HARDWARE TOOLS & SUPPLIES

H·S·& Co·
N·Y·

Catalogue
No. 500

HAMMACHER SCHLEMMER & CO.
NEW YORK

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1919
COPY 1

HARDWARE TOOLS and SUPPLIES

for

MANUFACTURERS
INDIVIDUALS AND
INSTITUTIONS

Since 1848

Hammacher, Schlemmer & Co.

Fourth Avenue and 13th Street

New York

Officers of

Hammacher, Schlemmer & Co.

Mr. William Schlemmer

Who is at present the Treasurer of the Company, has been identified with the business for sixty-one years continuously and President and Treasurer up to January 1, 1914.

Mr. William F. Schlemmer

Son of Mr. William Schlemmer, identified with the business for the past twenty-three years, fifteen years Vice-President, and now President.

Mr. Dean Park

Connected with the business for the past eighteen years and Secretary for the past ten years.

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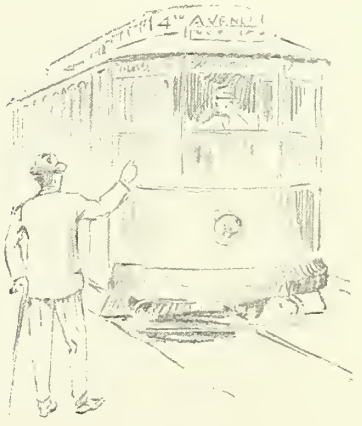
Our present location at
127 to 133 Fourth Avenue, corner 13th Street
New York

Where Do You Live?



IT need not matter much, as our store is located in one of the few real centers of the city.

The Subway express station is one block away; the Broadway surface cars one block; the Fourth Avenue cars pass the door. From the Grand Central, the Subway brings you one block from our corner in six to eight minutes; from the Pennsylvania, the Broadway surface cars take ten minutes or so; from the Jersey side, the Hudson Tunnel lands you four rather long blocks away.



We are always glad to receive visitors—we like to make new acquaintances. Anyone interested in Hardware and Tools will enjoy our stock; while factory representatives may find it decidedly to their advantage to get acquainted in the main office on the second floor. On many lines of regular and special goods we are in a position to quote exceptionally favorable prices on large lots, or on contract basis.



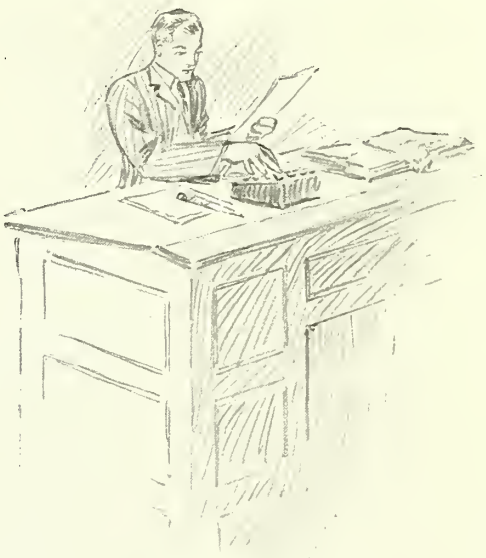








The Main Office



OCCUPIES the entire second floor, and it is here, rather than in the store, that the bulk of our business is handled.

In planning our office we adopted the old fashioned idea of everything "open and above board," for we have always believed that more and better business can be done where there is quickest and easiest contact between departments, and less time wasted in approaching the sanctums of the various managerial heads; therefore, "the office" generally assumes that one-large-family atmosphere, such as is occasionally found in long established business houses.



In the foreground of the upper picture may be seen the cabinets for our elaborate system of buyers' records, behind them a part of the invoicing and accounting departments. In the center the buying department is shown at closer range.

The lower view shows a display room devoted exclusively to builders' hardware.









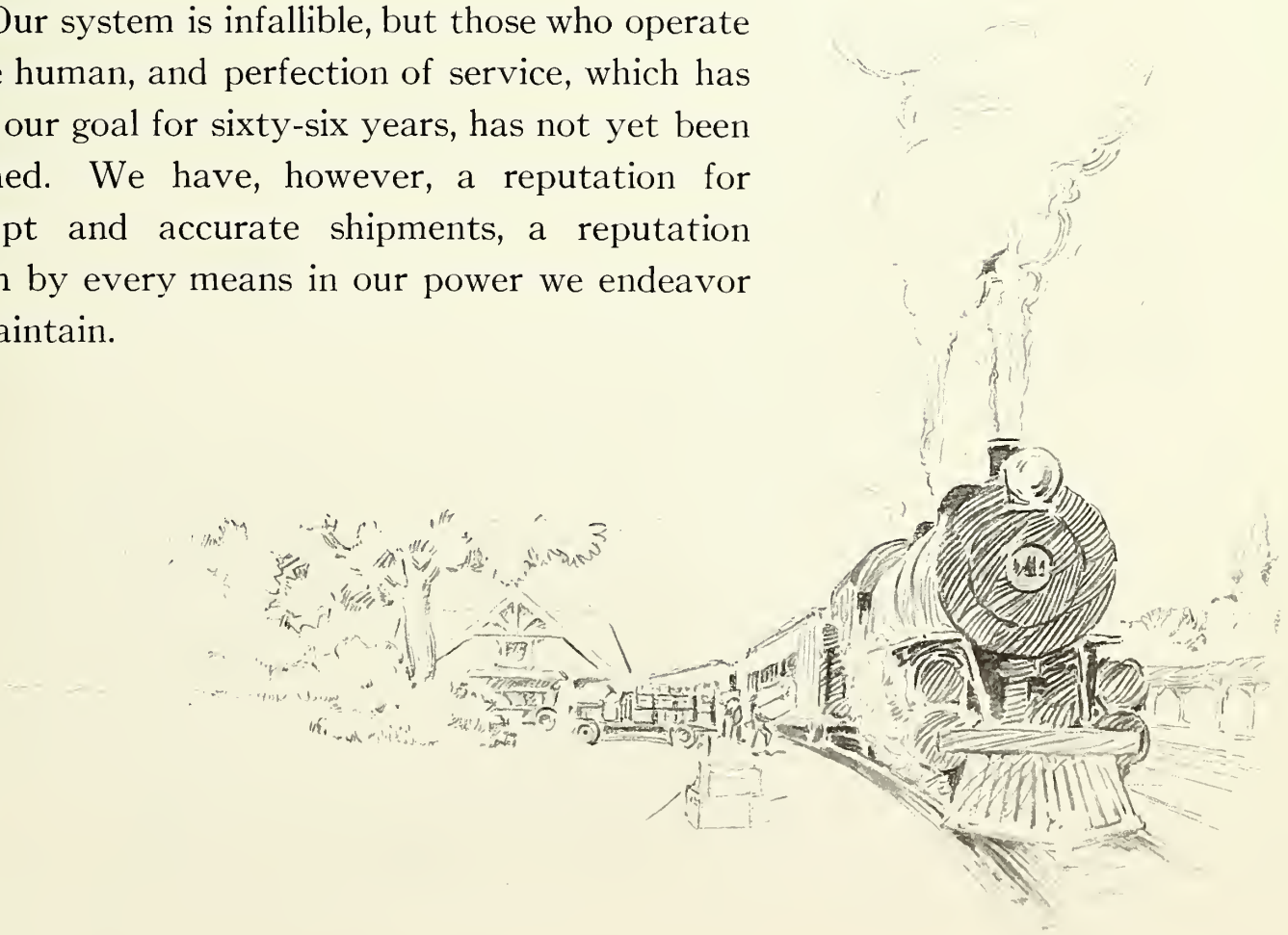


Packing and Shipping

THE Shipping Department is the main artery of any business, and this statement applies with exceptional truth to such a business as ours. Orders calling for several thousand items, many of unusual finishes or dimensions and manufactured in a score of different factories, are a familiar part of our day's work.

The original order and three carbon copies are written out and delivered to four different departments, where they become unfinished business until the order is delivered complete. Records of upwards of three million orders are on file in our cabinets.

Our system is infallible, but those who operate it are human, and perfection of service, which has been our goal for sixty-six years, has not yet been reached. We have, however, a reputation for prompt and accurate shipments, a reputation which by every means in our power we endeavor to maintain.











Piano Materials and Tools



ONE of the most important branches of our business is the sale of Piano Materials and Tools, and the views on the opposite page are taken at random from various points.

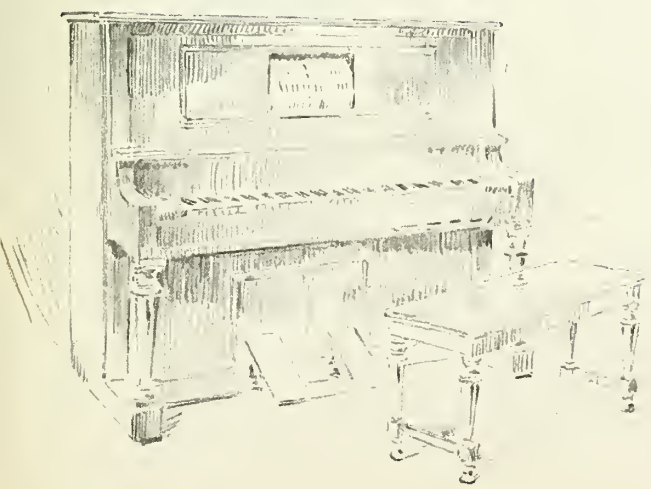
The upper picture shows a part of the space devoted to small items in Piano Materials, such as hinges, locks, knobs, rubber buttons, front frame swings and scores of other similar items.

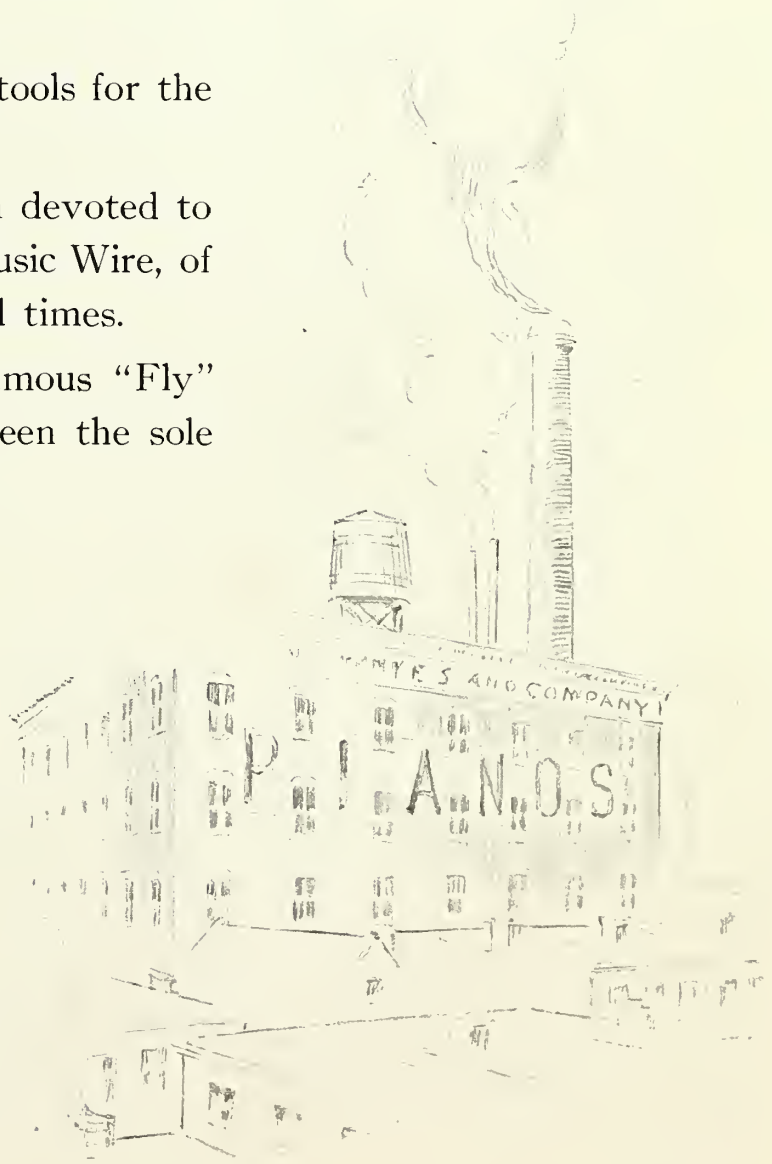
In the center view the various kinds of Felts and Cloths used exclusively in piano work, including bushing cloth, key rail cloth, string and name-board felt and similar material.

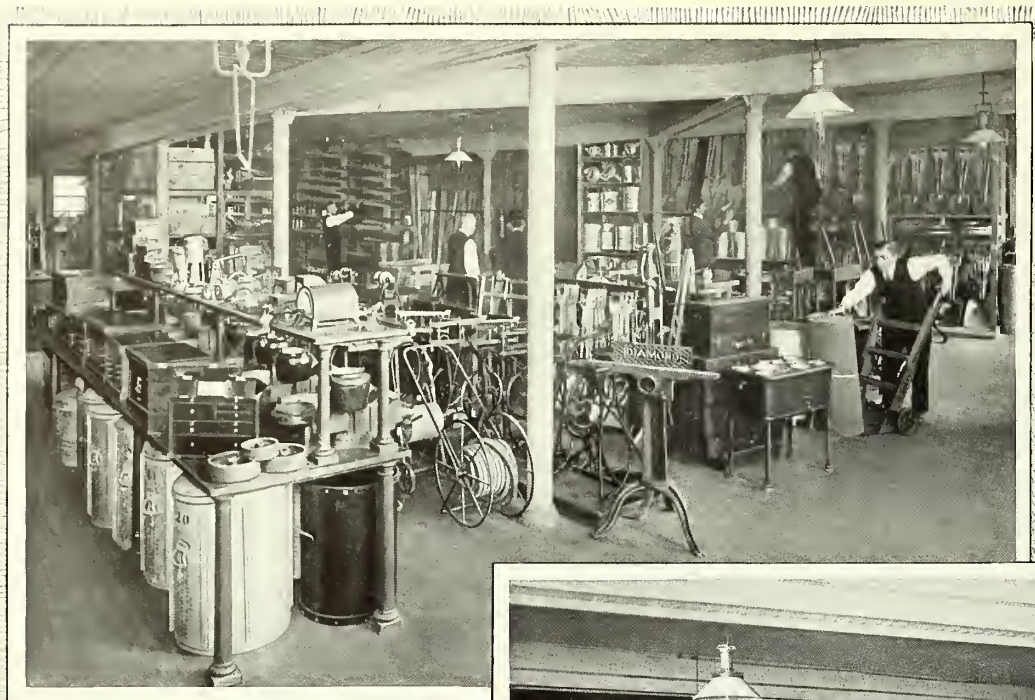
Next, a corner devoted entirely to tools for the use of piano tuners and regulators.

The lower picture shows the section devoted to the celebrated Felten and Guilleaume Music Wire, of which we carry an enormous stock at all times.

On this same floor we stock the famous "Fly" Brand Tuning Pins for which we have been the sole American and Canadian agents for years.













General Views

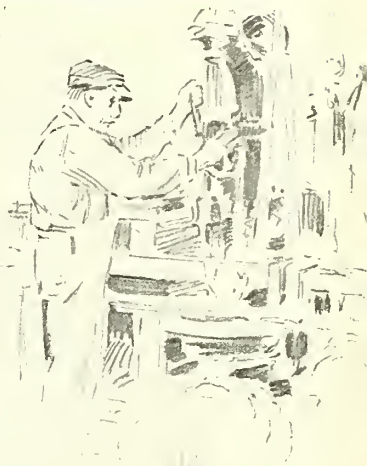
THE illustrations on the opposite page are used merely to give some idea of the scope and variety of our lines.

The upper picture shows an exceedingly varied assortment of "bulky" goods, including shovels, spades, brooms, etc., for contractors' use; hose-racks, mortising machines, tool chests, glue room specialties, ash and garbage cans, and scores of other items.

The remaining three pictures are from different floors housing thousands of items in the line of general hardware tools and supplies.

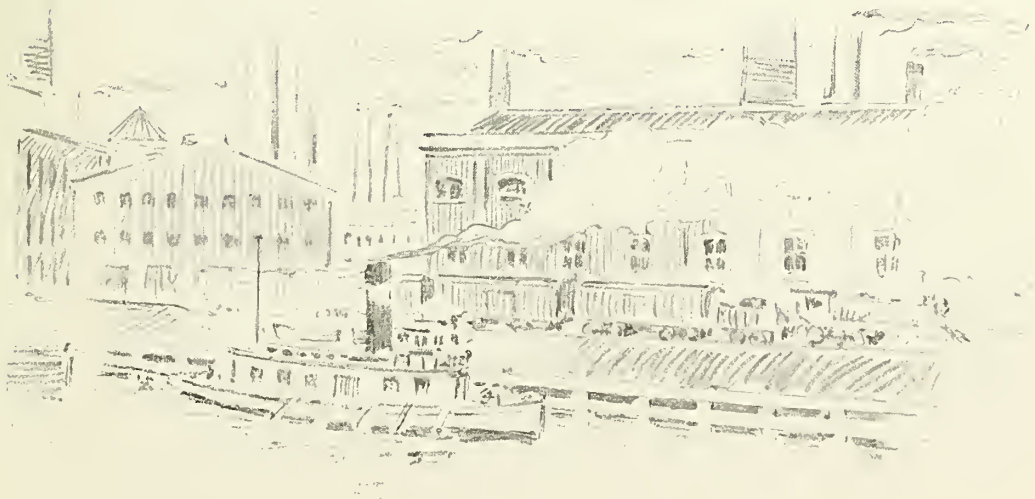
Our sole aim in these views has been to afford customers who have never given us the honor of a personal visit, some idea at a glance of the great variety and extent of our lines.

Our stock is probably the largest and most comprehensive in the East.

















The Basement



A BASEMENT is just the place for heavy goods, and certainly hardware is heavy. Opposite, three different views of our main basement show nails, screws, bolts, nuts, dowels, building paper and many other items which we stock in great quantities.

For years we have given very close attention to our stocks of wood screws and miscellaneous wire nails, and believe the statement a safe one to make that we have a greater variety of both items "on hand" than can be found elsewhere in the country, outside of possibly a few factory store houses.

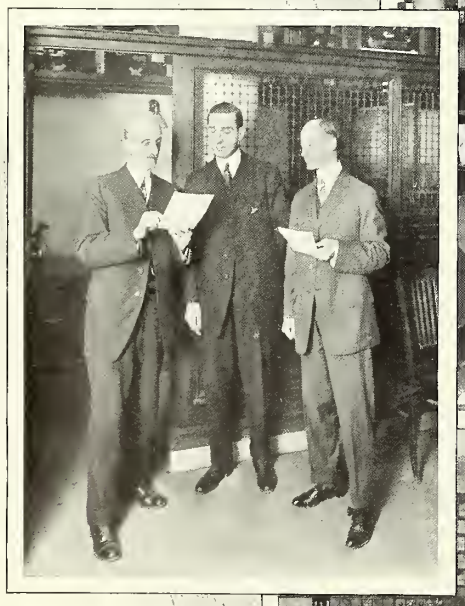
In the sale of Birch Dowels, which show so prominently in the lower picture, we are legitimate factors, having marketed these goods in large quantities for many years.

We have given considerable study to the perfecting of our methods for the rapid and efficient handling of the lines of heavy goods carried generally in the basements or on reinforced floors.











The Store

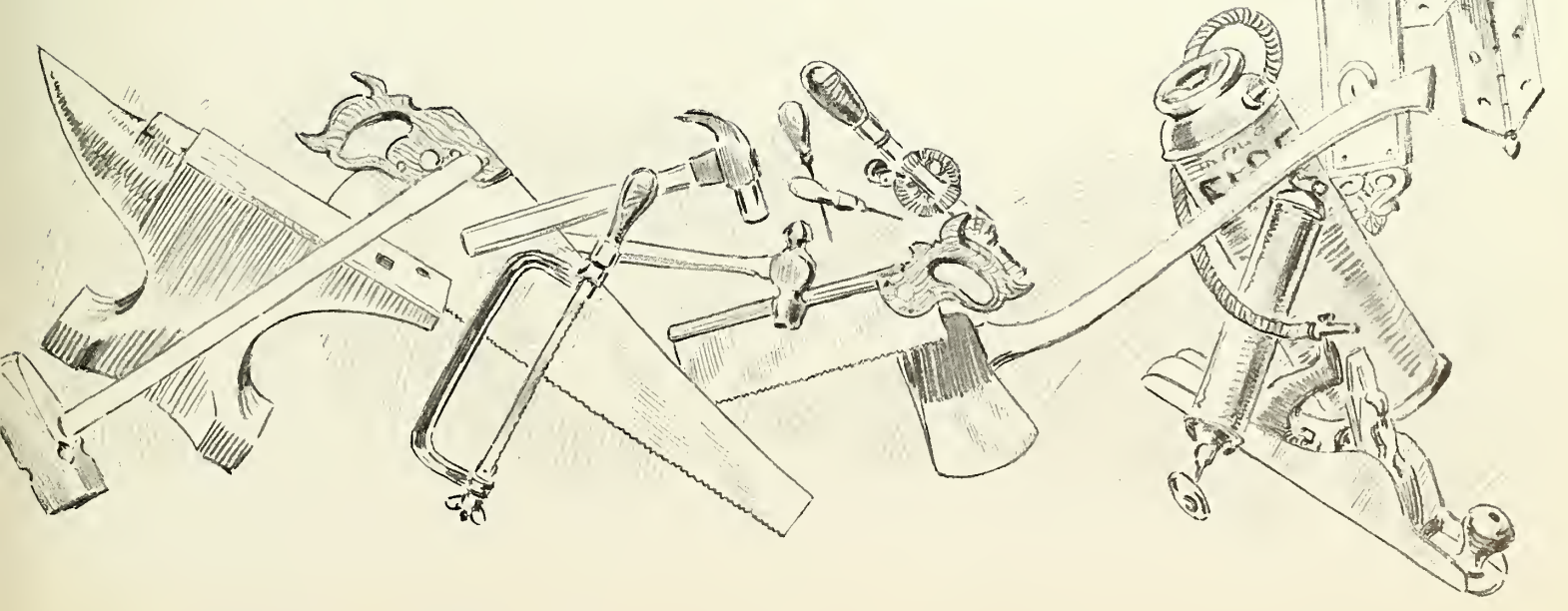
WE pride ourselves on conducting one of the finest hardware stores in the United States, and have had much satisfaction in being told by those who have traveled and observed much, that ours is "better than anything of the kind they have yet seen."

And the store has other advantages beyond "good looks," for in arrangements for handling business here as elsewhere throughout the building, we achieved a gratifying degree of "efficiency" some years before that word came into its present usage.

The store is roughly divided into two divisions: On the right from the entrance, Tools; on the left, Hardware; in the rear, our much advertised Tool Cabinets, and samples of general supplies.

The upper view is taken to the right and shows mainly the side of the store given to Tools. The lower view is taken to the left and shows the Hardware section. The central view shows in the foreground, Casters, one of our specialties; and in the rear, Tool Cabinets, etc.

It should be borne in mind that these pictures represent only a retail display.




HAMMACHER,
SCHLEMMER&CO.

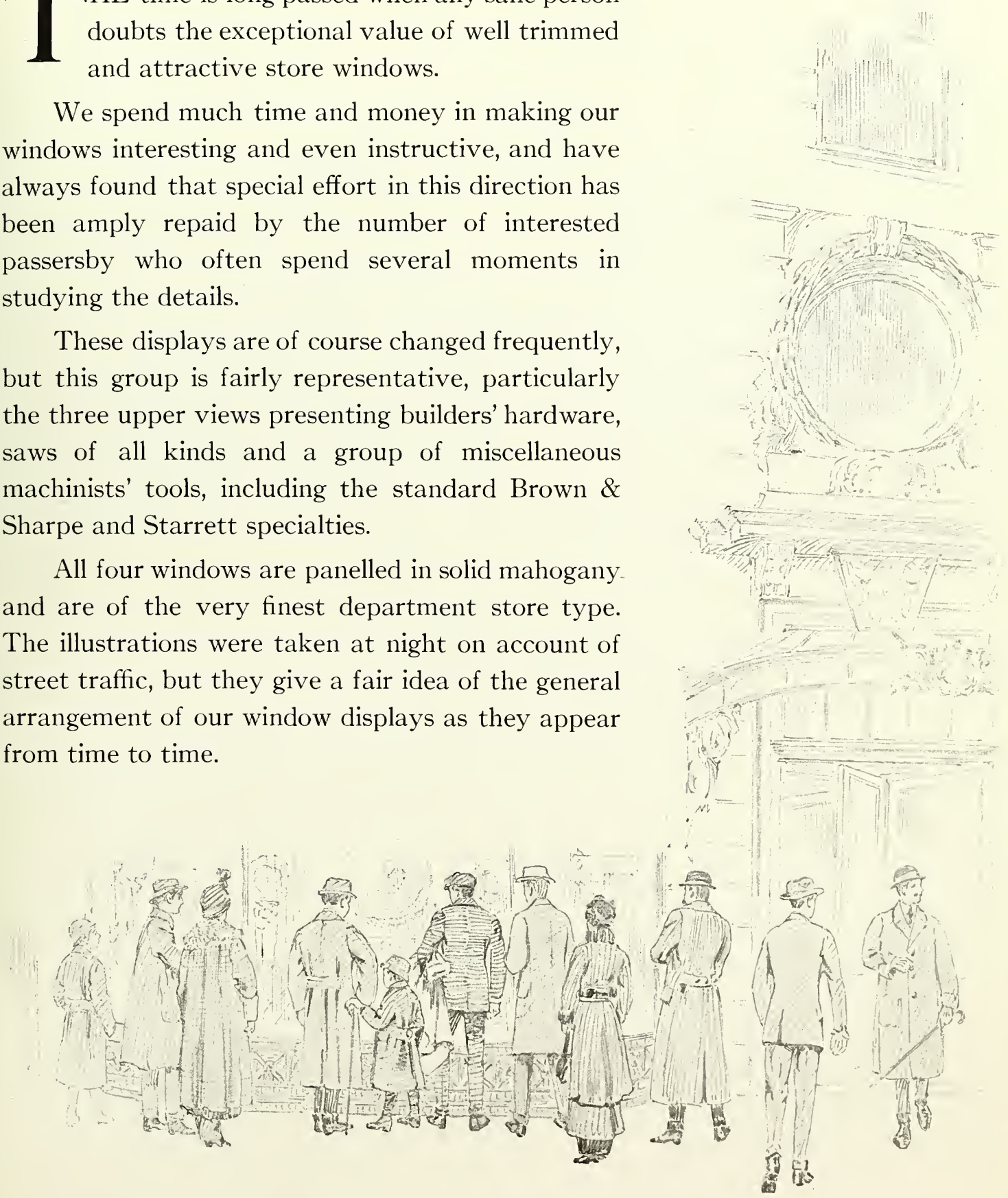
Show Windows

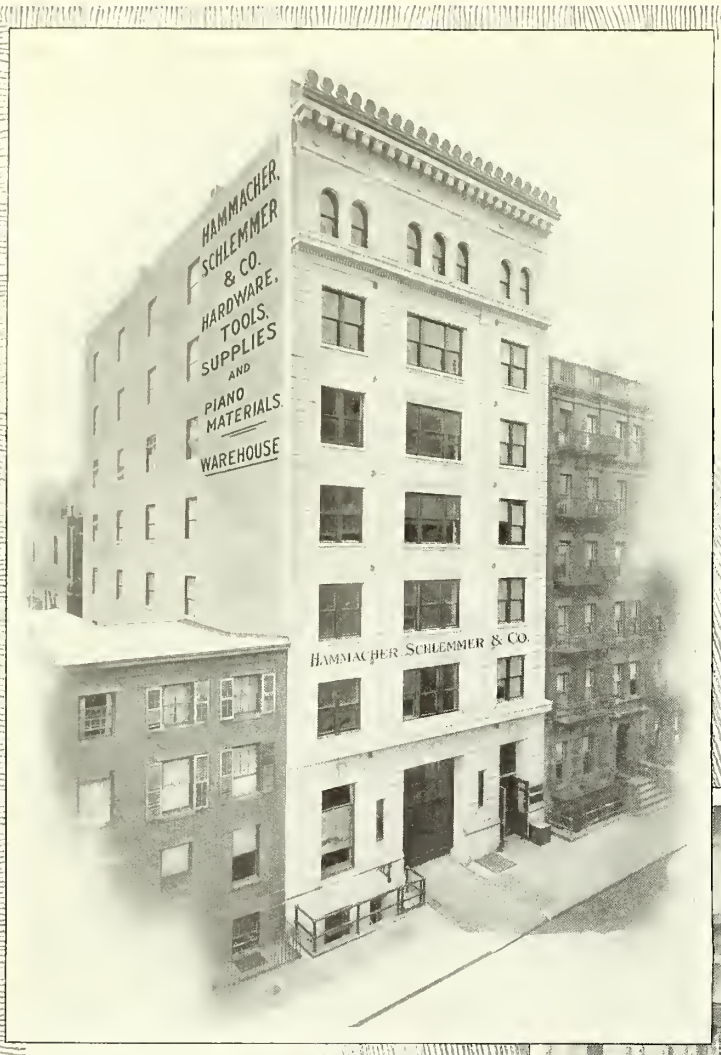
THE time is long passed when any sane person doubts the exceptional value of well trimmed and attractive store windows.

We spend much time and money in making our windows interesting and even instructive, and have always found that special effort in this direction has been amply repaid by the number of interested passersby who often spend several moments in studying the details.

These displays are of course changed frequently, but this group is fairly representative, particularly the three upper views presenting builders' hardware, saws of all kinds and a group of miscellaneous machinists' tools, including the standard Brown & Sharpe and Starrett specialties.

All four windows are panelled in solid mahogany and are of the very finest department store type. The illustrations were taken at night on account of street traffic, but they give a fair idea of the general arrangement of our window displays as they appear from time to time.




HAMMACHER, SCHLEMMER & CO.
HARDWARE, TOOLS, SUPPLIES AND PIANO MATERIALS.
WAREHOUSE
HAMMACHER SCHLEMMER & CO.

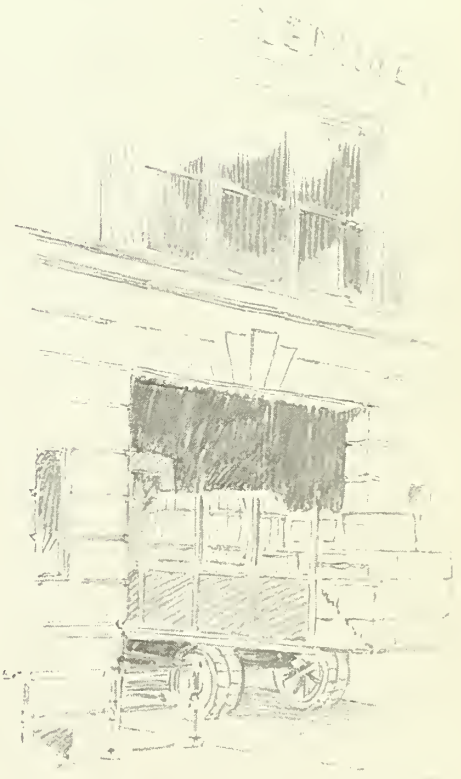




Our Warehouse



WHAT can anybody say about a warehouse? We show ours only to emphasize the fact that we are not merely a retail hardware store, as has been erroneously supposed by some of our new customers, but that we carry exceptionally large stocks of many items, thus enabling us to make prompt shipments to factories or to merchants who buy of us on a purely jobbing basis.



In conclusion we would say that although we trust you have become more or less acquainted with us and our business through these pictures, we hope that they will prove to be only an incentive for a personal call.

We take very great pleasure in meeting our customers.





The 1200 pages in this catalogue represent the boiled down essence of the literature of 1,000 manufacturers — plus descriptions of goods manufactured for or exclusively controlled by us

This book was built for your convenience and to save you time. We trust you will find it useful

Compiled by
Catalogue Department
Hammacher, Schlemmer & Co.

Press of Robert L. Stillson Co.
New York

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Twist Drills

Carbon and High Speed Steel

NOTE—Although Morse Drills now carry certain new numbers, we use only the old ones, as the new numbers have not been sufficiently established to secure their permanency.

NEW NUMBERS

Read note opposite



Morse No. 102, with Taper Shanks

All Twist Drills in this catalogue have increase twist or constant angle, see notes pages 36 and 39

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank
1/16	$ .35	$ .90	4 3/8	1 1/4	.0625	
5/64	.40	.90	4 1/2	1 3/8	.0781	
3/32	.40	.90	4 1/2	1 1/2	.0937	
7/64	.45	.90	4 5/8	1 11/16	.1093	
1/8	.45	.90	5 1/8	2 3/16	.125	
9/64	.45	.90	5 1/4	2 5/16	.1406	
5/32	.45	.90	5 3/8	2 7/16	.1562	
11/64	.50	.90	5 1/2	2 9/16	.1718	
3/16	.50	.90	5 3/4	2 13/16	.1875	
13/64	.55	1.00	5 7/8	2 7/8	.2031	
7/32	.55	1.00	6	3	.2187	
15/64	.60	1.10	6 1/8	3	.2343	
1/4	.60	1.10	6 1/8	3	.25	
17/64	.65	1.20	6 1/4	2 15/16	.2656	
9/32	.65	1.20	6 1/4	2 15/16	.2812	
19/64	.70	1.30	6 3/8	3 1/16	.2968	
5/16	.70	1.30	6 3/8	3 1/16	.3125	
21/64	.75	1.40	6 1/2	3 3/16	.3281	
11/32	.75	1.40	6 1/2	3 3/16	.3437	
23/64	.80	1.50	6 3/4	3 7/16	.3593	
3/8	.80	1.50	6 3/4	3 7/16	.375	
25/64	.85	1.65	7	3 11/16	.3906	
13/32	.85	1.65	7	3 11/16	.4062	
27/64	.90	1.75	7 1/4	3 15/16	.4218	
7/16	.90	1.75	7 1/4	3 15/16	.4375	
29/64	.95	1.90	7 1/2	4 3/16	.4531	
15/32	.95	1.90	7 1/2	4 3/16	.4687	
31/64	1.00	2.00	7 3/4	4 7/16	.4843	
1/2	1.00	2.00	7 3/4	4 7/16	.5	
33/64	1.10	2.15	8	4 11/16	.5156	
17/32	1.10	2.15	8	4 11/16	.5312	
35/64	1.20	2.25	8 1/4	4 15/16	.5468	
9/16	1.20	2.25	8 1/4	4 15/16	.5625	No. 1
37/64	1.30	2.40	8 1/2	4 5/8	.5781	
19/32	1.30	2.40	8 1/2	4 5/8	.5937	
39/64	1.40	2.50	8 3/4	4 7/8	.6093	
5/8	1.40	2.50	8 3/4	4 7/8	.625	
41/64	1.50	2.75	9	5 1/8	.6406	
21/32	1.50	2.75	9	5 1/8	.6562	
43/64	1.60	3.00	9 1/4	5 3/8	.6718	
11/16	1.60	3.00	9 1/4	5 3/8	.6875	
45/64	1.70	3.25	9 1/2	5 5/8	.7031	
23/32	1.70	3.25	9 1/2	5 5/8	.7187	
47/64	1.85	3.50	9 3/4	5 7/8	.7343	
3/4	1.85	3.50	9 3/4	5 7/8	.75	
49/64	2.00	3.75	9 7/8	6	.7656	
25/32	2.00	3.75	9 7/8	6	.7812	
51/64	2.15	4.00	10	6 1/8	.7968	
13/16	2.15	4.00	10	6 1/8	.8125	
53/64	2.30	4.40	10 1/4	6 3/8	.8281	
27/32	2.30	4.40	10 1/4	6 3/8	.8437	No. 2
55/64	$2.45	$4.75	10 1/2	6 5/8	.8593	
7/8	2.45	4.75	10 1/2	6 5/8	.875	
57/64	2.60	5.15	10 5/8	6 3/4	.8906	
29/32	2.60	5.15	10 5/8	6 3/4	.9062	No. 2
59/64	2.75	5.50	10 3/4	6 1/8	.9218	
15/16	2.75	5.50	10 3/4	6 1/8	.9375	
61/64	2.90	5.90	10 7/8	6 1/4	.9531	
31/32	2.90	5.90	10 7/8	6 1/4	.9687	
63/64	3.00	6.25	11	6 3/8	.9843	
1	3.00	6.25	11	6 3/8	1	
1 1/64	3.20	6.75	11 1/8	6 1/2	1.0156	
1 1/32	3.20	6.75	11 1/8	6 1/2	1.0312	
1 3/64	3.40	7.25	11 1/4	6 5/8	1.0468	
1 1/16	3.40	7.25	11 1/4	6 5/8	1.0625	
1 5/64	3.60	7.75	11 1/2	6 7/8	1.0781	
1 3/32	3.60	7.75	11 1/2	6 7/8	1.0937	
1 7/64	3.80	8.25	11 3/4	7 1/8	1.1093	
1 1/8	3.80	8.25	11 3/4	7 1/8	1.125	
1 9/64	4.00	8.90	11 7/8	7 1/4	1.1406	
1 5/32	4.00	8.90	11 7/8	7 1/4	1.1562	
1 11/64	4.20	9.50	12	7 3/8	1.1718	
1 3/16	4.20	9.50	12	7 3/8	1.1875	
1 13/64	4.40	10.15	12 1/8	7 1/2	1.2031	
1 7/32	4.40	10.15	12 1/8	7 1/2	1.2187	
1 15/64	4.50	10.75	12 1/2	7 7/8	1.2343	
1 1/4	4.50	10.75	12 1/2	7 7/8	1.25	No. 3
1 17/64	4.65	11.50	14 1/8	8 1/2	1.2656	
1 9/32	4.65	11.50	14 1/8	8 1/2	1.2812	
1 19/64	4.80	12.25	14 1/4	8 5/8	1.2968	
1 5/16	4.80	12.25	14 1/4	8 5/8	1.3125	
1 21/64	5.00	13.00	14 3/8	8 3/4	1.3281	
1 11/32	5.00	13.00	14 3/8	8 3/4	1.3437	
1 23/64	5.20	13.75	14 1/2	8 7/8	1.3593	
1 3/8	5.20	13.75	14 1/2	8 7/8	1.375	
1 25/64	5.40	14.65	14 5/8	9	1.3906	
1 13/32	5.40	14.65	14 5/8	9	1.4062	
1 27/64	5.60	15.50	14 3/4	9 1/8	1.4218	
1 7/16	5.60	15.50	14 3/4	9 1/8	1.4375	
1 29/64	5.80	16.40	14 7/8	9 1/4	1.4531	
1 15/32	5.80	16.40	14 7/8	9 1/4	1.4687	
1 31/64	6.00	17.25	15	9 3/8	1.4843	
1 1/2	6.00	17.25	15	9 3/8	1.5	
1 33/64	6.30	18.15	15	9 3/8	1.5156	
1 17/32	6.30	18.15	15	9 3/8	1.5312	
1 35/64	6.60	19.00	15 1/4	9 5/8	1.5468	
1 9/16	6.60	19.00	15 1/4	9 5/8	1.5625	
1 37/64	6.90	20.00	15 1/4	9 5/8	1.5781	
1 19/32	6.90	20.00	15 1/4	9 5/8	1.5937	
1 39/64	7.20	21.00	15 1/2	9 7/8	1.6093	
1 5/8	7.20	21.00	15 1/2	9 7/8	1.625	No. 4

Twist Drills

Carbon and High Speed Steel



Morse No. 102, with Taper Shanks (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank
1 41/64	$7.50	$22.00	15 1/2	9 7/8	1.6406	No. 4
1 21/32	7.50	22.00	15 1/2	9 7/8	1.6562	
1 43/64	7.80	23.00	15 3/4	10 1/8	1.6718	
1 11/16	7.80	23.00	15 3/4	10 1/8	1.6875	
1 45/64	8.10	24.00	15 3/4	10 1/8	1.7031	
1 23/32	8.10	24.00	15 3/4	9 11/16	1.7187	
1 47/64	8.40	25.00	16	9 15/16	1.7343	
1 3/4	8.40	25.00	16	9 15/16	1.75	
1 49/64	8.60	26.25	16	9 15/16	1.7656	
1 25/32	8.60	26.25	16	9 15/16	1.7812	
1 51/64	8.80	27.50	16 1/4	10 3/16	1.7968	
1 13/16	8.80	27.50	16 1/4	10 1/8	1.8125	
1 53/64	9.00	28.75	16 1/4	10 1/8	1.8281	
1 27/32	9.00	28.75	16 1/4	10 1/8	1.8437	
1 55/64	9.20	30.00	16 1/2	10 3/8	1.8593	
1 7/8	9.20	30.00	16 1/2	10 3/8	1.875	
1 57/64	9.35	31.25	16 1/2	10 3/8	1.8906	
1 29/32	9.35	31.25	16 1/2	10 3/8	1.9062	
1 59/64	9.50	32.50	16 1/2	10 3/8	1.9218	
1 15/16	9.50	32.50	16 1/2	10 1/4	1.9375	
1 61/64	9.65	33.75	16 1/2	10 1/4	1.9531	
1 31/32	9.65	33.75	16 1/2	10 1/4	1.9687	
1 63/64	9.80	35.00	16 1/2	10 1/4	1.9843	
2	9.80	35.00	16 1/2	10 1/4	2	
2 1/64	10.20	36.25	16 1/2	9 1/2	2.0156	No. 5
2 1/32	10.20	36.25	16 1/2	9 1/2	2.0312	
2 3/64	10.60	37.50	17	10	2.0468	
2 1/16	10.60	37.50	17	10	2.0625	
2 5/64	10.90	38.75	17	10	2.0781	
2 3/32	10.90	38.75	17	10	2.0937	
2 7/64	11.20	40.00	17	10	2.1093	
2 1/8	11.20	40.00	17	10	2.125	
2 9/64	11.60	41.25	17	10	2.1406	
2 5/32	11.60	41.25	17	10	2.1562	
2 11/64	12.00	42.50	17	10	2.1718	
2 3/16	12.00	42.50	17	10	2.1875	
2 13/64	12.40	43.75	17 1/2	10 1/2	2.2031	
2 7/32	12.40	43.75	17 1/2	10 1/2	2.2187	
2 15/64	12.80	45.00	17 1/2	10 1/2	2.2343	
2 1/4	12.80	45.00	17 1/2	10 1/8	2.25	
2 17/64	13.20	47.50	17 1/2	10 1/8	2.2356	
2 9/32	13.20	47.50	17 1/2	10 1/8	2.2812	
2 19/64	13.60	50.00	17 1/2	10 1/8	2.2968	
2 5/16	13.60	50.00	17 1/2	10 1/8	2.3125	
2 21/64	14.00	52.50	18	10 5/8	2.3281	
2 11/32	14.00	52.50	18	10 5/8	2.3437	
2 23/64	14.40	55.00	18	10 5/8	2.3593	
2 3/8	14.40	55.00	18	10 1/2	2.375	
2 25/64	14.70	57.50	18 1/2	11	2.3906	
2 13/32	14.70	57.50	18 1/2	11	2.4062	
2 27/64	15.00	60.00	18 1/2	11	2.4218	
2 7/16	15.00	60.00	18 1/2	11	2.4375	
2 29/64	15.30	62.50	19	11 1/2	2.4531	
2 15/32	15.30	62.50	19	11 1/2	2.4687	
2 31/64	15.60	65.00	19	11 1/2	2.4843	
2 1/2	15.60	65.00	19	11 3/8	2.5	
2 33/64	15.90	67.50	19 1/4	11 5/8	2.5156	
2 17/32	15.90	67.50	19 1/4	11 5/8	2.5312	
2 35/64	16.20	70.00	19 1/4	11 5/8	2.5468	
2 9/16	16.20	70.00	19 1/4	11 5/8	2.5625	
2 37/64	16.50	72.50	19 1/2	11 7/8	2.5781	
2 19/32	16.50	72.50	19 1/2	11 7/8	2.5937	
2 39/64	16.80	75.00	19 1/2	11 7/8	2.6093	
2 5/8	16.80	75.00	19 1/2	11 3/4	2.625	

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank
2 41/64	$17.20	$77.50	20	12 1/4	2.6406	No. 5
2 21/32	17.20	77.50	20	12 1/4	2.6562	
2 43/64	17.60	80.00	20	12 1/4	2.6718	
2 11/16	17.60	80.00	20	12 1/4	2.6875	
2 45/64	18.30	82.50	20 1/2	12 3/4	2.7031	
2 23/32	18.30	82.50	20 1/2	12 3/4	2.7187	
2 47/64	19.00	85.00	20 1/2	12 3/4	2.7343	
2 3/4	19.00	85.00	20 1/2	12 5/8	2.75	
2 49/64	19.50	87.50	20 1/2	12 5/8	2.7656	
2 25/32	19.50	87.50	20 1/2	12 5/8	2.7812	
2 51/64	20.00	90.00	20 1/2	12 5/8	2.7968	
2 13/16	20.00	90.00	20 1/2	12 5/8	2.8125	
2 53/64	20.50	92.50	21	13 1/8	2.8281	
2 27/32	20.50	92.50	21	13 1/8	2.8437	
2 55/64	21.00	95.00	21	13 1/8	2.8593	
2 7/8	21.00	95.00	21	13	2.875	
2 57/64	22.00	97.50	21	13	2.8906	
2 29/32	22.00	97.50	21	13	2.9062	
2 59/64	23.00	100.00	21	13	2.9218	
2 15/16	23.00	100.00	21	13	2.9375	
2 61/64	24.00	102.50	22	14	2.9531	
2 31/32	24.00	102.50	22	14	2.9687	
2 63/64	25.00	105.00	22	14	2.9843	
3	25.00	105.00	22	13 7/8	3	
3 1/16	28.00	112.50	24 5/16	14 1/2	3.0625	No. 6
3 1/8	31.00	120.00	24 5/16	14 3/8	3.1250	
3 3/16	34.00	127.50	24 5/16	14 3/8	3.1875	
3 1/4	37.00	135.00	24 13/16	14 3/4	3.2500	
3 5/16	40.00	142.50	24 13/16	14 3/4	3.3125	
3 3/8	43.00	150.00	24 13/16	14 5/8	3.3750	
3 7/16	46.00	157.50	24 13/16	14 5/8	3.4375	
3 1/2	49.50	165.00	25 5/16	15	3.5	
3 9/16	53.00	172.50	25 5/16	15	3.5625	
3 5/8	57.00	180.00	25 5/16	14 7/8	3.6250	
3 11/16	60.00	187.50	25 5/16	14 7/8	3.6875	
3 3/4	63.00	195.00	25 13/16	15 1/4	3.75	
3 13/16	66.00	202.50	25 13/16	15 1/4	3.8125	
3 7/8	69.00	210.00	25 13/16	15 1/8	3.8750	
3 15/16	72.00	217.50	25 13/16	15 1/8	3.9375	
4	75.00	225.00	25 13/16	15 1/8	4	
4 1/16	78.00		25 13/16	15	4.0625	
4 1/8	81.00	.....	25 13/16	15	4.1250	
4 3/16	84.00	.....	25 13/16	15	4.1875	
4 1/4	87.00	.....	25 13/16	15	4.25	
4 5/16	90.50	.....	25 13/16	15	4.3125	
4 3/8	94.00	.....	25 13/16	15	4.3750	
4 7/16	97.50	.....	25 13/16	15	4.4375	
4 1/2	101.00	.....	26 13/16	16	4.5	
4 9/16	103.50	.....	26 13/16	16	4.5625	
4 5/8	107.00	.....	26 13/16	16	4.6250	
4 11/16	110.50	.....	26 13/16	16	4.6875	
4 3/4	114.00	.....	26 13/16	16	4.75	
4 13/16	117.50	.....	26 13/16	16	4.8125	
4 7/8	121.00	.....	26 13/16	16	4.8750	
4 15/16	124.50	.....	26 13/16	16	4.9375	
5	128.00	.....	27 13/16	17	5	
5 1/8	134.00	.....	27 13/16	17	5.1250	
5 1/4	140.00	.....	27 13/16	17	5.25	
5 3/8	146.00	.....	27 13/16	17	5.3750	
5 1/2	152.00	.....	28 13/16	18	5.5	
5 5/8	158.00	.....	28 13/16	18	5.6250	
5 3/4	164.00	.....	28 13/16	18	5.75	
5 7/8	170.00	.....	28 13/16	18	5.8750	
6	176.00	.....	28 13/16	18	6	

For prices of these Drills in sets, see pages 48 and 49. For sizes larger than 2 inches we do not recommend Two-Groove Drills. We would call special attention to Three and Four-Groove Drills listed on page 40, which we think will enable customers to obtain much more satisfactory results

Twist Drills

Carbon and High Speed Steel



Morse No. 102, with Taper Shanks
Shanks larger than Regular

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent	Morse Taper Shank
5/16	$1.40	$2.80	6 1/2	2 5/8	.3125	No. 2
21/64	1.40	2.80	6 3/4	2 7/8	.3281	
11/32	1.40	2.80	6 3/4	2 7/8	.3437	
23/64	1.40	2.80	7	3 1/8	.3593	
3/8	1.40	2.80	7	3 1/8	.375	
25/64	1.40	2.80	7 1/4	3 3/8	.3906	
13/32	1.40	2.80	7 1/4	3 3/8	.4062	
27/64	1.40	2.80	7 1/2	3 5/8	.4218	
7/16	1.40	2.80	7 1/2	3 5/8	.4375	
29/64	1.45	3.00	7 3/4	3 7/8	.4531	
15/32	1.45	3.00	7 3/4	3 7/8	.4687	
31/64	1.45	3.00	8	4 1/8	.4843	
1/2	1.45	3.00	8	4 1/8	.5	
33/64	1.50	3.20	8 1/4	4 3/8	.5156	
17/32	1.50	3.20	8 1/4	4 3/8	.5312	
35/64	1.50	3.20	8 1/2	4 5/8	.5468	
9/16	1.50	3.20	8 1/2	4 5/8	.5625	
37/64	2.50	4.60	9 3/8	4 3/4	.5781	No. 3
19/32	2.50	4.60	9 3/8	4 3/4	.5937	
39/64	2.50	4.60	9 1/2	4 7/8	.6093	
5/8	2.50	4.60	9 1/2	4 7/8	.625	
41/64	2.50	4.60	9 5/8	5	.6406	
21/32	2.50	4.60	9 5/8	5	.6562	
43/64	2.50	4.60	9 3/4	5 1/8	.6718	
11/16	2.50	4.60	9 3/4	5 1/8	.6875	
45/64	2.60	5.00	9 7/8	5 1/4	.7031	
23/32	2.60	5.00	9 7/8	5 1/4	.7187	
47/64	2.60	5.00	10	5 3/8	.7343	
3/4	2.60	5.00	10	5 3/8	.75	
49/64	2.60	5.00	10 1/8	5 1/2	.7656	
25/32	2.60	5.00	10 1/8	5 1/2	.7812	
51/64	2.70	5.45	10 1/4	5 5/8	.7968	
13/16	2.70	5.45	10 1/4	5 5/8	.8125	
53/64	2.70	5.45	10 3/8	5 3/4	.8281	
27/32	2.70	5.45	10 3/8	5 3/4	.8437	
55/64	2.75	5.60	10 1/2	5 7/8	.8593	
7/8	2.75	5.60	10 1/2	5 7/8	.875	
57/64	2.80	5.75	10 5/8	6	.8906	
29/32	2.80	5.75	10 5/8	6	.9062	
1 1/8	4.60	10.50	12	6 3/8	1.125	No. 4
1 9/64	4.65	10.80	12 1/4	6 5/8	1.1406	
1 5/32	4.65	10.80	12 1/4	6 5/8	1.1562	
1 11/64	4.70	11.10	12 1/2	6 7/8	1.1718	
1 3/16	4.70	11.10	12 1/2	6 7/8	1.1875	
1 13/64	4.75	11.55	12 3/4	7 1/8	1.2031	
1 7/32	4.75	11.55	12 3/4	7 1/8	1.2187	
1 15/64	4.80	12.00	13	7 3/8	1.2343	
1 1/4	4.80	12.00	13	7 3/8	1.25	
1 17/64	8.40	25.00	16 1/2	9 5/8	1.7343	No. 5
1 3/4	8.40	25.00	16 1/2	9 5/8	1.75	
1 49/64	8.60	26.25	16 1/2	9 5/8	1.7656	
1 25/32	8.60	26.25	16 1/2	9 5/8	1.7812	
1 51/64	8.80	27.50	16 1/2	9 5/8	1.7968	
1 13/16	8.80	27.50	16 1/2	9 5/8	1.8125	
1 53/64	9.00	28.75	16 1/2	9 5/8	1.8281	
1 27/32	9.00	28.75	16 1/2	9 5/8	1.8437	
1 55/64	9.20	30.00	16 1/2	9 5/8	1.8593	
1 7/8	9.20	30.00	16 1/2	9 5/8	1.875	
1 57/64	9.35	31.25	16 1/2	9 5/8	1.8906	
1 29/32	9.35	31.25	16 1/2	9 5/8	1.9062	
1 59/64	9.50	32.50	16 1/2	9 5/8	1.9218	
1 15/16	9.50	32.50	16 1/2	9 5/8	1.9375	
1 61/64	9.65	33.75	16 1/2	9 5/8	1.9531	
1 31/32	9.65	33.75	16 1/2	9 5/8	1.9687	
1 63/64	9.80	35.00	16 1/2	9 5/8	1.9843	
2	9.80	35.00	16 1/2	9 5/8	2	

Morse No. 102 J Reamer, with Taper Shanks

Diameter Inch	Carbon Each	Whole Length Inches	Twist Cut Inches	To Precede Reamer Size	Morse Taper Shank
.245	$ .60	6 1/8	3	1/4	No. 1
.276	.65	6 1/4	2 15/16	9/32	
.306	.70	6 3/8	3 1/16	5/16	
.337	.75	6 1/2	3 3/16	11/32	
.369	.80	6 3/4	3 7/16	3/8	
.400	.85	7	3 11/16	13/32	
.429	.90	7 1/4	3 15/16	7/16	
.462	.95	7 1/2	4 3/16	15/32	
.492	1.00	7 3/4	4 7/16	1/2	
.554	1.20	8 1/4	4 15/16	9/16	
.615	1.40	8 3/4	4 7/8	5/8	No. 2
.677	1.60	9 1/4	5 3/8	11/16	
.740	1.85	9 3/4	5 7/8	3/4	
.802	2.15	10	6 1/8	13/16	
.865	2.45	10 1/2	6 5/8	7/8	
.927	2.75	10 3/4	6 1/8	15/16	No. 3
.990	3.00	11	6 3/8	1	



Morse No. 104 N Reamer, with Straight Shanks
Taper Length

Diameter Inch	Carbon Each	Whole Length Inches	Twist Cut Inches	To Precede Reamer Size
.245	$ .60	6 1/8	4	1/4
.276	.65	6 1/4	4	9/32
.306	.70	6 3/8	4 1/16	5/16
.337	.75	6 1/2	4 1/8	11/32
.369	.80	6 3/4	4 1/4	3/8
.400	.85	7	4 3/8	13/32
.429	.90	7 1/4	4 5/8	7/16
.462	.95	7 1/2	4 7/8	15/32
.492	1.00	7 3/4	5	1/2
.554	1.20	8 1/4	5 3/8	9/16
.615	1.40	8 3/4	5 3/4	5/8
.677	1.60	9 1/4	6	11/16
.740	1.85	9 3/4	6 3/8	3/4
.802	2.15	10	6 5/8	13/16
.865	2.45	10 1/2	7	7/8
.927	2.75	10 3/4	7	15/16
.990	3.00	11	7 3/16	1

For Reamer Drills larger than one inch we recommend the use of Three or Four-Groove Drills listed on page 40.

Twist Drills

Forged High Speed Steel



Morse No. 1020, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Morse Taper Shank	Whole Length Inches	Morse Taper Shank	Length of Groove Inches
31/64	$1.30	8 5/16	No. 2	....	....	5 3/16
1/2	1.30	8 5/16		....	....	5 3/16
33/64	1.40	8 7/16		....	....	5 5/16
17/32	1.40	8 7/16		....	....	5 5/16
35/64	1.50	8 5/8		....	....	5 1/2
9/16	1.50	8 5/8		....	....	5 1/2
37/64	1.60	8 3/4		....	....	5 5/8
19/32	1.60	8 3/4		....	....	5 5/8
39/64	1.75	8 15/16		....	....	5 13/16
5/8	1.75	8 15/16		....	....	5 13/16
41/64	1.90	9 13/16	No. 3	....	....	5 15/16
21/32	1.90	9 13/16		....	....	5 15/16
43/64	2.05	9 15/16		....	....	6 1/16
11/16	2.05	9 15/16		....	....	6 1/16
45/64	2.25	10 1/8		....	....	6 1/4
23/32	2.25	10 1/8		....	....	6 1/4
47/64	2.40	10 1/4		....	....	6 3/8
3/4	2.40	10 1/4		....	....	6 3/8
49/64	2.60	10 7/16		....	....	6 9/16
25/32	2.60	10 7/16		....	....	6 9/16
51/64	2.80	10 9/16		....	....	6 11/16
13/16	2.80	10 9/16		....	....	6 11/16
53/64	3.00	10 3/4		....	....	6 7/8
27/32	3.00	10 3/4		....	....	6 7/8
55/64	3.20	10 7/8				7
7/8	3.20	10 7/8		11 7/8	No. 4	7
57/64	3.45	11		12		7 1/8
29/32	3.45	11		12		7 1/8
59/64	3.75	11 3/16		12 3/16		7 5/16
15/16	3.75	11 3/16		12 3/16		7 5/16
61/64	4.05	11 5/16		12 5/16		7 7/16
31/32	4.05	11 5/16		12 5/16		7 7/16
63/64	4.35	11 1/2		12 1/2		7 5/8
1	4.35	11 1/2		12 1/2		7 5/8
1 1/64	4.75	12 5/8	No. 4	....	....	7 3/4
1 1/32	4.75	12 5/8		....	....	7 3/4
1 3/64	5.10	12 13/16		....	....	7 15/16
1 1/16	5.10	12 13/16		....	....	7 15/16
1 5/64	5.45	12 15/16		....	....	8 1/16
1 3/32	5.45	12 15/16		....	....	8 1/16
1 7/64	5.80	13 1/8		....	....	8 1/4
1 1/8	5.80	13 1/8		....	....	8 1/4
1 9/64	6.20	13 1/4		....	....	8 3/8
1 5/32	6.20	13 1/4		....	....	8 3/8
1 11/64	6.55	13 3/8		....	....	8 1/2
1 3/16	6.55	13 3/8		....	....	8 1/2
1 13/64	6.90	13 9/16		....	....	8 11/16
1 7/32	6.90	13 9/16		....	....	8 11/16
1 15/64	7.20	13 11/16		....	....	8 13/16
1 1/4	7.20	13 11/16		....	....	8 13/16
1 17/64	7.60	15		15 1/8	No. 5	9
1 9/32	7.60	15		15 1/8		9
1 19/64	8.00	15 1/8		15 1/4		9 1/8
1 5/16	8.00	15 1/8		15 1/4		9 1/8
1 21/64	8.40	15 1/4		15 3/8		9 1/4
1 11/32	8.40	15 1/4		15 3/8		9 1/4
1 23/64	8.80	15 7/16		15 9/16		9 7/16

Diameter Inches	Each	Whole Length Inches	Morse Taper Shank	Whole Length Inches	Morse Taper Shank	Length of Groove Inches
1 3/8	$8.80	15 7/16	No. 4	15 9/16	No. 5	9 7/16
1 25/64	9.20	15 9/16		15 11/16		9 9/16
1 13/32	9.20	15 9/16		15 11/16		9 9/16
1 27/64	9.60	15 3/4		15 7/8		9 3/4
1 7/16	9.60	15 3/4		15 7/8		9 3/4
1 29/64	10.00	15 7/8		16		9 7/8
1 15/32	10.00	15 7/8		16		9 7/8
1 31/64	10.40	16		16 1/8		10
1 1/2	10.40	16		16 1/8		10
1 33/64	10.80	16		16 1/8		10
1 17/32	10.80	16		16 1/8		10
1 35/64	11.20	16 3/16		16 5/16		10 3/16
1 9/16	11.20	16 3/16		16 5/16		10 3/16
1 37/64	11.65	16 3/16		16 5/16		10 3/16
1 19/32	11.65	16 3/16		16 5/16		10 3/16
1 39/64	12.10	16 5/16		16 7/16		10 5/16
1 5/8	12.10	16 5/16		16 7/16		10 5/16
1 41/64	12.60	16 5/16		16 7/16		10 5/16
1 21/32	12.60	16 5/16		16 7/16		10 5/16
1 43/64	13.05	16 1/2		16 5/8		10 1/2
1 11/16	13.05	16 1/2		16 5/8		10 1/2
1 45/64	13.60	16 5/8	No. 5	....	....	10 1/2
1 23/32	13.60	16 5/8		....	....	10 1/2
1 47/64	14.10	16 3/4		....	....	10 5/8
1 3/4	14.10	17 7/8		....	....	10 5/8
1 49/64	14.55	17 7/8		....	....	10 5/8
1 25/32	14.55	17 7/8		....	....	10 5/8
1 51/64	15.00	18		....	....	10 3/4
1 13/16	15.00	18		....	....	10 3/4
1 53/64	15.50	18		....	....	10 3/4
1 27/32	15.50	18		....	....	10 3/4
1 55/64	16.00	18 3/16		....	....	10 15/16
1 7/8	16.00	18 3/16		....	....	10 15/16
1 57/64	16.55	18 3/16		....	....	10 15/16
1 29/32	16.55	18 3/16		....	....	10 15/16
1 59/64	17.10	18 3/16		....	....	10 15/16
1 15/16	17.10	18 3/16		....	....	10 15/16
1 61/64	17.65	18 3/16		....	....	10 15/16
1 31/32	17.65	18 3/16		....	....	10 15/16
1 63/64	18.20	18 5/16		....	....	11 1/16
2	18.20	18 5/16		....	....	11 1/16
2 1/64	18.85	18 5/16		....	....	11 1/16
2 1/32	18.85	18 5/16		....	....	11 1/16
2 3/64	19.50	18 5/16		....	....	11 1/16
2 1/16	19.50	18 5/16		....	....	11 1/16
2 5/64	20.15	18 5/16		....	....	11 1/16
2 3/32	20.15	18 5/16		....	....	11 1/16
2 7/64	20.80	18 1/2		....	....	11 1/4
2 1/8	20.80	18 1/2		....	....	11 1/4
2 9/64	21.50	18 1/2		....	....	11 1/4
2 5/32	21.50	18 1/2		....	....	11 1/4
2 11/64	22.20	18 1/2		....	....	11 1/4
2 3/16	22.20	18 1/2		....	....	11 1/4
2 13/64	22.90	18 1/2		....	....	11 1/4
2 7/32	22.90	18 1/2		....	....	11 1/4
2 15/64	23.60	18 5/8		....	....	11 3/8
2 1/4	23.60	18 5/8		....	....	11 3/8

Several sizes of these Drills are furnished with two sizes of shanks and when ordering, customers should specify which size shank is desired

Twist Drills

Carbon and High Speed Steel



Morse No. 104, with Straight Shanks, Taper Length

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
1/16	$ .35	$ .90	3	1 1/4	.0625
5/64	.40	.90	3 3/4	1 3/8	.0781
3/32	.40	.90	4 1/4	1 5/8	.0937
7/64	.45	.90	4 5/8	2 1/4	.1093
1/8	.45	.90	5 1/8	2 1/2	.125
9/64	.45	.90	5 1/4	2 3/4	.1406
5/32	.45	.90	5 3/8	3	.1562
11/64	.50	.90	5 1/2	3 1/4	.1718
3/16	.50	.90	5 3/4	3 1/2	.1875
13/64	.55	1.00	5 7/8	3 3/4	.2031
7/32	.55	1.00	6	4	.2187
15/64	.60	1.10	6 1/8	4	.2343
1/4	.60	1.10	6 1/8	4	.25
17/64	.65	1.20	6 1/4	4	.2656
9/32	.65	1.20	6 1/4	4	.2812
19/64	.70	1.30	6 3/8	4 1/16	.2968
5/16	.70	1.30	6 3/8	4 1/16	.3125
21/64	.75	1.40	6 1/2	4 1/8	.3281
11/32	.75	1.40	6 1/2	4 1/8	.3437
23/64	.80	1.50	6 3/4	4 1/4	.3593
3/8	.80	1.50	6 3/4	4 1/4	.375
25/64	.85	1.65	7	4 3/8	.3906
13/32	.85	1.65	7	4 3/8	.4062
27/64	.90	1.75	7 1/4	4 5/8	.4218
7/16	.90	1.75	7 1/4	4 5/8	.4375
29/64	.95	1.90	7 1/2	4 7/8	.4531
15/32	.95	1.90	7 1/2	4 7/8	.4687
31/64	1.00	2.00	7 3/4	5	.4843
1/2	1.00	2.00	7 3/4	5	.5
33/64	1.10	2.15	8	5 1/4	.5156
17/32	1.10	2.15	8	5 1/4	.5312
35/64	1.20	2.25	8 1/4	5 3/8	.5468
9/16	1.20	2.25	8 1/4	5 3/8	.5625
37/64	1.30	2.40	8 1/2	5 5/8	.5781
19/32	1.30	2.40	8 1/2	5 5/8	.5937
39/64	1.40	2.50	8 3/4	5 3/4	.6093
5/8	1.40	2.50	8 3/4	5 3/4	.625
41/64	1.50	2.75	9	5 7/8	.6406
21/32	1.50	2.75	9	5 7/8	.6562
43/64	1.60	3.00	9 1/4	6	.6718
11/16	1.60	3.00	9 1/4	6	.6875
45/64	1.70	3.25	9 1/2	6 3/16	.7031
23/32	1.70	3.25	9 1/2	6 3/16	.7187
47/64	1.85	3.50	9 3/4	6 3/8	.7343
3/4	1.85	3.50	9 3/4	6 3/8	.75
49/64	2.00	3.75	9 7/8	6 1/2	.7656
25/32	2.00	3.75	9 7/8	6 1/2	.7812
51/64	2.15	4.00	10	6 5/8	.7968
13/16	2.15	4.00	10	6 5/8	.8125
53/64	2.30	4.40	10 1/4	6 3/4	.8281
27/32	2.30	4.40	10 1/4	6 3/4	.8437
55/64	2.45	4.75	10 1/2	7	.8593
7/8	2.45	4.75	10 1/2	7	.875
57/64	2.60	5.15	10 5/8	7	.8906
29/32	2.60	5.15	10 5/8	7	.9062
59/64	2.75	5.50	10 3/4	7	.9218
15/16	$2.75	$5.50	10 3/4	7	.9375
61/64	2.90	5.90	10 7/8	7 1/8	.9531
31/32	2.90	5.90	10 7/8	7 1/8	.9687
63/64	3.00	6.25	11	7 3/16	.9843
1	3.00	6.25	11	7 3/16	1.
1 1/64	3.20	6.75	11 1/8	7 5/16	1.0156
1 1/32	3.20	6.75	11 1/8	7 5/16	1.0312
1 3/64	3.40	7.25	11 1/4	7 3/8	1.0468
1 1/16	3.40	7.25	11 1/4	7 3/8	1.0625
1 5/64	3.60	7.75	11 1/2	7 5/8	1.0781
1 3/32	3.60	7.75	11 1/2	7 5/8	1.0937
1 7/64	3.80	8.25	11 3/4	7 7/8	1.1093
1 1/8	3.80	8.25	11 3/4	7 7/8	1.125
1 9/64	4.00	8.90	11 7/8	8	1.1406
1 5/32	4.00	8.90	11 7/8	8	1.1562
1 11/64	4.20	9.50	12	8 1/8	1.1718
1 3/16	4.20	9.50	12	8 1/8	1.1875
1 13/64	4.40	10.15	12 1/8	8 1/8	1.2031
1 7/32	4.40	10.15	12 1/8	8 1/8	1.2187
1 15/64	4.50	10.75	12 1/2	8 1/2	1.2343
1 1/4	4.50	10.75	12 1/2	8 1/2	1.25
1 17/64	4.65	11.50	14 1/8	9 1/8	1.2656
1 9/32	4.65	11.50	14 1/8	9 1/8	1.2812
1 19/64	4.80	12.25	14 1/4	9 1/4	1.2968
1 5/16	4.80	12.25	14 1/4	9 1/4	1.3125
1 21/64	5.00	13.00	14 3/8	9 3/8	1.3281
1 11/32	5.00	13.00	14 3/8	9 3/8	1.3437
1 23/64	5.20	13.75	14 1/2	9 1/2	1.3593
1 3/8	5.20	13.75	14 1/2	9 1/2	1.375
1 25/64	5.40	14.65	14 5/8	9 1/2	1.3906
1 13/32	5.40	14.65	14 5/8	9 1/2	1.4062
1 27/64	5.60	15.50	14 3/4	9 5/8	1.4218
1 7/16	5.60	15.50	14 3/4	9 5/8	1.4375
1 29/64	5.80	16.40	14 7/8	9 3/4	1.4531
1 15/32	5.80	16.40	14 7/8	9 3/4	1.4687
1 31/64	6.00	17.25	15	9 7/8	1.4843
1 1/2	6.00	17.25	15	9 7/8	1.5
1 33/64	6.30	18.15	15	9 1/2	1.5156
1 17/32	6.30	18.15	15	9 1/2	1.5312
1 35/64	6.60	19.00	15 1/4	9 3/4	1.5468
1 9/16	6.60	19.00	15 1/4	9 3/4	1.5625
1 37/64	6.90	20.00	15 1/4	9 3/4	1.5781
1 19/32	6.90	20.00	15 1/4	9 3/4	1.5937
1 39/64	7.20	21.00	15 1/2	10	1.6093
1 5/8	7.20	21.00	15 1/2	10	1.625
1 41/64	7.50	22.00	15 1/2	10	1.6406
1 21/32	7.50	22.00	15 1/2	10	1.6562
1 43/64	7.80	23.00	15 3/4	10 1/4	1.6718
1 11/16	7.80	23.00	15 3/4	10 1/4	1.6875
1 45/64	8.10	24.00	15 3/4	10 1/4	1.7031
1 23/32	8.10	24.00	15 3/4	10 1/4	1.7187
1 47/64	8.40	25.00	16	10 1/2	1.7343
1 3/4	8.40	25.00	16	10 1/2	1.75
1 49/64	8.60	26.25	16	10 1/2	1.7656
1 25/32	8.60	26.25	16	10 1/2	1.7812

Drills 1 33/64 to 2 inches have shanks 1 1/2 inches diameter, 4 3/4 inches long

Twist Drills

Carbon and High Speed Steel

Morse No. 104 (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
1 51/64	$8.80	$27.50	16¼	10¾	1.7968
1 13/16	8.80	27.50	16¼	10¾	1.8125
1 53/64	9.00	28.75	16¼	10¾	1.8281
1 27/32	9.00	28.75	16¼	10¾	1.8437
1 55/64	9.20	30.00	16½	11	1.8593
1 7/8	9.20	30.00	16½	11	1.875
1 57/64	9.35	31.25	16½	11	1.8906
1 29/32	9.35	31.25	16½	11	1.9062
1 59/64	9.50	32.50	16½	11	1.9218
1 15/16	9.50	32.50	16½	11	1.9375
1 61/64	9.65	33.75	16½	11	1.9531
1 31/32	9.65	33.75	16½	11	1.9687
1 63/64	9.80	35.00	16½	11	1.9843
2	9.80	35.00	16½	11	2
2 1/64	10.20	36.25	16½	9⅝	2.0156
2 1/32	10.20	36.25	16½	9⅝	2.0312
2 3/64	10.60	37.50	17	10⅛	2.0468
2 1/16	10.60	37.50	17	10⅛	2.0625
2 5/64	10.90	38.75	17	10⅛	2.0781
2 3/32	10.90	38.75	17	10⅛	2.0938
2 7/64	11.20	40.00	17	10⅛	2.1093
2⅛	11.20	40.00	17	10⅛	2.125
2 9/64	11.60	41.25	17	10⅛	2.1406
2 5/32	11.60	41.25	17	10⅛	2.1562
2 11/64	12.00	42.50	17	10⅛	2.1718
2 3/16	12.00	42.50	17	10⅛	2.1875
2 13/64	12.40	43.75	17½	10⅝	2.2031
2 7/32	12.40	43.75	17½	10⅝	2.2187
2 15/64	12.80	45.00	17½	10⅝	2.2343
2¼	12.80	45.00	17½	10¼	2.25
2 17/64	13.20	47.50	17½	10¼	2.2656
2 9/32	13.20	47.50	17½	10¼	2.2812
2 19/64	13.60	50.00	17½	10¼	2.2968
2 5/16	13.60	50.00	17½	10¼	2.3125
2 21/64	14.00	52.50	18	10¾	2.3281
2 11/32	14.00	52.50	18	10¾	2.3437
2 23/64	14.40	55.00	18	10¾	2.3593
2⅜	14.40	55.00	18	10⅝	2.375
2 25/64	14.70	57.50	18½	11⅛	2.3906
2 13/32	$14.70	$57.50	18½	11⅛	2.4062
2 27/64	15.00	60.00	18½	11⅛	2.4218
2 7/16	15.00	60.00	18½	11⅛	2.4375
2 29/64	15.30	62.50	19	11⅝	2.4531
2 15/32	15.30	62.50	19	11⅝	2.4687
2 31/64	15.60	65.00	19	11⅝	2.4843
2½	15.60	65.00	19	11½	2.5
2 33/64	15.90	67.50	19¼	11¾	2.5156
2 17/32	15.90	67.50	19¼	11¾	2.5312
2 35/64	16.20	70.00	19¼	11¾	2.5468
2 9/16	16.20	70.00	19¼	11¾	2.5625
2 37/64	16.50	72.50	19½	12	2.5781
2 19/32	16.50	72.50	19½	12	2.5937
2 39/64	16.80	75.00	19½	12	2.6093
2⅝	16.80	75.00	19½	11⅞	2.625
2 41/64	17.20	77.50	20	12⅜	2.6406
2 21/32	17.20	77.50	20	12⅜	2.6562
2 43/64	17.60	80.00	20	12⅜	2.6718
2 11/16	17.60	80.00	20	12⅜	2.6875
2 45/64	18.30	82.50	20½	12⅞	2.7031
2 23/32	18.30	82.50	20½	12⅞	2.7187
2 47/64	19.00	85.00	20½	12⅞	2.7343
2¾	19.00	85.00	20½	12¾	2.75
2 49/64	19.50	87.50	20½	12¾	2.7656
2 25/32	19.50	87.50	20½	12¾	2.7812
2 51/64	20.00	90.00	20½	12¾	2.7968
2 13/16	20.00	90.00	20½	12¾	2.8125
2 53/64	20.50	92.50	21	13¼	2.8281
2 27/32	20.50	92.50	21	13¼	2.8437
2 55/64	21.00	95.00	21	13¼	2.8593
2⅞	21.00	95.00	21	13⅛	2.875
2 57/64	22.00	97.50	21	13⅛	2.8906
2 29/32	22.00	97.50	21	13⅛	2.9062
2 59/64	23.00	100.00	21	13⅛	2.9218
2 15/16	23.00	100.00	21	13⅛	2.9375
2 61/64	24.00	102.50	22	14⅛	2.9531
2 31/32	24.00	102.50	22	14⅛	2.9687
2 63/64	25.00	105.00	22	14⅛	2.9843
3	25.00	105.00	22	14	3

For sizes larger than 2 inches we do not recommend Two-Groove Drills. We would call special attention to Three and Four-Groove Drills listed on page 40, which we think will enable customers to obtain much more satisfactory results. Drills 1 33/64 to 2 inches have shanks 1½ inches in diameter, 4¾ inches long. Drills 2 1/64 to 3 inches have shanks 1¾ inches diameter, 6 inches long.



Morse No. 104 M, with Grooved Shanks

Taper Length

Carbon and High Speed Steel. These Drills take same list and discount as No. 104 Drills (see this and preceding page). Dimensions are also the same.



Morse No. 102½, with Taper Shanks

Fitting Andrew Socket

Carbon and High Speed Steel. These Drills take same list and discount as No. 102 Drills (see pages 25 and 26). Dimensions are also the same.

Twist Drills

Carbon and High Speed Steel



Morse No. 105, with Straight Shanks

Jobbers Lengths

Diameter Inch	Carbon Per Dozen	High Speed Per Dozen	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
1/32	$ .90	....	1 7/16	9/16	.0312
3/64	1.00	....	1 11/16	25/32	.0468
1/16	1.00	$12.00	2 1/2	1 1/4	.0625
5/64	1.10	10.00	2 5/8	1 3/8	.0781
3/32	1.20	9.00	2 3/4	1 1/2	.0937
7/64	1.30	9.00	2 7/8	1 11/16	.1093
1/8	1.45	8.50	3	1 13/16	.125
9/64	1.60	8.50	3 1/8	1 15/16	.1406
5/32	1.80	7.50	3 1/4	2 3/32	.1562
11/64	2.00	7.50	3 3/8	2 7/32	.1718
3/16	2.20	6.50	3 1/2	2 5/16	.1875
13/64	2.40	7.35	3 5/8	2 7/16	.2031
7/32	2.65	7.35	3 3/4	2 17/32	.2187
15/64	2.90	7.35	3 7/8	2 21/32	.2343
1/4	3.15	7.35	4	2 3/4	.25
17/64	3.40	9.10	4 1/8	2 7/8	.2656
9/32	3.65	9.10	4 1/4	2 31/32	.2812
19/64	3.90	10.50	4 3/8	3 3/32	.2968
5/16	4.20	10.50	4 1/2	3 3/16	.3125
21/64	4.50	12.00	4 5/8	3 5/16	.3281
11/32	4.80	12.00	4 3/4	3 13/32	.3437
23/64	5.10	13.50	4 7/8	3 17/32	.3593
3/8	5.40	13.50	5	3 5/8	.375
25/64	5.70	15.00	5 1/8	3 3/4	.3906
13/32	6.00	15.00	5 1/4	3 27/32	.4062
27/64	6.40	17.00	5 3/8	3 31/32	.4218
7/16	6.80	17.00	5 1/2	4 1/16	.4375
29/64	7.20	18.75	5 5/8	4 3/16	.4531
15/32	7.50	18.75	5 3/4	4 9/32	.4687
31/64	7.75	20.00	5 7/8	4 13/32	.4843
1/2	8.00	20.00	6	4 1/2	.5

For prices of these Drills in sets see pages 48 and 49

Track



Morse No. 105 C

Carbon

Diameter Inch	Per Dozen	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
9/32	$3.65	4 1/4	2 31/32	.2812

High Speed

9/32	9.10	3 1/4	1 31/32	.2812

These Drills are especially adapted for drilling rails for bonding work and are of a construction and temper guaranteed to give best results.

Left Hand Drills Nos. 102, 104, 105, 107 and 109E.

List prices on these Drills are the same as on Right Hand Drills of the same numbers.



Morse No. 105 B, with Grooved Shanks

Jobbers Lengths

Diameter Inch	Carbon Per Dozen	High Speed Per Dozen	Whole Length Inches	Twist Cut Inches	Decimal Equivalent
3/32	$1.20	$9.00	2 3/4	1 1/16	.0937
7/64	1.30	9.00	2 7/8	1 11/16	.1093
1/8	1.45	8.50	3	1 3/4	.125
9/64	1.60	8.50	3 1/8	1 7/8	.1406
5/32	1.80	7.50	3 1/4	2	.1562
11/64	2.00	7.50	3 3/8	2 1/16	.1718
3/16	2.20	6.50	3 1/2	2 3/16	.1875
13/64	2.40	7.35	3 5/8	2 5/16	.2031
7/32	2.65	7.35	3 3/4	2 3/8	.2187
15/64	2.90	7.35	3 7/8	2 1/2	.2343
1/4	3.15	7.35	4	1 15/16	.25
17/64	3.40	9.10	4 1/8	2 1/16	.2656
9/32	3.65	9.10	4 1/4	2 3/16	.2812
19/64	3.90	10.50	4 3/8	2 1/4	.2968
5/16	4.20	10.50	4 1/2	2 3/8	.3125
21/64	4.50	12.00	4 5/8	2 1/2	.3281
11/32	4.80	12.00	4 3/4	2 9/16	.3437
23/64	5.10	13.50	4 7/8	2 11/16	.3593
3/8	5.40	13.50	5	2 13/16	.375
25/64	5.70	15.00	5 1/8	2 7/8	.3906
13/32	6.00	15.00	5 1/4	3	.4062
27/64	6.40	17.00	5 3/8	3 1/8	.4218
7/16	6.80	17.00	5 1/2	3 1/4	.4375
29/64	7.20	18.75	5 5/8	3 1/4	.4531
15/32	7.50	18.75	5 3/4	3 3/8	.4687
31/64	7.75	20.00	5 7/8	3 1/2	.4843
1/2	8.00	20.00	6	3 5/8	.5

Center



Morse No. 114 E

Diameter Inch	Carbon Per Dozen	Whole Length Inches	Twist Cut Inch	Diameter Inch	Carbon Per Dozen	Whole Length Inches	Twist Cut Inch
1/32	$ .90	1 1/8	5/8	3/16	$1.90	1 1/2	1
3/64	.90	1 1/8	5/8	13/64	2.10	1 1/2	1
1/16	.80	1 1/4	3/4	7/32	2.35	1 1/2	1
5/64	.90	1 1/4	3/4	15/64	2.60	1 1/2	1
3/32	1.10	1 1/4	3/4	1/4	2.85	1 1/2	1
7/64	1.20	1 1/4	3/4	17/64	3.10	1 1/2	1
1/8	1.25	1 1/4	3/4	9/32	3.30	1 1/2	1
9/64	1.35	1 1/4	3/4	19/64	3.50	1 1/2	1
5/32	1.50	1 1/2	1	5/16	3.75	1 1/2	1
11/64	1.70	1 1/2	1				

Morse No. 114 F. Wire Sizes

Number by Gauge	Carbon Per Doz.	Whole Length Inches	Twist Cut Inch	Number by Gauge	Carbon Per Doz.	Whole Length Inches	Twist Cut Inch
30	$1.55	1 1/4	3/4	45	$1.10	1 1/4	3/4
35	1.40	1 1/4	3/4	50	.95	1 1/4	3/4
40	1.25	1 1/4	3/4	55	.95	1 1/4	3/4

For sizes in decimals of 1 inch, see No. 107, on page 32

Morse No. 114 G. Metric Sizes

Diameter MM.	Carbon Per Dozen	Diameter in Decimals of 1 inch	Whole Length MM.	Twist Cut MM.
1	$ .90	.0393	27	13 1/2
1 1/2	.90	.0590	27	13 1/2
2	.90	.0787	27	13 1/2
2 1/2	1.00	.0984	27	13 1/2
3	1.00	.1181	27	13 1/2
3 1/2	1.10	.1378	27	13 1/2
4	1.10	.1575	27	13 1/2
4 1/2	1.40	.1771	27	13 1/2
5	1.40	.1968	27	13 1/2

Twist Drills

Carbon and High Speed Steel



Morse No. 107, with Straight Shanks

Wire Sizes

Number by Gauge	Carbon Per Dozen	High Speed Per Dozen	Decimals of 1 Inch	Approximate Length Inches	Twist Cut Inches
1	$2.35	$7.35	.2280	4	$2\frac{21}{32}$
2	2.35	7.35	.2210	$3\frac{15}{16}$	$2\frac{5}{8}$
3	2.35	7.35	.2130	$3\frac{15}{16}$	$2\frac{5}{8}$
4	2.35	7.35	.2090	$3\frac{7}{8}$	$2\frac{19}{32}$
5	2.35	7.35	.2055	$3\frac{13}{16}$	$2\frac{9}{16}$
6	2.25	7.35	.2040	$3\frac{13}{16}$	$2\frac{17}{32}$
7	2.25	7.35	.2010	$3\frac{3}{4}$	$2\frac{1}{2}$
8	2.25	7.35	.1990	$3\frac{11}{16}$	$2\frac{15}{32}$
9	2.25	7.35	.1960	$3\frac{11}{16}$	$2\frac{7}{16}$
10	2.25	7.35	.1935	$3\frac{5}{8}$	$2\frac{3}{8}$
11	2.10	7.35	.1910	$3\frac{9}{16}$	$2\frac{11}{32}$
12	2.10	7.35	.1890	$3\frac{9}{16}$	$2\frac{5}{16}$
13	2.10	7.50	.1850	$3\frac{1}{2}$	$2\frac{9}{32}$
14	2.10	7.50	.1820	$3\frac{7}{16}$	$2\frac{1}{4}$
15	2.10	7.50	.1800	$3\frac{7}{16}$	$2\frac{7}{32}$
16	1.95	7.50	.1770	$3\frac{3}{8}$	$2\frac{3}{16}$
17	1.95	7.50	.1730	$3\frac{5}{16}$	$2\frac{5}{32}$
18	1.95	7.50	.1695	$3\frac{5}{16}$	$2\frac{1}{8}$
19	1.95	7.50	.1660	$3\frac{1}{4}$	$2\frac{3}{32}$
20	1.95	7.50	.1610	$3\frac{3}{16}$	$2\frac{1}{16}$
21	1.75	7.50	.1590	$3\frac{3}{16}$	$2\frac{1}{16}$
22	1.75	7.50	.1570	$3\frac{1}{8}$	2
23	1.75	8.50	.1540	$3\frac{1}{16}$	$1\frac{31}{32}$
24	1.75	8.50	.1520	$3\frac{1}{16}$	$1\frac{15}{16}$
25	1.75	8.50	.1495	3	$1\frac{29}{32}$
26	1.55	8.50	.1470	$2\frac{15}{16}$	$1\frac{7}{8}$
27	1.55	8.50	.1440	$2\frac{15}{16}$	$1\frac{27}{32}$
28	1.55	8.50	.1405	$2\frac{7}{8}$	$1\frac{13}{16}$
29	1.55	8.50	.1360	$2\frac{13}{16}$	$1\frac{3}{4}$
30	1.55	8.50	.1285	$2\frac{13}{16}$	$1\frac{23}{32}$
31	1.40	9.00	.1200	$2\frac{3}{4}$	$1\frac{11}{16}$
32	1.40	9.00	.1160	$2\frac{11}{16}$	$1\frac{5}{8}$
33	1.40	9.00	.1130	$2\frac{11}{16}$	$1\frac{5}{8}$
34	1.40	9.00	.1110	$2\frac{5}{8}$	$1\frac{9}{16}$
35	1.40	9.00	.1100	$2\frac{9}{16}$	$1\frac{1}{2}$
36	1.25	9.00	.1065	$2\frac{9}{16}$	$1\frac{1}{2}$
37	1.25	9.00	.1040	$2\frac{1}{2}$	$1\frac{7}{16}$
38	1.25	9.00	.1015	$2\frac{7}{16}$	$1\frac{3}{8}$
39	1.25	9.00	.0995	$2\frac{7}{16}$	$1\frac{11}{32}$
40	1.25	9.00	.0980	$2\frac{3}{8}$	$1\frac{11}{32}$
41	1.10	9.00	.0960	$2\frac{5}{16}$	$1\frac{5}{16}$
42	1.10	10.00	.0935	$2\frac{5}{16}$	$1\frac{1}{4}$
43	1.10	10.00	.0890	$2\frac{1}{4}$	$1\frac{7}{32}$
44	1.10	10.00	.0860	$2\frac{3}{16}$	$1\frac{3}{16}$
45	1.10	10.00	.0820	$2\frac{3}{16}$	$1\frac{1}{8}$
46	.95	10.00	.0810	$2\frac{1}{8}$	$1\frac{1}{8}$
47	.95	10.00	.0785	$2\frac{1}{16}$	$1\frac{3}{32}$
48	.95	12.00	.0760	$2\frac{1}{16}$	$1\frac{1}{16}$
49	.95	12.00	.0730	2	1
50	.95	12.00	.0700	$1\frac{15}{16}$	$\frac{31}{32}$
51	.95	12.00	.0670	$1\frac{15}{16}$	$\frac{15}{16}$
52	.95	12.00	.0635	$1\frac{7}{8}$	$\frac{7}{8}$
53	.95	....	.0595	$1\frac{13}{16}$	$\frac{27}{32}$
54	.95	....	.0550	$1\frac{13}{16}$	$\frac{27}{32}$



Morse No. 106, with Straight Shanks

Letter Sizes

Size by Gauge	Carbon Per Dozen	High Speed Per Dozen	Decimal Equivalent	Whole Length Inches	Twist Cut Inches
A	$2.90	$7.35	.234	$3\frac{13}{16}$	$2\frac{19}{32}$
B	3.00	7.35	.238	$3\frac{13}{16}$	$2\frac{19}{32}$
C	3.10	7.35	.242	$3\frac{13}{16}$	$2\frac{19}{32}$
D	3.20	7.35	.246	$3\frac{13}{16}$	$2\frac{19}{32}$
E	3.30	7.35	.250	$3\frac{13}{16}$	$2\frac{9}{16}$
F	3.40	9.10	.257	$4\frac{1}{4}$	3
G	3.50	9.10	.261	$4\frac{1}{4}$	3
H	3.60	9.10	.266	$4\frac{1}{4}$	3
I	3.70	9.10	.272	$4\frac{1}{4}$	3
J	3.80	9.10	.277	$4\frac{1}{4}$	3
K	3.90	9.10	.281	$4\frac{1}{4}$	3
L	4.00	10.50	.290	$4\frac{1}{4}$	$2\frac{31}{32}$
M	4.10	10.50	.295	$4\frac{1}{4}$	$2\frac{31}{32}$
N	4.20	10.50	.302	$4\frac{1}{4}$	$2\frac{31}{32}$
O	4.30	10.50	.316	$4\frac{1}{4}$	$2\frac{15}{16}$
P	4.40	12.00	.323	$4\frac{1}{2}$	$3\frac{9}{16}$
Q	4.60	12.00	.332	$4\frac{5}{8}$	$3\frac{5}{16}$
R	4.80	12.00	.339	$4\frac{5}{8}$	$3\frac{5}{16}$
S	5.00	13.50	.348	$4\frac{3}{4}$	$3\frac{13}{32}$
T	5.20	13.50	.358	$4\frac{3}{4}$	$3\frac{13}{32}$
U	5.40	13.50	.368	$4\frac{7}{8}$	$3\frac{17}{32}$
V	5.60	13.50	.377	5	$3\frac{5}{8}$
W	5.80	15.00	.386	5	$3\frac{5}{8}$
X	6.00	15.00	.397	$5\frac{1}{8}$	$3\frac{3}{4}$
Y	6.40	15.00	.404	$5\frac{1}{8}$	$3\frac{3}{4}$
Z	6.80	17.00	.413	$5\frac{1}{4}$	$3\frac{27}{32}$



Morse No. 107 (Continued)

Number by Gauge	Carbon Per Dozen	Decimals of 1 Inch	Approximate Length Inches	Twist Cut Inches
55	$ .95	.0520	$1\frac{3}{4}$	$\frac{13}{16}$
56	.95	.0465	$1\frac{11}{16}$	$\frac{25}{32}$
57	.95	.0430	$1\frac{11}{16}$	$\frac{23}{32}$
58	.95	.0420	$1\frac{5}{8}$	$\frac{23}{32}$
59	.95	.0410	$1\frac{9}{16}$	$\frac{11}{16}$
60	.95	.0400	$1\frac{9}{16}$	$\frac{11}{16}$
61	.90	.0390	$1\frac{1}{2}$	$\frac{5}{8}$
62	.90	.0380	$1\frac{1}{2}$	$\frac{5}{8}$
63	.90	.0370	$1\frac{1}{2}$	$\frac{5}{8}$
64	.90	.0360	$1\frac{1}{2}$	$\frac{5}{8}$
65	.90	.0350	$1\frac{1}{2}$	$\frac{5}{8}$
66	.90	.0330	$1\frac{1}{2}$	$\frac{9}{16}$
67	.90	.0320	$1\frac{7}{16}$	$\frac{9}{16}$
68	.90	.0310	$1\frac{7}{16}$	$\frac{9}{16}$
69	.90	.0292	$1\frac{3}{8}$	$\frac{9}{16}$
70	.90	.0280	$1\frac{5}{16}$	$\frac{9}{16}$
71	1.00	.0260	$1\frac{5}{16}$	$\frac{1}{2}$
72	1.00	.0250	$1\frac{1}{4}$	$\frac{7}{16}$
73	1.00	.0240	$1\frac{3}{16}$	$\frac{3}{8}$
74	1.00	.0225	$1\frac{1}{8}$	$\frac{5}{16}$
75	1.00	.0210	$1\frac{1}{16}$	$\frac{1}{4}$
76	1.00	.0200	1	$\frac{1}{4}$
77	1.00	.0180	$\frac{15}{16}$	$\frac{7}{32}$
78	1.00	.0160	$\frac{7}{8}$	$\frac{7}{32}$
79	1.00	.0145	$\frac{13}{16}$	$\frac{3}{16}$
80	1.00	.0135	$\frac{3}{4}$	$\frac{3}{16}$

For prices of these Drills in sets, see pages 48 and 49

Twist Drills

Carbon Steel

Jewelers



Morse No. 107 B, with Straight Shanks

Wire Gauge Sizes

Number by Gauge	Per Dozen	Decimals of 1 Inch	Whole Length Inches	Twist Cut Inches
30	$1.55	.1285	1 29/32	1 5/16
31	1.40	.1200	1 29/32	1 5/16
32	1.40	.1160	1 29/32	1 5/16
33	1.40	.1130	1 29/32	1 5/16
34	1.40	.1110	1 29/32	1 5/16
35	1.40	.1100	1 29/32	1 5/16
36	1.25	.1065	1 29/32	1 5/16
37	1.25	.1040	1 29/32	1 5/16
38	1.25	.1015	1 29/32	1 5/16
39	1.25	.0995	1 29/32	1 5/16
40	1.25	.0980	1 29/32	1 5/16
41	1.10	.0960	1 29/32	1 5/16
42	1.10	.0935	1 29/32	1 1/4
43	1.10	.0890	1 29/32	1 7/32
44	1.10	.0860	1 29/32	1 3/16
45	1.10	.0820	1 29/32	1 1/8
46	.95	.0810	1 29/32	1 1/8
47	.95	.0785	1 29/32	1 3/32
48	.95	.0760	1 29/32	1 1/16
49	.95	.0730	1 29/32	1
50	.95	.0700	1 15/16	31/32
51	.95	.0670	1 15/16	15/16
52	.95	.0635	1 7/8	7/8
53	.95	.0595	1 13/16	27/32
54	.95	.0550	1 13/16	27/32
55	.95	.0520	1 3/4	13/16
56	.95	.0465	1 11/16	25/32
57	.95	.0430	1 11/16	23/32
58	.95	.0420	1 5/8	23/32
59	.95	.0410	1 9/16	11/16
60	.95	.0400	1 9/16	11/16
61	.90	.039	1 1/2	5/8
62	.90	.038	1 1/2	5/8
63	.90	.037	1 1/2	5/8
64	.90	.036	1 1/2	5/8
65	.90	.035	1 1/2	5/8
66	.90	.033	1 1/2	9/16
67	.90	.032	1 7/16	9/16
68	.90	.031	1 7/16	9/16
69	.90	.029	1 3/8	9/16
70	.90	.028	1 5/16	9/16
71	1.00	.026	1 5/16	1/2
72	1.00	.025	1 1/4	7/16
73	1.00	.024	1 3/16	3/8
74	1.00	.0225	1 1/8	5/16
75	1.00	.021	1 1/16	1/4
76	1.00	.02	1	1/4
77	1.00	.018	15/16	7/32
78	1.00	.016	7/8	7/32
79	1.00	.0145	13/16	3/16
80	1.00	.0135	3/4	3/16

Morse No. 107 C, with Straight Shanks

Diameter Inch	Per Dozen	Decimals of 1 Inch	Whole Length Inches	Twist Cut Inches
1/32	$ .90	.0312	1 7/16	9/16
3/64	.95	.0468	1 11/16	25/32
1/16	1.00	.0625	1 7/8	7/8
5/64	1.10	.0781	2	1 1/4
3/32	1.20	.0937	2	1 1/4
7/64	1.30	.1093	2	1 1/4
1/8	1.45	.1250	2	1 1/4

For prices of sets of Jewelers Drills see page 49.

Bit Stock



Morse No. 109

For Metal or Wood

Diameter Inches	Per Dozen	Whole Length Inches	Twist Cut Inches	Length from Shank to Point Inches
1/32	$1.25	2 7/8	9/16	1 1/16
3/64	1.40	3 3/16	25/32	1 3/8
1/16	1.50	3 5/16	7/8	1 1/2
5/64	1.60	3 7/16	1 3/32	1 21/32
3/32	1.65	3 5/8	1 1/4	1 27/32
7/64	1.90	3 7/8	1 1/2	2 3/32
1/8	2.10	3 5/8	1 3/4	2 9/32
9/64	2.35	3 11/16	1 13/16	2 11/32
5/32	2.60	3 15/16	2	2 19/32
11/64	2.85	4 1/8	2 5/32	2 25/32
3/16	3.10	4 5/16	2 5/16	2 31/32
13/64	3.35	4 3/8	2 7/16	3 1/32
7/32	3.60	4 11/16	2 5/8	3 11/32
15/64	3.85	5 3/16	3 3/16	3 15/16
1/4	4.10	5 3/16	3 3/16	3 15/16
17/64	4.40	5 3/8	3 3/8	4 1/8
9/32	4.70	5 3/8	3 3/8	4 1/8
19/64	5.05	5 1/2	3 1/2	4 1/4
5/16	5.40	5 1/2	3 1/2	4 1/4
21/64	5.85	5 7/8	3 7/8	4 5/8
11/32	6.30	5 7/8	3 7/8	4 5/8
3/8	7.20	5 7/8	3 7/8	4 5/8
13/32	8.00	5 7/8	3 5/8	4 1/8
7/16	8.80	6 1/4	4	4 1/2
15/32	9.60	6 5/8	4 3/8	4 7/8
1/2	10.30	6 3/4	4 7/16	5
17/32	11.00	7 1/2	5 3/16	5 3/4
9/16	14.35	7 1/2	5 3/16	5 3/4
19/32	15.55	7 1/2	5 3/16	5 3/4
5/8	16.15	7 1/2	5 1/16	5 3/4
21/32	17.35	7 1/2	5 1/16	5 3/4
11/16	17.95	7 1/2	5 1/16	5 3/4
23/32	19.15	7 1/2	5 1/16	5 3/4
3/4	19.75	7 1/2	5	5 3/4
25/32	20.95	7 1/2	5	5 3/4
13/16	21.55	7 1/2	5	5 3/4
27/32	22.75	7 1/2	5	5 3/4
7/8	23.35	7 1/2	5	5 3/4
29/32	24.55	7 1/2	5	5 3/4
15/16	25.75	7 1/2	4 15/16	5 3/4
31/32	26.95	7 1/2	4 15/16	5 3/4
1	28.15	7 1/2	4 15/16	5 3/4
1 1/16	35.95	7 1/2	4 15/16	5 3/4
1 1/8	40.15	7 1/2	4 7/8	5 3/4
1 3/16	43.15	7 1/2	4 7/8	5 3/4
1 1/4	44.95	7 1/2	4 7/8	5 3/4

These Bit Stock Drills will fit any brace in the market, and will drill steel, iron or other metals as well as wood. They are not injured by contact with screws or nails, and will bore straight any kind of wood without splitting it.

For prices of these Drills in sets see page 49.

Twist and Flat Drills

Carbon and High Speed Steel

Twist



Morse No. 109 E, with Taper Square Shanks. Fitting Ratchets

Small Shank or No. 1. Size of Shank 3/8 inch x 5/8 inch x 1 1/2 inches
Large Shank or No. 2. Size of Shank, 1/2 inch x 3/4 inch x 1 3/4 inches
No. 1 Shank always furnished unless otherwise specified.

Carbon, Shank No. 1

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches
1/8	$ .90	....	4 3/16	1 13/16
5/32	.95	....	4 7/16	2 3/32
3/16	.95	....	4 11/16	2 5/16
7/32	1.00	....	4 13/16	2 17/32
1/4	1.00	$2.50	5	2 9/16
9/32	1.05	2.55	5	2 9/16
5/16	1.10	2.60	5	2 9/16
11/32	1.15	2.65	5	2 3/4
3/8	1.20	2.70	6	3 3/4
13/32	1.25	2.75	6 1/4	4
7/16	1.25	2.80	6 1/4	4
15/32	1.30	2.85	6 1/4	4
1/2	1.30	2.90	6 1/2	4 1/4
17/32	1.35	2.95	6 1/2	4 1/4
9/16	1.35	3.00	6 1/2	4 1/4
19/32	1.40	3.10	6 1/2	4 1/4
5/8	1.40	3.20	6 1/2	4 1/4
21/32	1.45	3.30	6 1/2	4 3/16
11/16	1.45	3.40	6 1/2	4 3/16
23/32	1.50	3.50	6 1/2	4 3/16
3/4	1.55	3.65	6 1/2	4 3/16
25/32	1.65	3.80	6 3/4	4 7/16
13/16	1.75	4.00	7	4 11/16

High Speed, Shanks Nos. 1 and 2

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches
27/32	$1.90	$4.20	7 1/4	4 15/16
7/8	2.05	4.50	7 1/2	5 5/16
29/32	2.20	4.70	7 3/4	5 7/16
15/16	2.30	5.00	8	5 11/16
31/32	2.40	5.25	8 1/4	5 15/16
1	2.55	5.50	8 1/2	6 3/16
1 1/32	2.70	5.75	8 3/4	6 7/16
1 1/16	2.85	6.00	9	6 11/16
1 3/32	3.00	6.30	9	6 11/16
1 1/8	3.10	6.70	9	6 11/16
1 5/32	3.25	7.00	9	6 11/16
1 3/16	3.35	7.30	9	6 11/16
1 7/32	3.50	7.60	9	6 11/16
1 1/4	3.65	7.90	9	6 11/16
1 9/32	3.75	8.25	9	6 11/16
1 5/16	3.90	8.60	9	6 11/16
1 11/32	4.05	9.00	9	6 11/16
1 3/8	4.20	9.40	9	6 11/16
1 13/32	4.35	9.80	9	6 11/16
1 7/16	4.50	10.20	9	6 11/16
1 15/32	4.65	10.60	9	6 11/16
1 1/2	4.80	11.00	9	6 11/16

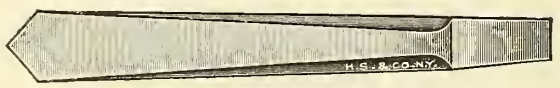
Carbon, Shank No. 2

Diameter Inch	Each	Whole Length Inches	Twist Cut Inches
1/8	$ .90	4 7/16	1 13/16
5/32	.95	4 11/16	2 3/32
3/16	.95	4 15/16	2 5/16
7/32	1.00	5 1/16	2 17/32
1/4	1.00	5	2 5/16
9/32	1.05	5	2 5/16
5/16	1.10	5	2 5/16
11/32	1.15	5	2 1/2
3/8	1.20	6	3 1/2
13/32	1.25	6 1/4	3 3/4
7/16	1.25	6 1/4	3 3/4
15/32	1.30	6 1/4	3 3/4
1/2	1.30	6 1/2	4
17/32	1.35	6 1/2	4
9/16	1.35	6 1/2	4
19/32	$1.40	6 1/2	4
5/8	1.40	6 1/2	4
21/32	1.45	6 1/2	4
11/16	1.45	6 1/2	4
23/32	1.50	6 1/2	4
3/4	1.55	6 1/2	4
25/32	1.65	6 3/4	4 3/16
13/16	1.75	7	4 7/16
27/32	1.90	7 1/4	4 11/16
7/8	2.05	7 1/2	4 15/16
29/32	2.20	7 3/4	5 3/16
15/16	2.30	8	5 7/16
31/32	2.40	8 1/4	5 11/16
1	2.55	8 1/2	5 15/16
1 1/32	2.70	8 3/4	6 3/16
1 1/16	2.85	9	6 7/16
1 3/32	$3.00	9	6 7/16
1 1/8	3.10	9	6 7/16
1 5/32	3.25	9	6 7/16
1 3/16	3.35	9	6 7/16
1 7/32	3.50	9	6 7/16
1 1/4	3.65	9	6 7/16
1 9/32	3.75	9	6 7/16
1 5/16	3.90	9	6 7/16
1 11/32	4.05	9	6 7/16
1 3/8	4.20	9	6 7/16
1 13/32	4.35	9	6 7/16
1 7/16	4.50	9	6 7/16
1 15/32	4.65	9	6 7/16
1 1/2	4.80	9	6 7/16
1 17/32	4.95	9	6 7/16
1 9/16	$5.10	9	6 7/16
1 19/32	5.25	9	6 7/16
1 5/8	5.40	9	6 7/16
1 21/32	5.55	9	6 7/16
1 11/16	5.75	9	6 7/16
1 23/32	5.90	9	6 7/16
1 3/4	6.10	9	6 7/16
1 25/32	6.30	9	6 7/16
1 13/16	6.50	9	6 7/16
1 27/32	6.70	9	6 7/16
1 7/8	6.90	9	6 7/16
1 29/32	7.10	9	6 7/16
1 15/16	7.30	9	6 7/16
1 31/32	7.50	9	6 7/16
2	7.75	9	6 7/16

When ordering Taper Square Shank Drills for Packer Ratchets please state number of ratchet and name of manufacturer. 64th sizes furnished at price of next larger size.

Flat

Carbon, for Metal



For Ratchets. 6 Inches Long

	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2 inches
Each...$	.40	.40	.40	.45	.45	.45	.50	.55	.60	.65

Carbon, for Metal or Tile



For Brace

	3/16	1/4	5/16	3/8	7/16	1/2 inches
Per Dozen.....$	1.25	1.25	1.25	1.25	1.35	1.50

Twist Drills

Carbon Steel

Morse No. 110

Fitting Coe Blacksmiths Drill Press and Prentice Drill Press No. 3



Style No. 1



Style No. 2

Shanks .647 inch exact diameter (about $\frac{41}{64}$ inch) and $2\frac{1}{4}$ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches	Twist Cut Inches
$\frac{1}{8}$	$ .55	$4\frac{7}{8}$	$2\frac{3}{16}$
$\frac{9}{64}$	.58	5	$2\frac{5}{16}$
$\frac{5}{32}$	.58	$5\frac{1}{8}$	$2\frac{7}{16}$
$\frac{11}{64}$	.60	$5\frac{1}{4}$	$2\frac{9}{16}$
$\frac{3}{16}$	.60	$5\frac{1}{2}$	$2\frac{13}{16}$
$\frac{13}{64}$	.65	$5\frac{5}{8}$	$2\frac{7}{8}$
$\frac{7}{32}$	.65	$5\frac{3}{4}$	3
$\frac{15}{64}$	.70	$5\frac{7}{8}$	3
$\frac{1}{4}$	.70	6	3
$\frac{17}{64}$	.73	6	3
$\frac{9}{32}$	.73	6	3
$\frac{19}{64}$	.75	6	3
$\frac{5}{16}$	.75	6	3
$\frac{21}{64}$	.80	6	3
$\frac{11}{32}$	.80	6	3
$\frac{23}{64}$	.85	6	3
$\frac{3}{8}$	.85	6	3
$\frac{25}{64}$	.88	6	3
$\frac{13}{32}$	.88	6	3
$\frac{27}{64}$	.90	6	3
$\frac{7}{16}$	.90	6	3
$\frac{29}{64}$	.93	6	3
$\frac{15}{32}$	.93	6	3
$\frac{31}{64}$	.95	6	3
$\frac{1}{2}$	.95	6	3
$\frac{33}{64}$	.98	6	3
$\frac{17}{32}$	.98	6	3
$\frac{35}{64}$	1.00	6	3
$\frac{9}{16}$	1.00	6	3
$\frac{37}{64}$	1.03	6	3
$\frac{19}{32}$	1.03	6	3
$\frac{39}{64}$	1.05	6	3
$\frac{5}{8}$	1.05	6	3
$\frac{41}{64}$	1.10	6	3
$\frac{21}{32}$	1.10	6	3
$\frac{43}{64}$	1.15	6	3
$\frac{11}{16}$	1.15	6	3
$\frac{45}{64}$	1.20	6	3
$\frac{23}{32}$	1.20	6	3
$\frac{47}{64}$	1.25	6	3
$\frac{3}{4}$	1.25	6	3
$\frac{49}{64}$	$1.30	6	3
$\frac{25}{32}$	1.30	6	3
$\frac{51}{64}$	1.35	6	3
$\frac{13}{16}$	1.35	6	3
$\frac{53}{64}$	1.40	6	3
$\frac{27}{32}$	1.40	6	3
$\frac{55}{64}$	1.45	6	3
$\frac{7}{8}$	1.45	6	3
$\frac{57}{64}$	1.55	6	3
$\frac{29}{32}$	1.55	6	3
$\frac{59}{64}$	1.60	6	3
$\frac{15}{16}$	1.60	6	3
$\frac{61}{64}$	1.70	6	3
$\frac{31}{32}$	1.70	6	3
$\frac{63}{64}$	1.80	6	3
1	1.80	6	3
$1\frac{1}{32}$	1.90	6	3
$1\frac{1}{16}$	2.00	6	3
$1\frac{3}{32}$	2.10	6	3
$1\frac{1}{8}$	2.20	6	3
$1\frac{5}{32}$	2.25	6	3
$1\frac{3}{16}$	2.30	6	3
$1\frac{7}{32}$	2.35	6	3
$1\frac{1}{4}$	2.40	6	3
$1\frac{9}{32}$	2.50	6	3
$1\frac{5}{16}$	2.60	6	3
$1\frac{11}{32}$	2.70	6	3
$1\frac{3}{8}$	2.80	6	3
$1\frac{13}{32}$	2.90	6	3
$1\frac{7}{16}$	3.00	6	3
$1\frac{15}{32}$	3.10	6	3
$1\frac{1}{2}$	3.20	6	3
$1\frac{9}{16}$	3.40	6	3
$1\frac{5}{8}$	3.60	6	3
$1\frac{11}{16}$	3.80	6	3
$1\frac{3}{4}$	4.05	6	3
$1\frac{13}{16}$	4.30	6	3
$1\frac{7}{8}$	4.50	6	3
$1\frac{15}{16}$	4.75	6	3
2	5.00	6	3

Morse No. 111, Taper Length

Fitting the Prentice Elacksmiths Drill Presses Nos. 1 and 2



Style No. 1



Style No. 2

Shanks $\frac{1}{2}$ inch diameter, $2\frac{1}{2}$ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches	Twist Cut Inches
$\frac{1}{8}$	$ .45	$5\frac{1}{8}$	$2\frac{3}{16}$
$\frac{9}{64}$	.45	$5\frac{1}{4}$	$2\frac{5}{16}$
$\frac{5}{32}$	.45	$5\frac{3}{8}$	$2\frac{7}{16}$
$\frac{11}{64}$	.50	$5\frac{1}{2}$	$2\frac{9}{16}$
$\frac{3}{16}$	.50	$5\frac{3}{4}$	$2\frac{13}{16}$
$\frac{13}{64}$	.55	$5\frac{7}{8}$	$2\frac{7}{8}$
$\frac{7}{32}$	.55	6	3
$\frac{15}{64}$	.60	$6\frac{1}{8}$	3
$\frac{1}{4}$	.60	$6\frac{1}{8}$	3
$\frac{17}{64}$	.65	$6\frac{1}{4}$	3
$\frac{9}{32}$	.65	$6\frac{1}{4}$	3
$\frac{19}{64}$	.70	$6\frac{3}{8}$	$3\frac{1}{8}$
$\frac{5}{16}$	.70	$6\frac{3}{8}$	$3\frac{1}{8}$
$\frac{21}{64}$	.75	$6\frac{1}{2}$	$3\frac{1}{4}$
$\frac{11}{32}$	.75	$6\frac{1}{2}$	$3\frac{1}{4}$
$\frac{23}{64}$	.80	$6\frac{3}{4}$	$3\frac{1}{2}$
$\frac{3}{8}$	.80	$6\frac{3}{4}$	$3\frac{1}{2}$
$\frac{25}{64}$	.85	7	$3\frac{3}{4}$
$\frac{13}{32}$	.85	7	$3\frac{3}{4}$
$\frac{27}{64}$	.90	$7\frac{1}{4}$	4
$\frac{7}{16}$	.90	$7\frac{1}{4}$	4
$\frac{29}{64}$	.95	$7\frac{1}{2}$	$4\frac{1}{4}$
$\frac{15}{32}$	.95	$7\frac{1}{2}$	$4\frac{1}{4}$
$\frac{31}{64}$	1.00	$7\frac{3}{4}$	$4\frac{1}{2}$
$\frac{1}{2}$	1.00	$7\frac{3}{4}$	$4\frac{1}{2}$
$\frac{33}{64}$	1.10	8	$4\frac{3}{4}$
$\frac{17}{32}$	1.10	8	$4\frac{3}{4}$
$\frac{35}{64}$	1.20	$8\frac{1}{4}$	5
$\frac{9}{16}$	1.20	$8\frac{1}{4}$	5
$\frac{37}{64}$	1.30	$8\frac{1}{2}$	$5\frac{1}{4}$
$\frac{19}{32}$	1.30	$8\frac{1}{2}$	$5\frac{1}{4}$
$\frac{39}{64}$	1.40	$8\frac{3}{4}$	$5\frac{1}{2}$
$\frac{5}{8}$	1.40	$8\frac{3}{4}$	$5\frac{1}{2}$
$\frac{41}{64}$	1.50	9	$5\frac{3}{4}$
$\frac{21}{32}$	1.50	9	$5\frac{3}{4}$
$\frac{43}{64}$	1.60	$9\frac{1}{4}$	6
$\frac{11}{16}$	1.60	$9\frac{1}{4}$	6
$\frac{45}{64}$	$1.70	$9\frac{1}{2}$	$6\frac{1}{4}$
$\frac{23}{32}$	1.70	$9\frac{1}{2}$	$6\frac{1}{4}$
$\frac{47}{64}$	1.85	$9\frac{3}{4}$	$6\frac{1}{2}$
$\frac{3}{4}$	1.85	$9\frac{3}{4}$	$6\frac{1}{2}$
$\frac{49}{64}$	2.00	$9\frac{7}{8}$	$6\frac{5}{8}$
$\frac{25}{32}$	2.00	$9\frac{7}{8}$	$6\frac{5}{8}$
$\frac{51}{64}$	2.15	10	$6\frac{3}{4}$
$\frac{13}{16}$	2.15	10	$6\frac{3}{4}$
$\frac{53}{64}$	2.30	$10\frac{1}{4}$	7
$\frac{27}{32}$	2.30	$10\frac{1}{4}$	7
$\frac{55}{64}$	2.45	$10\frac{1}{2}$	$7\frac{1}{4}$
$\frac{7}{8}$	2.45	$10\frac{1}{2}$	$7\frac{1}{4}$
$\frac{57}{64}$	2.60	$10\frac{5}{8}$	$7\frac{3}{8}$
$\frac{29}{32}$	2.60	$10\frac{5}{8}$	$7\frac{3}{8}$
$\frac{59}{64}$	2.75	$10\frac{3}{4}$	$7\frac{1}{2}$
$\frac{15}{16}$	2.75	$10\frac{3}{4}$	$7\frac{1}{2}$
$\frac{61}{64}$	2.90	$10\frac{7}{8}$	$7\frac{5}{8}$
$\frac{31}{32}$	2.90	$10\frac{7}{8}$	$7\frac{5}{8}$
$\frac{63}{64}$	3.00	11	$7\frac{3}{4}$
1	3.00	11	$7\frac{3}{8}$
$1\frac{1}{32}$	3.20	$11\frac{1}{8}$	$7\frac{1}{2}$
$1\frac{1}{16}$	3.40	$11\frac{1}{4}$	$7\frac{5}{8}$
$1\frac{3}{32}$	3.60	$11\frac{1}{2}$	$7\frac{7}{8}$
$1\frac{1}{8}$	3.80	$11\frac{3}{4}$	8
$1\frac{5}{32}$	4.00	$11\frac{7}{8}$	$8\frac{1}{8}$
$1\frac{3}{16}$	4.20	12	$8\frac{1}{4}$
$1\frac{7}{32}$	4.40	$12\frac{1}{8}$	$8\frac{3}{8}$
$1\frac{1}{4}$	4.50	$12\frac{1}{2}$	$8\frac{3}{8}$
$1\frac{9}{32}$	4.65	$12\frac{1}{2}$	$8\frac{5}{8}$
$1\frac{5}{16}$	4.80	$12\frac{1}{2}$	$8\frac{5}{8}$
$1\frac{11}{32}$	5.00	$12\frac{1}{2}$	$8\frac{5}{8}$
$1\frac{3}{8}$	5.20	$12\frac{1}{2}$	$8\frac{1}{2}$
$1\frac{13}{32}$	5.40	$12\frac{1}{2}$	$8\frac{1}{2}$
$1\frac{7}{16}$	5.60	$12\frac{1}{2}$	$8\frac{1}{2}$
$1\frac{15}{32}$	5.80	$12\frac{1}{2}$	$8\frac{1}{2}$
$1\frac{1}{2}$	6.00	$12\frac{1}{2}$	$8\frac{3}{8}$

32nd sizes not listed furnished at intermediate prices, and 64th sizes at price of next larger 32nd size. High Speed Steel Drills of these styles are listed on following pages.

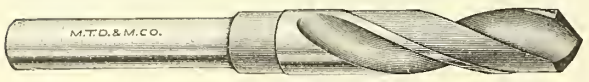
For list of Drill Presses see page 37

Twist Drills

Carbon and High Speed Steel

Morse No. 112, Carbon Steel, Short Length

Fitting Silver & Deming and Prentice Blacksmiths Drill Presses Nos. 1 and 2



Style No. 1



Style No. 2

Shanks ½ inch diameter, 2½ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches	Twist Cut Inches
1/8	$ .45	5 1/8	2 3/16
9/64	.45	5 1/4	2 5/16
5/32	.45	5 3/8	2 7/16
11/64	.50	5 1/2	2 9/16
3/16	.50	5 3/4	2 13/16
13/64	.55	5 7/8	2 7/8
7/32	.55	6	3
15/64	.60	6	3
1/4	.60	6	3
17/64	.65	6	2 3/4
9/32	.65	6	2 3/4
19/64	.70	6	2 3/4
5/16	.70	6	2 3/4
21/64	.73	6	2 3/4
11/32	.73	6	2 3/4
23/64	.75	6	2 3/4
3/8	.75	6	2 3/4
25/64	.78	6	2 3/4
13/32	.78	6	2 3/4
27/64	.80	6	2 3/4
7/16	.80	6	2 3/4
29/64	.83	6	2 3/4
15/32	.83	6	2 3/4
31/64	.85	6	2 3/4
1/2	.85	6	2 3/4
33/64	.88	6	2 3/4
17/32	.88	6	2 3/4
35/64	.90	6	2 3/4
9/16	.90	6	2 3/4
37/64	1.00	6	2 3/4
19/32	1.00	6	2 3/4
39/64	1.05	6	2 3/4
5/8	1.05	6	2 3/4
41/64	1.10	6	2 3/4
21/32	1.10	6	2 3/4
43/64	1.15	6	2 3/4
11/16	1.15	6	2 3/4
45/64	$1.20	6	2 3/4
23/32	1.20	6	2 3/4
47/64	1.25	6	2 3/4
3/4	1.25	6	2 3/4
49/64	1.30	6	2 3/4
25/32	1.30	6	2 3/4
51/64	1.35	6	2 3/4
13/16	1.35	6	2 3/4
53/64	1.40	6	2 3/4
27/32	1.40	6	2 3/4
55/64	1.45	6	2 3/4
7/8	1.45	6	2 3/4
57/64	1.55	6	2 3/4
29/32	1.55	6	2 3/4
59/64	1.60	6	2 3/4
15/16	1.60	6	2 3/4
61/64	1.70	6	2 3/4
31/32	1.70	6	2 3/4
63/64	1.80	6	2 3/4
1	1.80	6	2 3/4
1 1/32	1.90	6	2 3/4
1 1/16	2.00	6	2 3/4
1 3/32	2.10	6	2 3/4
1 1/8	2.20	6	2 3/4
1 5/32	2.25	6	2 3/4
1 3/16	2.30	6	2 3/4
1 7/32	2.35	6	2 3/4
1 1/4	2.40	6	2 3/4
1 9/32	2.50	6	2 3/4
1 5/16	2.60	6	2 3/4
1 11/32	2.70	6	2 3/4
1 3/8	2.80	6	2 3/4
1 13/32	2.90	6	2 3/4
1 7/16	3.00	6	2 3/4
1 15/32	3.10	6	2 3/4
1 1/2	3.20	6	2 3/4

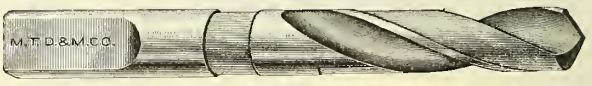
64th sizes not listed furnished at price of next larger size.
High Speed Steel Drills of this style are listed on following page.

Morse No. 110, High Speed Steel

Fitting Coe Blacksmiths Drill Press and Prentice Drill Press No. 3



Style No. 1



Style No. 2

Shanks .647 inch exact diameter (about 41/64 inch) and 2¼ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches
1/4	$1.20	6
9/32	1.30	6
5/16	1.40	6
11/32	1.50	6
3/8	1.55	6
13/32	1.65	6
7/16	1.70	6
15/32	1.80	6
1/2	1.85	6
17/32	1.95	6
9/16	2.05	6
19/32	2.20	6
5/8	2.30	6
21/32	2.40	6
11/16	2.50	6
23/32	2.65	6
3/4	2.75	6
25/32	2.90	6
13/16	3.00	6
27/32	3.15	6
7/8	3.30	6
29/32	$3.50	6
15/16	3.70	6
31/32	3.90	6
1	4.10	6
1 1/32	4.30	6
1 1/16	4.50	6
1 3/32	4.75	6
1 1/8	5.00	6
1 5/32	5.25	6
1 3/16	5.50	6
1 7/32	5.80	6
1 1/4	6.10	6
1 9/32	6.40	6
1 5/16	6.70	6
1 11/32	7.00	6
1 3/8	7.40	6
1 13/32	7.80	6
1 7/16	8.20	6
1 15/32	8.60	6
1 1/2	9.00	6

Note—What is Meant by "Constant Angle"

In the "Constant Angle" drill the increase of area of groove toward the shank is obtained by a gradual variation of the angle of the cutters to the axis of the drill as the groove is milled, a uniform speed of rotation of the drill being maintained to produce a groove of uniform pitch. This variation widens the groove toward the shank of the drill, and compensates for the reduction of the area, which would otherwise result from its diminishing depth, without impairing the efficiency of the cutting lip of the drill at any point by changing the pitch of the groove.

By this means any desired proportion of area of the groove at the point and at the shank can be obtained, the fact remaining that in any form of twist drill the more the groove is enlarged toward the shank the greater the extent to which the torsional strength of the drill is impaired.

In the "Constant Angle" drills the contour, angle, and area of the groove at all parts of its length are proportioned to combine the maximum torsional strength, the most efficient chip clearance, and the best form of cutting lip.

See Note "Increase Twist" on page 39.

Twist Drills

High Speed Steel

Morse No. 111, Taper Length

Fitting the Prentice Blacksmiths Drill Presses Nos. 1 and 2



Style No. 1



Style No. 2

Shanks ½ inch diameter, 2½ inches long
Style No. 2 always furnished unless otherwise ordered

Morse No. 112, Short Length

Fitting Silver & Deming and Prentice Blacksmiths Drill Presses Nos. 1 and 2



Style No. 1



Style No. 2

Shanks ½ inch diameter, 2½ inches long
Style No. 2 always furnished unless otherwise ordered

Diameter Inch	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches	Diameter Inch	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches
1/4	$1.10	6 1/8	29/32	$5.15	10 5/8	1/4	$1.10	6	29/32	$3.50	6
9/32	1.20	6 1/4	15/16	5.50	10 3/4	9/32	1.20	6	15/16	3.70	6
5/16	1.30	6 3/8	31/32	5.90	10 7/8	5/16	1.30	6	31/32	3.90	6
11/32	1.40	6 1/2	1	6.25	11	11/32	1.40	6	1	4.10	6
3/8	1.50	6 3/4	1 1/32	6.75	11 1/8	3/8	1.45	6	1 1/32	4.30	6
13/32	1.65	7	1 1/16	7.25	11 1/4	13/32	1.55	6	1 1/16	4.50	6
7/16	1.75	7 1/4	1 3/32	7.75	11 1/2	7/16	1.60	6	1 3/32	4.75	6
15/32	1.90	7 1/2	1 1/8	8.25	11 3/4	15/32	1.70	6	1 1/8	5.00	6
1/2	2.00	7 3/4	1 5/32	8.90	11 7/8	1/2	1.75	6	1 5/32	5.25	6
17/32	2.15	8	1 3/16	9.50	12	17/32	1.90	6	1 3/16	5.50	6
9/16	2.25	8 1/4	1 7/32	10.15	12 1/8	9/16	2.05	6	1 7/32	5.80	6
19/32	2.40	8 1/2	1 1/4	10.75	12 1/2	19/32	2.20	6	1 1/4	6.10	6
5/8	2.50	8 3/4	1 9/32	11.50	12 1/2	5/8	2.30	6	1 9/32	6.40	6
21/32	2.75	9	1 5/16	12.25	12 1/2	21/32	2.40	6	1 5/16	6.70	6
11/16	3.00	9 1/4	1 11/32	13.00	12 1/2	11/16	2.50	6	1 11/32	7.00	6
23/32	3.25	9 1/2	1 3/8	13.75	12 1/2	23/32	2.65	6	1 3/8	7.40	6
3/4	3.50	9 3/4	1 13/32	14.65	12 1/2	3/4	2.75	6	1 13/32	7.80	6
25/32	3.75	9 7/8	1 7/16	15.50	12 1/2	25/32	2.90	6	1 7/16	8.20	6
13/16	4.00	10	1 15/32	16.40	12 1/2	13/16	3.00	6	1 15/32	8.60	6
27/32	4.40	10 1/4	1 1/2	17.25	12 1/2	27/32	3.15	6	1 1/2	9.00	6
7/8	4.75	10 1/2				7/8	3.30	6			

The above furnished in 64th sizes if ordered and take price of the next larger size listed

Drills with Shanks as per Lists Nos. 111 and 112 on pages 35 and 36 will fit Drill Presses of

Boynton & Plummer, Worcester, Mass.....All sizes except Nos. 14, 15, 16
Buffalo Forge Co., Buffalo, N. Y.....All sizes
Canedy Otto Mfg. Co., Chicago Heights, Ill.
Champion Blower & Forge Co., Lancaster, Pa.....All sizes
Asa Goddard, Worcester, Mass.....Nos. 2, 4
Illinois Iron & Bolt Co., Carpentersville, Ill.....Bailey Nos. 2, 3, 4; 0, 1, Handy
D. H. Potts, Lancaster, Pa.....All sizes
Francis Reed Co., Worcester, Mass.....Nos. 0, 1, 1½, 2, 5, 8, 9, 11, 13, 18
Silver Mfg. Co., Salem, Ohio.....Nos. 1, 1½, 2, 3, 12, 13, 14
Geo. C. Taft, Worcester, Mass.....No. 2 old or new style or horizontal, 2½, 3
Wiley & Russell Mfg. Co., Greenfield, Mass.....Nos. 701, 706, 730, 734, 740, 751
M. L. Edwards Co., Salem, Ohio.....All sizes
B. B. Noyes & Co., Greenfield, Mass.....Nos. 2, 4, 5, 6, 12, 14, 16, 18, D5
Geo. S. Comstock, Mechanicsburg, Pa.....Comstock's Ball Bearing Fig. 500

Drills with Shanks as per List No. 110 on pages 35 and 36 will fit Drill Presses of

Boynton & Plummer, Worcester, Mass.....All sizes except Nos. 14, 15, 16
Buda Foundry & Mfg. Co., Harvey, Ill.....Paulus Track Drills
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Asa Goddard, Worcester, Mass.....No. 3
Illinois Iron & Bolt Co., Carpentersville, Ill.....Bailey No. 5 and Illinois Upright
B. B. Noyes & Co., Greenfield, Mass.....All sizes Little Giant Drills
Francis Reed Co., Worcester, Mass.....Nos. 3, 6, 7, 12, 14, 19
Silver Mfg. Co., Salem, Ohio.....Nos. 3, 4
Wiley & Russell Mfg. Co., Greenfield, Mass.....Nos. 732, 742, 743, 744, 745
Champion Blower Forge Co., Lancaster, Pa.....All sizes if ordered
D. H. Potts, Lancaster, Penn.....Nos. 1, 2, 3½, 10, 11, 12

Straightway Drills

Carbon Steel



Morse No. 114B, with Taper Shanks

Diameter Inches	Carbon Each	Whole Length Inches	Length of Flute Inches	Morse Taper Shank
1/4	$ .60	6 1/8	3	No. 1
9/32	.65	6 1/4	2 15/16	
5/16	.70	6 3/8	3 1/16	
11/32	.75	6 1/2	3 3/16	
3/8	.80	6 3/4	3 7/16	
13/32	.85	7	3 11/16	
7/16	.90	7 1/4	3 15/16	
15/32	.95	7 1/2	4 3/16	
1/2	1.00	7 3/4	4 7/16	
17/32	1.10	8	4 11/16	
9/16	1.20	8 1/4	4 15/16	
19/32	1.30	8 1/2	4 5/8	No. 2
5/8	1.40	8 3/4	4 7/8	
21/32	1.50	9	5 1/8	
11/16	1.60	9 1/4	5 3/8	
23/32	1.70	9 1/2	5 5/8	
3/4	1.85	9 3/4	5 7/8	
25/32	2.00	9 7/8	6	
13/16	2.15	10	6 1/8	
27/32	2.30	10 1/4	6 3/8	
7/8	2.45	10 1/2	6 5/8	
29/32	2.60	10 5/8	6 3/4	
15/16	2.75	10 3/4	6 1/8	No. 3
31/32	2.90	10 7/8	6 1/4	
1	3.00	11	6 3/8	
1 1/32	3.20	11 1/8	6 1/2	
1 1/16	3.40	11 1/4	6 5/8	
1 3/32	3.60	11 1/2	6 7/8	
1 1/8	3.80	11 3/4	7 1/8	
1 5/32	4.00	11 7/8	7 1/4	
1 3/16	4.20	12	7 3/8	
1 7/32	4.40	12 1/8	7 1/2	
1 1/4	4.50	12 1/2	7 7/8	
1 9/32	4.65	14 1/8	8 1/2	No. 4
1 5/16	4.80	14 1/4	8 5/8	
1 11/32	5.00	14 3/8	8 3/4	
1 3/8	5.20	14 1/2	8 7/8	
1 13/32	5.40	14 5/8	9	

Diameter Inches	Carbon Each	Whole Length Inches	Length of Flute Inches	Morse Taper Shank
1 7/16	$5.60	14 3/4	9 1/8	No. 4
1 15/32	5.80	14 7/8	9 1/4	
1 1/2	6.00	15	9 3/8	
1 17/32	6.30	15	9 3/8	
1 9/16	6.60	15 1/4	9 5/8	
1 19/32	6.90	15 1/4	9 5/8	
1 5/8	7.20	15 1/2	9 7/8	
1 21/32	7.50	15 1/2	9 7/8	
1 11/16	7.80	15 3/4	10 1/8	
1 23/32	8.10	15 3/4	9 11/16	
1 3/4	8.40	16	9 15/16	
1 25/32	8.60	16	9 15/16	
1 13/16	8.80	16 1/4	10 1/8	
1 27/32	9.00	16 1/4	10 1/8	
1 7/8	9.20	16 1/2	10 3/8	
1 29/32	9.35	16 1/2	10 3/8	
1 15/16	9.50	16 1/2	10 1/4	
1 31/32	9.65	16 1/2	10 1/4	
2	9.80	16 1/2	10 1/4	
2 1/32	10.20	16 1/2	9 1/2	No. 5
2 1/16	10.60	17	10	
2 1/8	11.20	17	10	
2 3/16	12.00	17	10	
2 1/4	12.80	17 1/2	10 1/8	
2 5/16	13.60	17 1/2	10 1/8	
2 3/8	14.40	18	10 1/2	
2 7/16	15.00	18 1/2	11	
2 1/2	15.60	19	11 3/8	
2 9/16	16.20	19 1/4	11 5/8	
2 5/8	16.80	19 1/2	11 3/4	
2 11/16	17.60	20	12 1/4	
2 3/4	19.00	20 1/2	12 5/8	
2 13/16	20.00	20 1/2	12 5/8	
2 7/8	21.00	21	13	
2 15/16	23.00	21	13	
3	25.00	22	13 7/8	

32nd sizes not listed, furnished at intermediate prices, and 64th sizes at price of next larger 32nd size

Lubricants for Cutting Tools

Material	Turning	Chucking	Drilling Milling	Reaming	Tapping
Tool Steel	Dry or Oil	Oil or Soda Water	Oil	Lard Oil	Oil
Soft Steel	Dry or Soda Water	Soda Water	Oil or Soda Water	Lard Oil	Oil
Wrought Iron	Dry or Soda Water	Soda Water	Oil or Soda Water	Lard Oil	Oil
Cast Iron	Dry	Dry	Dry	Dry	Oil
Brass	Dry	Dry	Dry	Dry	Oil
Copper	Dry	Oil	Oil	Mixture	Oil
Babbitt	Dry	Dry	Dry	Dry	Oil
Glass			Turpentine	or Kerosene	

Mixture is 1/3 Crude Petroleum, 2/3 Lard Oil. Oil is Lard. When two lubricants are mentioned the first is preferable

Straightway Drills

Carbon Steel



Morse No. 114½B, with Straight Shanks
Taper Length



Morse No. 114C, with Straight Shanks
Wire Sizes

Diameter Inches	Each	Whole Length Inches	Length of Flute Inches
1/4	$ .60	6 1/8	4
9/32	.65	6 1/4	4
5/16	.70	6 3/8	4 1/16
11/32	.75	6 1/2	4 1/8
3/8	.80	6 3/4	4 1/4
13/32	.85	7	4 3/8
7/16	.90	7 1/4	4 5/8
15/32	.95	7 1/2	4 7/8
1/2	1.00	7 3/4	5
17/32	1.10	8	5 1/4
9/16	1.20	8 1/4	5 3/8
19/32	1.30	8 1/2	5 5/8
5/8	1.40	8 3/4	5 3/4
21/32	1.50	9	5 7/8
11/16	1.60	9 1/4	6
23/32	1.70	9 1/2	6 3/16
3/4	1.85	9 3/4	6 3/8
25/32	2.00	9 7/8	6 1/2
13/16	2.15	10	6 5/8
27/32	2.30	10 1/4	6 3/4
7/8	2.45	10 1/2	7
29/32	2.60	10 5/8	7
15/16	2.75	10 3/4	7
31/32	2.90	10 7/8	7 1/8
1	3.00	11	7 3/16
1 1/32	3.20	11 1/8	7 5/16
1 1/16	3.40	11 1/4	7 3/8
1 3/32	3.60	11 1/2	7 5/8
1 1/8	3.80	11 3/4	7 7/8
1 5/32	4.00	11 7/8	8
1 3/16	4.20	12	8 1/8
1 7/32	4.40	12 1/8	8 1/8
1 1/4	4.50	12 1/2	8 1/2
1 9/32	4.65	14 1/8	9 1/8
1 5/16	4.80	14 1/4	9 1/4
1 11/32	5.00	14 3/8	9 3/8
1 3/8	5.20	14 1/2	9 1/2
1 13/32	5.40	14 5/8	9 1/2
1 7/16	5.60	14 3/4	9 5/8
1 15/32	5.80	14 7/8	9 3/4
1 1/2	6.00	15	9 7/8
1 17/32	6.30	15	9 1/2
1 9/16	6.60	15 1/4	9 3/4
1 19/32	6.90	15 1/4	9 3/4
1 5/8	7.20	15 1/2	10
1 21/32	7.50	15 1/2	10
1 11/16	7.80	15 3/4	10 1/4
1 23/32	8.10	15 3/4	10 1/4
1 3/4	8.40	16	10 1/2
1 25/32	8.60	16	10 1/2
1 13/16	8.80	16 1/4	10 3/4
1 27/32	9.00	16 1/4	10 3/4
1 7/8	9.20	16 1/2	11
1 29/32	9.35	16 1/2	11
1 15/16	9.50	16 1/2	11
1 31/32	9.65	16 1/2	11
2	9.80	16 1/2	11
2 1/32	10.20	16 1/2	9 5/8
2 1/16	10.60	17	10 1/8
2 1/8	11.20	17	10 1/8
2 3/16	12.00	17	10 1/8
2 1/4	12.80	17 1/2	10 1/4
2 5/16	13.60	17 1/2	10 1/4
2 3/8	14.40	18	10 5/8
2 7/16	15.00	18 1/2	11 1/8
2 1/2	15.60	19	11 1/2
2 9/16	16.20	19 1/4	11 3/4
2 5/8	16.80	19 1/2	11 7/8
2 11/16	17.60	20	12 3/8
2 3/4	19.00	20 1/2	12 3/4
2 13/16	20.00	20 1/2	12 3/4
2 7/8	21.00	21	13 1/8
2 15/16	23.00	21	13 1/8
3	25.00	22	14

Number by Gauge	Per Dozen	Each
1 to 5	$2.35	$ .22
6 to 10	2.25	.21
11 to 15	2.10	.20
16 to 20	1.95	.19
21 to 25	1.75	.17
26 to 30	$1.55	$ .15
31 to 35	1.40	.14
36 to 40	1.25	.12
41 to 45	1.10	.10
46 to 60	.95	.09

For sizes in decimals of 1 inch, and for lengths, see No. 107 on page 32

Morse No. 114A, with Straight Shanks. Jobbers Lengths

Diameter Inch	Per Dozen	Whole Length Inches	Length of Flute, Inches
1/16	$1.00	2 1/2	1 1/4
5/64	1.10	2 5/8	1 3/8
3/32	1.20	2 3/4	1 1/2
7/64	1.30	2 7/8	1 11/16
1/8	1.45	3	1 13/16
9/64	1.60	3 1/8	1 15/16
5/32	1.80	3 1/4	2 3/32
11/64	2.00	3 3/8	2 7/32
3/16	2.20	3 1/2	2 5/16
13/64	2.40	3 5/8	2 7/16
7/32	2.65	3 3/4	2 17/32
15/64	2.90	3 7/8	2 21/32
1/4	3.15	4	2 3/4
17/64	3.40	4 1/8	2 7/8
9/32	3.65	4 1/4	2 31/32
19/64	3.90	4 3/8	3 3/32
5/16	4.20	4 1/2	3 3/16
21/64	4.50	4 5/8	3 5/16
11/32	4.80	4 3/4	3 13/32
23/64	5.10	4 7/8	3 17/32
3/8	5.40	5	3 5/8
25/64	5.70	5 1/8	3 3/4
13/32	6.00	5 1/4	3 27/32
27/64	6.40	5 3/8	3 31/32
7/16	6.80	5 1/2	4 1/16
29/64	7.20	5 5/8	4 3/16
15/32	7.50	5 3/4	4 9/32
31/32	7.75	5 7/8	4 13/32
1/2	8.00	6	4 1/2

Note—What is Meant by "Increase Twist"

In order that a drill may be of sufficient strength to resist the torsional strain to which it is subjected in use, without being at the same time so thick at the point as to require excessive force to make it penetrate the work, it has long been customary to form the grooves of gradually decreasing depth from the point to the shank. By this practice the groove is naturally of less area near the shank and if no means were employed to increase this area there would be a tendency for the chips to clog in the groove.

This difficulty is obviated in the "Increase Twist" drill by gradually increasing the rate of forward traverse of the drill while it is fed to the groove milling cutters, the speed of rotation of the drill remaining constant. Through the ensuing change in the angle of the cutters to the groove, the groove is made wider and its area thereby increased.

See Note "Constant Angle," on page 36.

Twist Drills

Carbon and High Speed Steel

Morse No. 102F, with Taper Shanks



Three-Groove

This Drill supplied in sizes 1/4 inch to 3 inches

Morse No. 102G, with Taper Shanks



Four-Groove

This Drill supplied in sizes 1/2 inch to 3 inches only

It is considered advisable to use two drills when large holes are to be made in solid stock, first using a two-groove drill and following with a three or four-groove drill
A two-groove drill should not be used in cored holes or to follow another drill
The points of the three and four-groove drills show that they are not to be used for drilling solid stock but for enlarging a hole already made

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
1/4	$1.50	$2.00	6 1/8	2 13/16	
17/64	1.60	2.15	6 1/4	2 15/16	
9/32	1.60	2.15	6 1/4	2 15/16	
19/64	1.60	2.25	6 3/8	3 1/16	
5/16	1.60	2.25	6 3/8	3 1/16	
21/64	1.70	2.40	6 1/2	3 3/16	
11/32	1.70	2.40	6 1/2	3 3/16	
23/64	1.70	2.50	6 3/4	3 7/16	
3/8	1.70	2.50	6 3/4	3 7/16	
25/64	1.75	2.65	7	3 11/16	
13/32	1.75	2.65	7	3 11/16	
27/64	1.80	2.75	7 1/4	3 15/16	
7/16	1.80	2.75	7 1/4	3 15/16	
29/64	1.85	2.90	7 1/2	4 3/16	
15/32	1.85	2.90	7 1/2	4 3/16	
31/64	1.90	3.00	7 3/4	4 7/16	
1/2	1.90	3.00	7 3/4	4 7/16	
33/64	1.95	3.15	8	4 11/16	
17/32	1.95	3.15	8	4 11/16	
35/64	2.00	3.25	8 1/4	4 15/16	
9/16	2.00	3.25	8 1/4	4 15/16	
37/64	2.30	3.50	8 1/2	4 5/8	
19/32	2.30	3.50	8 1/2	4 5/8	
39/64	2.60	3.75	8 3/4	4 7/8	
5/8	2.60	3.75	8 3/4	4 7/8	
41/64	2.70	4.00	9	5 1/8	
21/32	2.70	4.00	9	5 1/8	
43/64	2.75	4.25	9 1/4	5 3/8	
11/16	2.75	4.25	9 1/4	5 3/8	
45/64	2.85	4.65	9 1/2	5 5/8	
23/32	2.85	4.65	9 1/2	5 5/8	
47/64	2.90	5.00	9 3/4	5 7/8	
3/4	2.90	5.00	9 3/4	5 7/8	
49/64	3.00	5.40	9 7/8	6	
25/32	3.00	5.40	9 7/8	6	
51/64	3.05	5.75	10	6 1/8	
13/16	3.05	5.75	10	6 1/8	
53/64	3.15	6.15	10 1/4	6 3/8	
27/32	3.15	6.15	10 1/4	6 3/8	
55/64	3.20	6.50	10 1/2	6 5/8	
7/8	3.20	6.50	10 1/2	6 5/8	
57/64	3.30	7.00	10 5/8	6 3/4	
29/32	3.30	7.00	10 5/8	6 3/4	
59/64	3.40	7.50	10 3/4	6 1/8	
15/16	3.40	7.50	10 3/4	6 1/8	
61/64	3.50	8.00	10 7/8	6 1/4	
31/32	3.50	8.00	10 7/8	6 1/4	
63/64	3.60	8.50	11	6 3/8	
1	3.60	8.50	11	6 3/8	

No. 1 — No. 2 — No. 3

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
1 1/64	$3.70	$9.00	11 1/8	6 1/2	
1 1/32	3.70	9.00	11 1/8	6 1/2	
1 3/64	3.80	9.50	11 1/4	6 5/8	
1 1/16	3.80	9.50	11 1/4	6 5/8	
1 5/64	3.90	10.25	11 1/2	6 7/8	
1 3/32	3.90	10.25	11 1/2	6 7/8	
1 7/64	4.00	11.00	11 3/4	7 1/8	
1 1/8	4.00	11.00	11 3/4	7 1/8	
1 9/64	4.25	11.75	11 7/8	7 1/4	
1 5/32	4.25	11.75	11 7/8	7 1/4	
1 11/64	4.50	12.50	12	7 3/8	
1 3/16	4.50	12.50	12	7 3/8	
1 13/64	4.65	13.25	12 1/8	7 1/2	
1 7/32	4.65	13.25	12 1/8	7 1/2	
1 15/64	4.80	14.00	12 1/2	7 7/8	
1 1/4	4.80	14.00	12 1/2	7 7/8	
1 17/64	5.00	14.75	14 1/8	8 1/2	
1 9/32	5.00	14.75	14 1/8	8 1/2	
1 19/64	5.20	15.50	14 1/4	8 5/8	
1 5/16	5.20	15.50	14 1/4	8 5/8	
1 21/64	5.40	16.25	14 3/8	8 3/4	
1 11/32	5.40	16.25	14 3/8	8 3/4	
1 23/64	5.60	17.00	14 1/2	8 7/8	
1 3/8	5.60	17.00	14 1/2	8 7/8	
1 25/64	5.80	17.75	14 5/8	9	
1 13/32	5.80	17.75	14 5/8	9	
1 27/64	6.00	18.50	14 3/4	9 1/8	
1 7/16	6.00	18.50	14 3/4	9 1/8	
1 29/64	6.20	19.25	14 7/8	9 1/4	
1 15/32	6.20	19.25	14 7/8	9 1/4	
1 31/64	6.40	20.00	15	9 3/8	
1 1/2	6.40	20.00	15	9 3/8	
1 17/32	6.65	20.75	15	9 3/8	
1 9/16	6.90	21.50	15 1/4	9 5/8	
1 19/32	7.15	22.25	15 1/4	9 5/8	
1 5/8	7.40	23.00	15 1/2	9 7/8	
1 21/32	7.65	23.75	15 1/2	9 7/8	
1 11/16	7.90	24.50	15 3/4	10 1/8	
1 23/32	8.15	25.50	15 3/4	9 11/16	
1 3/4	8.40	26.50	16	9 15/16	
1 25/32	8.60	27.50	16	9 15/16	
1 13/16	8.80	28.50	16 1/4	10 1/8	
1 27/32	9.00	29.50	16 1/4	10 1/8	
1 7/8	9.20	30.50	16 1/2	10 3/8	
1 29/32	9.35	31.50	16 1/2	10 3/8	
1 15/16	9.50	32.50	16 1/2	10 1/4	
1 31/32	9.65	33.50	16 1/2	10 1/4	
2	9.80	34.50	16 1/2	10 1/4	

No. 3 — No. 4

Twist Drills

Carbon and High Speed Steel

Morse No. 102F and No. 102G (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
2 1/32	$10.20	$36.00	16 1/2	9 1/2	
2 1/16	10.60	37.50	17	10	
2 3/32	10.90	39.00	17	10	
2 1/8	11.20	40.50	17	10	
2 5/32	11.60	42.15	17	10	
2 3/16	12.00	43.75	17	10	
2 7/32	12.40	45.65	17 1/2	10 1/2	No. 5
2 1/4	12.80	47.50	17 1/2	10 1/8	
2 9/32	13.20	50.00	17 1/2	10 1/8	
2 5/16	13.60	52.50	17 1/2	10 1/8	
2 11/32	14.00	56.25	18	10 5/8	
2 3/8	14.40	60.00	18	10 1/2	
2 13/32	14.70	62.50	18 1/2	11	
2 7/16	15.00	65.00	18 1/2	11	
2 15/32	15.30	67.50	19	11 1/2	
2 1/2	15.60	70.00	19	11 3/8	

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
2 17/32	$15.90	$73.15	19 1/4	11 5/8	
2 9/16	16.20	76.25	19 1/4	11 5/8	
2 19/32	16.50	79.40	19 1/2	11 7/8	
2 5/8	16.80	82.50	19 1/2	11 3/4	
2 21/32	17.35	85.65	20	12 1/4	
2 11/16	17.90	88.75	20	12 1/4	
2 23/32	18.45	91.90	20 1/2	12 3/4	No. 5
2 3/4	19.00	95.00	20 1/2	12 5/8	
2 25/32	19.50	98.75	20 1/2	12 5/8	
2 13/16	20.00	102.50	20 1/2	12 5/8	
2 27/32	20.50	106.25	21	13 1/8	
2 7/8	21.00	110.00	21	13	
2 29/32	22.00	113.75	21	13	
2 15/16	23.00	117.50	21	13	
2 31/32	24.00	121.25	22	14	
3	25.00	125.00	22	13 7/8	

Drills larger than 1 1/2 inches are furnished in 1/64th sizes if ordered, and take price of the next larger size listed.

Morse No. 104G, with Straight Shanks



Three-Groove

These Drills 23/64 and smaller have regular drill points

Morse No. 104H, with Straight Shanks



Four-Groove

This Drill supplied in sizes 1/2 inch to 3 inches only

It is considered advisable to use two drills when large holes are to be made in solid stock, first using a two-groove drill and following with a three or four-groove drill.
A two-groove drill should not be used in cored holes or to follow another drill.
The points of the three and four-groove drills show that they are not to be used for drilling solid stock, but for enlarging a hole already made.

Diameter Inch	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Shank Inch	Length Shank Inches
1/4	$1.30	$2.00	6 1/8	3 7/8	1/4	1 1/2
17/64	1.40	2.15	6 1/4	4	1/4	1 1/2
9/32	1.40	2.15	6 1/4	4	1/4	1 1/2
19/64	1.50	2.25	6 3/8	4 1/8	1/4	1 1/2
5/16	1.50	2.25	6 3/8	4 1/8	1/4	1 1/2
21/64	1.60	2.40	6 1/2	4 1/4	1/4	1 1/2
11/32	1.60	2.40	6 1/2	4 1/4	1/4	1 1/2
23/64	1.70	2.50	6 3/4	4 1/4	3/8	1 3/4
3/8	1.70	2.50	6 3/4	4 1/4	3/8	1 3/4
25/64	1.75	2.65	7	4 1/2	3/8	1 3/4
13/32	1.75	2.65	7	4 1/2	3/8	1 3/4
27/64	1.80	2.75	7 1/4	4 3/4	3/8	1 3/4
7/16	1.80	2.75	7 1/4	4 3/4	3/8	1 3/4
29/64	1.85	2.90	7 1/2	5	3/8	1 3/4
15/32	1.85	2.90	7 1/2	5	3/8	1 3/4
31/64	1.90	3.00	7 3/4	5	1/2	2
1/2	1.90	3.00	7 3/4	5	1/2	2
33/64	1.95	3.15	8	5 1/4	1/2	2
17/32	1.95	3.15	8	5 1/4	1/2	2
35/64	2.00	3.25	8 1/4	5 1/2	1/2	2
9/16	2.00	3.25	8 1/4	5 1/2	1/2	2
37/64	2.30	3.50	8 1/2	5 3/4	1/2	2
19/32	2.30	3.50	8 1/2	5 3/4	1/2	2
39/64	2.60	3.75	8 3/4	5 3/4	5/8	2 1/4
5/8	2.60	3.75	8 3/4	5 3/4	5/8	2 1/4
41/64	2.70	4.00	9	6	5/8	2 1/4
21/32	2.70	4.00	9	6	5/8	2 1/4
43/64	2.75	4.25	9 1/4	6 1/4	5/8	2 1/4
11/16	2.75	4.25	9 1/4	6 1/4	5/8	2 1/4
45/64	2.85	4.65	9 1/2	6 1/2	5/8	2 1/4
23/32	2.85	4.65	9 1/2	6 1/2	5/8	2 1/4
47/64	2.90	5.00	9 3/4	6 3/4	3/4	2 1/4
3/4	2.90	5.00	9 3/4	6 3/4	3/4	2 1/4
49/64	3.00	5.40	9 7/8	6 7/8	3/4	2 1/4
25/32	3.00	5.40	9 7/8	6 7/8	3/4	2 1/4
51/64	3.05	5.75	10	7	3/4	2 1/4
13/16	3.05	5.75	10	7	3/4	2 1/4
53/64	3.15	6.15	10 1/4	7 1/4	3/4	2 1/4
27/32	3.15	6.15	10 1/4	7 1/4	3/4	2 1/4
55/64	3.20	6.50	10 1/2	7 1/4	7/8	2 1/2

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Shank Inches	Length Shank Inches
7/8	$3.20	$6.50	10 1/2	7 1/4	7/8	2 1/2
57/64	3.30	7.00	10 5/8	7 3/8	7/8	2 1/2
29/32	3.30	7.00	10 5/8	7 3/8	7/8	2 1/2
59/64	3.40	7.50	10 3/4	7 1/2	7/8	2 1/2
15/16	3.40	7.50	10 3/4	7 1/2	7/8	2 1/2
61/64	3.50	8.00	10 7/8	7 5/8	7/8	2 1/2
31/32	3.50	8.00	10 7/8	7 5/8	7/8	2 1/2
63/64	3.60	8.50	11	7 1/2	1	2 3/4
1	3.60	8.50	11	7 1/2	1	2 3/4
1 1/64	3.70	9.00	11 1/8	7 5/8	1	2 3/4
1 1/32	3.70	9.00	11 1/8	7 5/8	1	2 3/4
1 3/64	3.80	9.50	11 1/4	7 3/4	1	2 3/4
1 1/16	3.80	9.50	11 1/4	7 3/4	1	2 3/4
1 5/64	3.90	10.25	11 1/2	8	1	2 3/4
1 3/32	3.90	10.25	11 1/2	8	1	2 3/4
1 7/64	4.00	11.00	11 3/4	8 1/4	1	2 3/4
1 1/8	4.00	11.00	11 3/4	8 1/4	1	2 3/4
1 9/64	4.25	11.75	11 7/8	8 3/8	1	2 3/4
1 5/32	4.25	11.75	11 7/8	8 3/8	1	2 3/4
1 11/64	4.50	12.50	12	8 1/2	1	2 3/4
1 3/16	4.50	12.50	12	8 1/2	1	2 3/4
1 13/64	4.65	13.25	12 1/8	8 5/8	1	2 3/4
1 7/32	4.65	13.25	12 1/8	8 5/8	1	2 3/4
1 15/64	4.80	14.00	12 1/2	8 3/4	1 1/4	3
1 1/4	4.80	14.00	12 1/2	8 3/4	1 1/4	3
1 17/64	5.00	14.75	14 1/8	10 3/8	1 1/4	3
1 9/32	5.00	14.75	14 1/8	10 3/8	1 1/4	3
1 19/64	5.20	15.50	14 1/4	10 1/2	1 1/4	3
1 5/16	5.20	15.50	14 1/4	10 1/2	1 1/4	3
1 21/64	5.40	16.25	14 3/8	10 5/8	1 1/4	3
1 11/32	5.40	16.25	14 3/8	10 5/8	1 1/4	3
1 23/64	5.60	17.00	14 1/2	10 3/4	1 1/4	3
1 3/8	5.60	17.00	14 1/2	10 3/4	1 1/4	3
1 25/64	5.80	17.75	14 5/8	10 7/8	1 1/4	3
1 13/32	5.80	17.75	14 5/8	10 7/8	1 1/4	3
1 27/64	6.00	18.50	14 3/4	11	1 1/4	3
1 7/16	6.00	18.50	14 3/4	11	1 1/4	3
1 29/64	6.20	19.25	14 7/8	11 1/8	1 1/4	3
1 15/32	6.20	19.25	14 7/8	11 1/8	1 1/4	3
1 31/64	6.40	20.00	15	11 1/4	1 1/4	3

Twist Drills

Carbon and High Speed Steel

Morse No. 104G and No. 104H (Continued)

Diameter Inches	Carbon Each	High Speed Each	Whole Length Inches	Twist Cut Inches	Diameter Shank Inches	Length Shank Inches
1 1/2	$6.40	$20.00	15	11 1/4	1 1/4	3
1 17/32	6.65	20.75	15	11 1/4	1 1/4	3
1 9/16	6.90	21.50	15	11 1/4	1 1/4	3
1 19/32	7.15	22.25	15 1/4	11 1/2	1 1/4	3
1 5/8	7.40	23.00	15 1/4	11 1/2	1 1/4	3
1 21/32	7.65	23.75	15 1/2	11 3/4	1 1/4	3
1 11/16	7.90	24.50	15 1/2	11 3/4	1 1/4	3
1 23/32	8.15	25.50	15 3/4	12	1 1/4	3
1 3/4	8.40	26.50	15 3/4	12	1 1/4	3
1 25/32	8.60	27.50	16	11 7/8	1 1/4	3
1 13/16	8.80	28.50	16	11 7/8	1 1/4	3
1 27/32	9.00	29.50	16 1/4	12 1/8	1 1/4	3
1 7/8	9.20	30.50	16 1/4	12 1/8	1 1/4	3
1 29/32	9.35	31.50	16 1/2	12 1/4	1 1/4	3
1 15/16	9.50	32.50	16 1/2	12 1/4	1 1/4	3
1 31/32	9.65	33.50	16 1/2	12 1/4	1 1/4	3
2	9.80	34.50	16 1/2	12 1/4	1 1/4	3
2 1/32	10.20	36.00	16 1/2	12 1/8	1 1/4	3
2 1/16	10.60	37.50	16 1/2	11 3/4	1 1/2	3 1/2
2 3/32	10.90	39.00	17	12 1/4	1 1/2	3 1/2
2 1/8	11.20	40.50	17	12 1/4	1 1/2	3 1/2
2 5/32	11.60	42.15	17	12 1/8	1 1/2	3 1/2
2 3/16	12.00	43.75	17	12 1/8	1 1/2	3 1/2
2 7/32	12.40	45.65	17 1/2	12 5/8	1 1/2	3 1/2
2 1/4	$12.80	$47.50	17 1/2	12 1/2	1 1/2	3 1/2
2 9/32	13.20	50.00	17 1/2	12 1/2	1 1/2	3 1/2
2 5/16	13.60	52.50	17 1/2	12 1/2	1 1/2	3 1/2
2 11/32	14.00	56.25	18	13	1 1/2	3 1/2
2 3/8	14.40	60.00	18	12 7/8	1 1/2	3 1/2
2 13/32	14.70	62.50	18 1/2	13 3/8	1 1/2	3 1/2
2 7/16	15.00	65.00	18 1/2	13 3/8	1 1/2	3 1/2
2 15/32	15.30	67.50	19	13 7/8	1 1/2	3 1/2
2 1/2	15.60	70.00	19	13 3/4	1 1/2	3 1/2
2 17/32	15.90	73.15	19 1/4	14	1 1/2	3 1/2
2 9/16	16.20	76.25	19 1/4	14	1 1/2	3 1/2
2 19/32	16.50	79.40	19 1/2	14 1/4	1 1/2	3 1/2
2 5/8	16.80	82.50	19 1/2	14 1/8	1 1/2	3 1/2
2 21/32	17.35	85.65	20	14 5/8	1 1/2	3 1/2
2 11/16	17.90	88.75	20	14 5/8	1 1/2	3 1/2
2 23/32	18.45	91.90	20 1/2	15 1/8	1 1/2	3 1/2
2 3/4	19.00	95.00	20 1/2	15	1 1/2	3 1/2
2 25/32	19.50	98.75	20 1/2	14 1/2	1 3/4	4
2 13/16	20.00	102.50	20 1/2	14 1/2	1 3/4	4
2 27/32	20.50	106.25	21	15	1 3/4	4
2 7/8	21.00	110.00	21	14 7/8	1 3/4	4
2 29/32	22.00	113.75	21	14 7/8	1 3/4	4
2 15/16	23.00	117.50	21	14 7/8	1 3/4	4
2 31/32	24.00	121.25	22	15 7/8	1 3/4	4
3	25.00	125.00	22	15 3/4	1 3/4	4

32nd sizes not listed furnished at intermediate prices, and 64th sizes at price of next larger 32nd size



Morse No. 102E, with Taper Shanks. Metric Sizes

Diameter MM.	Carbon Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Morse Taper Shank
1	$ .35	.0394	92	16	
1 1/2	.35	.0591	98	21	
2	.40	.0787	105	28	
2 1/2	.40	.0984	111	34	
3	.45	.1181	116	43	
3 1/2	.45	.1378	130	56	
4	.45	.1575	137	62	
4 1/2	.50	.1771	140	65	
5	.55	.1968	149	73	
5 1/2	.55	.2165	152	76	
6	.60	.2362	156	76	
6 1/2	.65	.2559	156	76	
7	.65	.2756	159	75	
7 1/2	.70	.2953	162	78	
8	.75	.3149	162	78	
8 1/2	.75	.3346	165	81	
9	.80	.3543	172	87	
9 1/2	.80	.3740	172	87	
10	.85	.3937	178	94	
10 1/2	.90	.4134	184	100	
11	.90	.4330	184	100	
11 1/2	.95	.4527	191	106	
12	1.00	4724	191	106	
12 1/2	1.00	.4921	197	113	
13	1.10	.5118	203	119	
13 1/2	1.20	.5315	203	119	
14	1.20	.5512	210	125	
14 1/2	1.30	.5708	216	117	
15	1.30	.5905	216	117	
15 1/2	1.40	.6102	222	124	
16	1.50	.6299	222	124	
16 1/2	1.50	.6496	229	130	
17	1.60	.6693	235	137	
17 1/2	1.70	.6890	235	137	
18	1.70	.7086	241	143	
18 1/2	1.85	.7283	247	149	
19	1.85	.7480	247	149	
19 1/2	2.00	.7677	251	152	

Morse Taper Shank: No. 1 (1 through 14); No. 2 (14 1/2 through 19 1/2)

Diameter MM.	Carbon Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Morse Shank Shank
20	$2.15	.7874	254	156	
20 1/2	2.15	.8071	254	156	
21	2.30	.8267	260	162	
21 1/2	2.45	.8464	260	162	
22	2.45	.8661	267	168	
22 1/2	2.60	.8858	270	171	
23	2.60	.9055	270	171	
23 1/2	2.75	.9252	273	156	
24	2.90	.9449	276	159	
24 1/2	2.90	.9646	276	159	
25	3.00	.9842	279	162	
25 1/2	3.20	1.0039	279	162	
26	3.20	1.0236	282	165	
26 1/2	3.40	1.0433	286	168	
27	3.60	1.0629	286	168	
27 1/2	3.60	1.0827	292	175	
28	3.80	1.1024	298	181	
28 1/2	3.80	1.1220	298	181	
29	4.00	1.1417	302	184	
29 1/2	4.20	1.1614	302	184	
30	4.20	1.1811	305	187	
30 1/2	4.40	1.2008	308	190	
31	4.50	1.2205	308	190	
31 1/2	4.50	1.2401	317	200	
32	4.65	1.2598	317	200	
32 1/2	4.65	1.2795	359	216	
33	4.80	1.2992	362	219	
33 1/2	5.00	1.3190	365	222	
34	5.00	1.3386	365	222	
34 1/2	5.20	1.3583	368	225	
35	5.20	1.3779	368	225	
35 1/2	5.40	1.3977	372	229	
36	5.60	1.4173	375	232	
36 1/2	5.60	1.4370	375	232	
37	5.80	1.4567	378	235	
37 1/2	6.00	1.4764	381	238	
38	6.00	1.4961	381	238	
38 1/2	6.30	1.5157	381	238	

Morse Shank Shank: No. 2 (20 through 23); No. 3 (23 1/2 through 32); No. 4 (32 1/2 through 38 1/2)

Twist Drills

Carbon Steel

Morse No. 102E (Continued)

Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Morse Taper Shank
39	$6.60	1.5354	381	238	No. 4
39½	6.60	1.5551	387	244	
40	6.90	1.5748	387	244	
40½	6.90	1.5945	387	244	
41	7.20	1.6142	394	251	
41½	7.50	1.6338	394	251	
42	7.50	1.6536	394	251	
42½	7.80	1.6733	400	257	
43	8.10	1.6929	400	257	
43½	8.10	1.7126	400	246	
44	8.40	1.7323	406	252	
44½	8.40	1.7519	406	252	
45	8.60	1.7717	406	252	
45½	8.80	1.7914	413	259	
46	8.80	1.8110	413	257	
46½	9.00	1.8307	413	257	
47	9.20	1.8504	419	264	
47½	9.20	1.8701	419	264	
48	9.35	1.8898	419	264	
48½	9.35	1.9094	419	264	
49	9.50	1.9291	419	260	
49½	9.65	1.9488	419	260	
50	9.65	1.9685	419	260	
50½	9.80	1.9882	419	260	
51	10.20	2.0079	419	241	No. 5
51½	10.20	2.0276	419	241	
52	10.60	2.0473	432	254	
52½	10.60	2.0670	432	254	
53	10.90	2.0866	432	254	
53½	11.20	2.1063	432	254	
54	11.20	2.1259	432	254	
54½	11.60	2.1456	432	254	
55	12.00	2.1654	432	254	
55½	12.00	2.1851	432	254	
56	12.40	2.2047	445	267	
56½	12.80	2.2244	445	267	
57	12.80	2.2441	445	257	
57½	$13.20	2.2637	445	257	No. 5
58	13.60	2.2835	445	257	
58½	13.60	2.3031	445	257	
59	14.00	2.3228	457	270	
59½	14.40	2.3425	457	270	
60	14.40	2.3622	457	270	
60½	14.70	2.3819	470	279	
61	14.70	2.4015	470	279	
61½	15.00	2.4212	470	279	
62	15.30	2.4409	470	279	
62½	15.30	2.4606	483	292	
63	15.60	2.4803	483	292	
63½	15.60	2.5000	483	289	
64	15.90	2.5197	489	295	
64½	15.90	2.5393	489	295	
65	16.20	2.5591	489	295	
65½	16.50	2.5787	495	302	
66	16.80	2.5984	495	302	
66½	16.80	2.6181	495	298	
67	17.20	2.6378	508	311	
67½	17.20	2.6574	508	311	
68	17.60	2.6772	508	311	
68½	18.30	2.6969	521	324	
69	18.30	2.7165	521	324	
69½	19.00	2.7362	521	324	
70	19.00	2.7559	521	321	
70½	19.50	2.7756	521	321	
71	20.00	2.7952	521	321	
71½	20.00	2.8149	521	321	
72	20.50	2.8347	533	333	
72½	21.00	2.8543	533	333	
73	21.00	2.8740	533	330	
73½	22.00	2.8937	533	330	
74	23.00	2.9134	533	330	
74½	23.00	2.9330	533	330	
75	24.00	2.9527	559	356	
75½	25.00	2.9724	559	356	
76	25.00	2.9921	559	352	



Morse No. 104F, with Straight Shanks, Taper Length. Metric Sizes

Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.
1	$ .35	.0394	57	25
1½	.35	.0591	76	32
2	.40	.0787	95	35
2½	.40	.0984	108	41
3	.45	.1181	130	63
3½	.45	.1378	133	70
4	.45	.1575	137	76
4½	.50	.1771	140	83
5	.55	.1968	149	95
5½	.55	.2165	152	102
6	.60	.2362	156	102
6½	.65	.2559	156	102
7	.65	.2756	159	102
7½	.70	.2953	162	103
8	.75	.3149	162	103
8½	.75	.3346	165	105
9	.80	.3543	172	108
9½	.80	.3740	172	108
10	.85	.3937	178	111
10½	.90	.4134	184	117
11	$ .90	.4330	184	117
11½	.95	.4527	191	124
12	1.00	.4724	191	124
12½	1.00	.4921	197	127
13	1.10	.5118	203	133
13½	1.20	.5315	203	133
14	1.20	.5512	210	137
14½	1.30	.5708	216	143
15	1.30	.5905	216	143
15½	1.40	.6102	222	146
16	1.50	.6299	222	146
16½	1.50	.6496	229	149
17	1.60	.6693	235	152
17½	1.70	.6890	235	152
18	1.70	.7086	241	157
18½	1.85	.7283	247	162
19	1.85	.7480	247	162
19½	2.00	.7677	251	165
20	2.15	.7874	254	168

Twist Drills

Carbon Steel

No. 104F (Continued)

Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.	Diameter MM.	Each	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.
20½	$2.15	.8071	254	168	48½	$9.35	1.9094	419	279
21	2.30	.8267	260	171	49	9.50	1.9291	419	279
21½	2.45	.8464	260	171	49½	9.65	1.9488	419	279
22	2.45	.8661	267	178	50	9.65	1.9685	419	279
22½	2.60	.8858	270	178	50½	9.80	1.9882	419	279
23	2.60	.9055	270	178	51	10.20	2.0079	419	244
23½	2.75	.9252	273	178	51½	10.20	2.0276	419	244
24	2.90	.9449	276	181	52	10.60	2.0473	432	257
24½	2.90	.9646	276	181	52½	10.60	2.0670	432	257
25	3.00	.9842	279	183	53	10.90	2.0866	432	257
25½	3.20	1.0039	279	183	53½	11.20	2.1063	432	257
26	3.20	1.0236	282	186	54	11.20	2.1259	432	257
26½	3.40	1.0433	286	187	54½	11.60	2.1456	432	257
27	3.60	1.0629	286	187	55	12.00	2.1654	432	257
27½	3.60	1.0827	292	194	55½	12.00	2.1851	432	257
28	3.80	1.1024	298	200	56	12.40	2.2047	445	270
28½	3.80	1.1220	298	200	56½	12.80	2.2244	445	270
29	4.00	1.1417	302	203	57	12.80	2.2441	445	260
29½	4.20	1.1614	302	203	57½	13.20	2.2637	445	260
30	4.20	1.1811	305	206	58	13.60	2.2835	445	260
30½	4.40	1.2008	308	206	58½	13.60	2.3031	445	260
31	4.50	1.2205	308	206	59	14.00	2.3228	457	273
31½	4.50	1.2401	317	216	59½	14.40	2.3425	457	273
32	4.65	1.2598	317	216	60	14.40	2.3622	457	273
32½	4.65	1.2795	359	232	60½	14.70	2.3819	470	283
33	4.80	1.2992	362	235	61	14.70	2.4015	470	283
33½	5.00	1.3190	365	238	61½	15.00	2.4212	470	283
34	5.00	1.3386	365	238	62	15.30	2.4409	470	283
34½	5.20	1.3583	368	241	62½	15.30	2.4606	483	295
35	5.20	1.3779	368	241	63	15.60	2.4803	483	295
35½	5.40	1.3977	372	241	63½	15.60	2.5	483	292
36	5.60	1.4173	375	244	64	15.90	2.5197	489	298
36½	5.60	1.4370	375	244	64½	15.90	2.5393	489	298
37	5.80	1.4567	378	248	65	16.20	2.5591	489	298
37½	6.00	1.4764	381	251	65½	16.50	2.5787	495	305
38	6.00	1.4961	381	251	66	16.80	2.5984	495	305
38½	6.30	1.5157	381	241	66½	16.80	2.6181	495	302
39	6.60	1.5354	381	241	67	17.20	2.6378	508	314
39½	6.60	1.5551	387	248	67½	17.20	2.6574	508	314
40	6.90	1.5748	387	248	68	17.60	2.6772	508	314
40½	6.90	1.5945	387	248	68½	18.30	2.6969	521	327
41	7.20	1.6142	394	254	69	18.30	2.7165	521	327
41½	7.50	1.6338	394	254	69½	19.00	2.7362	521	327
42	7.50	1.6536	394	254	70	19.00	2.7559	521	324
42½	7.80	1.6733	400	260	70½	19.50	2.7756	521	324
43	8.10	1.6929	400	260	71	20.00	2.7952	521	324
43½	8.10	1.7126	400	260	71½	20.00	2.8149	521	324
44	8.40	1.7323	406	267	72	20.50	2.8347	533	337
44½	8.40	1.7519	406	267	72½	21.00	2.8543	533	337
45	8.60	1.7717	406	267	73	21.00	2.8740	533	333
45½	8.80	1.7914	413	273	73½	22.00	2.8937	533	333
46	8.80	1.8110	413	273	74	23.00	2.9134	533	333
46½	9.00	1.8307	413	273	74½	23.00	2.9330	533	333
47	9.20	1.8504	419	279	75	24.00	2.9527	559	359
47½	9.20	1.8701	419	279	75½	25.00	2.9724	559	359
48	9.35	1.8898	419	279	76	25.00	2.9921	559	356

Drills 51 to 76 mm. diameter have shanks 45 mm. diameter, 152 mm. long

SEE DISCOUNT SHEET

Twist Drills

Carbon Steel



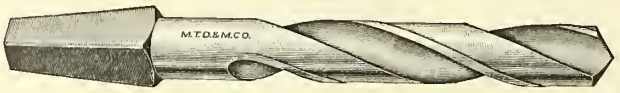
Morse No. 105A, with Straight Shanks. Jobbers Lengths. Metric Sizes

Diameter MM.	Per Dozen	Diameter in Decimals of 1 Inch	Approximate Whole Length MM.	Approximate Length Twist Cut MM.
.5	$ .90	.0197	25	6.5
.55	.90	.0216	27	6.5
.6	.90	.0236	30	9.5
.65	.90	.0256	31	11.
.7	.90	.0276	34	14.5
.75	.90	.0296	35	14.5
.8	.90	.0315	37	14.5
.85	.90	.0335	37	14.5
.9	.90	.0354	38	16.
.95	.90	.0374	38	16.
1.	.90	.0394	39	17.5
1.05	.95	.0413	39	17.5
1.1	.95	.0433	43	20.
1.15	.95	.0453	43	20.
1.2	.95	.0472	44	20.5
1.25	.95	.0492	44	20.5
1.3	.95	.0512	44	20.5
1.35	.95	.0532	45	21.5
1.4	.95	.0551	46	21.5
1.45	.95	.0571	46	21.5
1.5	.95	.0591	46	21.5
1.55	1.10	.0610	48	22.
1.6	1.10	.0630	48	22.
1.65	1.10	.0650	49	24.
1.7	1.10	.0669	49	24.
1.75	1.10	.0689	49	24.
1.8	1.10	.0709	51	25.5
1.85	1.10	.0728	51	25.5
1.9	1.10	.0748	52	27.
1.95	1.10	.0768	53	28.
2.	1.10	.0787	53	28.
2.05	1.25	.0807	54	28.5
2.1	1.25	.0827	56	30.
2.15	1.25	.0846	56	30.
2.2	1.25	.0866	57	31.
2.25	1.25	.0886	57	31.
2.3	1.25	.0905	58	31.5
2.35	1.25	.0925	58	31.5
2.4	1.25	.0945	59	33.5
2.45	1.25	.0965	59	33.5
2.5	1.25	.0984	60	34.
2.6	1.40	.1024	63	36.5
2.7	1.40	.1063	65	38.
2.8	1.40	.1102	67	39.5
2.9	1.40	.1142	69	41.5
3.	1.40	.1181	70	43.
3.1	1.55	.1220	70	43.
3.2	1.55	.1260	71	43.5
3.3	1.55	.1299	71	43.5
3.4	1.55	.1339	72	44.5
3.5	1.55	.1378	73	46.
3.6	1.75	.1417	73	46.
3.7	1.75	.1457	74	47.
3.8	1.75	.1496	76	48.5
3.9	1.75	.1535	78	50.
4.	1.75	.1575	79	51.
4.1	1.95	.1614	81	52.5
4.2	1.95	.1653	83	53.
4.3	1.95	.1693	84	54.
4.4	1.95	.1732	85	55.
4.5	1.95	.1772	86	55.5
4.6	$2.25	.1811	88	57.
4.7	2.25	.1850	89	58.
4.8	2.25	.1890	90	58.5
4.9	2.25	.1929	92	60.5
5.	2.25	.1968	93	62.
5.1	2.35	.2008	95	63.5
5.2	2.35	.2047	96	64.5
5.3	2.35	.2087	98	66.
5.4	2.35	.2126	99	66.5
5.5	2.35	.2165	100	66.5
5.6	2.90	.2205	100	66.5
5.7	2.90	.2244	100	66.5
5.8	2.90	.2283	102	67.5
5.9	2.90	.2323	102	67.5
6.	2.90	.2362	102	67.5
6.1	3.15	.2402	102	67.5
6.2	3.15	.2441	102	67.5
6.3	3.15	.2480	102	67.5
6.4	3.15	.2520	102	67.5
6.5	3.15	.2559	105	73.
6.6	3.65	.2598	105	73.
6.7	3.65	.2638	105	73.
6.8	3.65	.2677	108	76.
6.9	3.65	.2716	108	76.
7.	3.65	.2756	108	76.
7.1	3.90	.2795	108	76.
7.2	3.90	.2835	108	76.
7.3	3.90	.2874	108	76.
7.4	3.90	.2913	108	76.
7.5	3.90	.2953	111	78.5
7.6	4.20	.2992	111	78.5
7.7	4.20	.3031	111	78.5
7.8	4.20	.3071	111	78.5
7.9	4.20	.3110	111	78.5
8.	4.20	.3150	114	81.
8.1	4.80	.3189	114	81.
8.2	4.80	.3228	117	84.
8.3	4.80	.3268	117	84.
8.4	4.80	.3307	117	84.
8.5	4.80	.3346	117	84.
8.6	5.10	.3386	121	87.5
8.7	5.10	.3425	121	87.5
8.8	5.10	.3465	121	87.5
8.9	5.10	.3504	121	87.5
9.	5.10	.3543	124	89.5
9.1	5.40	.3583	124	89.5
9.2	5.40	.3622	124	89.5
9.3	5.40	.3661	124	89.5
9.4	5.40	.3701	124	89.5
9.5	5.40	.3740	127	93.
9.6	5.70	.3779	127	93.
9.7	5.70	.3819	127	93.
9.8	5.70	.3858	130	95.
9.9	5.70	.3898	130	95.
10.	5.70	.3937	130	95.
10.5	6.00	.4134	133	97.5
11.	6.80	.4331	140	104.
11.5	7.20	.4528	143	106.5
12.	7.50	.4724	146	108.5
12.5	8.00	.4921	162	111.
13.	10.00	.5118	167	114.5

For prices of these Drills in sets see page 48

Twist Drills

Carbon Steel



Morse No. 109½ E, Taper Square Shanks

Fitting Ratchets. Metric Sizes

Small Shank or No. 1—Size of Shank 9½ x 16 x 38 mm. Large Shank or No. 2—Size of Shank, 12½ x 19 x 44½ mm.

No. 1 or Small Size Shank always furnished unless otherwise specified

When ordering Taper Square Shank Drills for Packer Ratchet, please state number of ratchet and name of manufacturer

Diameter MM.	Each	Small Shank Whole Length MM.	Small Shank Twist Cut MM.	Large Shank Whole Length MM.	Large Shank Twist Cut MM.	Diameter in Decimals of 1 Inch
3	$ .85	106	43	113	43	.1181
3½	.85	110	46	116	46	.1378
4	.90	113	51	119	51	.1575
4½	.90	119	56	125	56	.1772
5	.95	119	62	125	62	.1968
5½	1.00	122	67	129	67	.2165
6	1.00	124	67	130	67	.2362
6½	1.00	127	65	127	59	.2559
7	1.05	127	65	127	59	.2756
7½	1.10	127	65	127	59	.2953
8	1.10	127	65	127	59	.3150
8½	1.15	127	70	127	63	.3346
9	1.20	152	95	152	89	.3543
9½	1.20	152	95	152	89	.3740
10	1.25	159	102	159	95	.3937
10½	1.25	159	102	159	95	.4134
11	1.25	159	102	159	95	.4331
11½	1.30	159	102	159	95	.4528
12	1.30	159	102	159	95	.4724
12½	1.30	165	108	165	102	.4921
13	1.35	165	108	165	102	.5118
13½	1.35	165	108	165	102	.5315
14	1.35	165	108	165	102	.5512
14½	1.40	165	108	165	102	.5709
15	1.40	165	108	165	102	.5905
15½	1.40	165	108	165	102	.6102
16	1.45	165	108	165	102	.6299
16½	1.45	165	106	165	102	.6496
17	1.45	165	106	165	102	.6693
17½	1.50	165	106	165	102	.6890
18	1.50	165	106	165	102	.7087
18½	1.55	165	106	165	102	.7283
19	1.55	165	106	165	102	.7480
19½	$1.65	171	113	171	106	.7677
20	1.65	171	113	171	106	.7874
20½	1.75	178	119	178	113	.8071
21	1.85	184	125	184	119	.8268
21½	1.95	184	125	184	119	.8465
22	2.05	190	132	190	125	.8661
22½	2.15	197	138	197	132	.8858
23	2.20	197	138	197	132	.9055
23½	2.25	203	144	203	138	.9252
24	2.30	203	144	203	138	.9449
24½	2.40	210	151	210	144	.9646
25	2.50	216	157	216	151	.9842
25½	2.60	216	157	216	151	1.0039
26	2.70	222	164	222	157	1.0236
26½	2.75	229	170	229	164	1.0433
27	2.85	229	170	229	164	1.0630
27½	3.00	229	170	229	164	1.0827
28	3.05	229	170	229	164	1.1024
28½	3.10	229	170	229	164	1.1220
29	3.25	229	170	229	164	1.1417
29½	3.30	229	170	229	164	1.1614
30	3.35	229	170	229	164	1.1811
30½	3.40	229	170	229	164	1.2008
31	3.50	229	170	229	164	1.2205
31½	3.65	229	170	229	164	1.2402
32	3.70	229	170	229	164	1.2598
33	3.90	229	170	229	164	1.2992
34	4.05	229	170	229	164	1.3386
35	4.20	229	170	229	164	1.3779
36	4.45	229	170	229	164	1.4173
37	4.65	229	170	229	164	1.4567
38	4.80	229	170	229	164	1.4961

Morse No. 109½, Bit Stock. For Metal or Wood. Metric Sizes

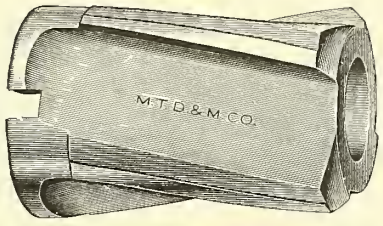
For illustration see No. 109, page 33

Diameter MM.	Carbon Per Dozen	Diameter in Decimals of 1 Inch	Whole Length MM.	Twist Cut MM.
1	$1.40	.0394	76	16
1½	1.50	.0591	83	21
2	1.65	.0787	87	28
2½	1.90	.0984	95	34
3	2.10	.1181	103	43
3½	2.35	.1378	94	46
4	2.60	.1575	100	51
4½	3.10	.1772	106	56
5	3.35	.1969	113	62
5½	3.60	.2165	119	67
6	3.85	.2362	132	81
6½	4.10	.2559	132	81
7	4.70	.2756	137	86
7½	5.05	.2953	140	89
8	5.40	.3150	140	89
8½	6.30	.3446	149	98
9	6.75	.3543	149	98
9½	7.20	.3740	149	98
10	8.00	.3937	149	92
10½	8.40	.4134	159	102
11	8.80	.4331	159	102
11½	9.60	.4528	168	111
12	9.95	.4724	168	111
12½	10.30	.4921	171	113
13	11.00	.5118	190	132
13½	$12.70	.5315	190	132
14	14.35	.5512	190	132
14½	14.95	.5709	190	132
15	15.55	.5905	190	132
15½	15.85	.6102	190	132
16	16.15	.6299	190	129
16½	17.35	.6496	190	129
17	17.95	.6693	190	129
17½	18.55	.6890	190	129
18	19.15	.7087	190	129
18½	19.45	.7283	190	129
19	19.75	.7480	190	127
19½	20.35	.7677	190	127
20	20.95	.7874	190	127
20½	21.55	.8071	190	127
21	22.75	.8268	190	127
21½	23.05	.8465	190	127
22	23.35	.8661	190	127
22½	23.95	.8858	190	127
23	24.55	.9055	190	127
23½	25.15	.9252	190	127
24	25.75	.9449	190	125
24½	26.95	.9646	190	125
25	28.15	.9842	190	125

These Bit Stock Drills will fit any brace in the market, and will drill steel, iron or other metals as well as wood. They are not injured by contact with screws or nails and will bore straight in any kind of wood without splitting it.

Shell Drills

Carbon Steel



Angle of Spiral, 15 degrees

Morse No. 102 H, with Taper Holes

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Size Hole Inches
1 11/16	$3.80	3 1/2	2 3/4	1
1 3/4	4.10	3 1/2	2 3/4	1
1 13/16	4.40	3 1/2	2 3/4	1
1 7/8	4.70	3 1/2	2 3/4	1
1 15/16	5.00	3 1/2	2 3/4	1
2	5.20	3 1/2	2 3/4	1
2 1/16	5.40	3 3/4	3	1 1/4
2 1/8	5.60	3 3/4	3	1 1/4
2 3/16	5.80	3 3/4	3	1 1/4
2 1/4	6.00	3 3/4	3	1 1/4
2 5/16	6.20	3 3/4	3	1 1/4
2 3/8	6.40	3 3/4	3	1 1/4
2 7/16	6.60	3 3/4	3	1 1/4
2 1/2	6.80	3 3/4	3	1 1/4
2 9/16	7.00	4	3 1/4	1 1/2
2 5/8	7.30	4	3 1/4	1 1/2
2 11/16	7.60	4	3 1/4	1 1/2
2 3/4	8.00	4	3 1/4	1 1/2
2 13/16	8.40	4	3 1/4	1 1/2
2 7/8	8.80	4	3 1/4	1 1/2
2 15/16	9.20	4	3 1/4	1 1/2
3	9.60	4	3 1/4	1 1/2
3 1/16	9.90	4 1/2	3 5/8	1 3/4
3 1/8	10.20	4 1/2	3 5/8	1 3/4
3 3/16	10.60	4 1/2	3 5/8	1 3/4
3 1/4	11.00	4 1/2	3 5/8	1 3/4
3 5/16	11.50	4 1/2	3 5/8	1 3/4
3 3/8	12.00	4 1/2	3 5/8	1 3/4
3 7/16	12.50	4 1/2	3 5/8	1 3/4
3 1/2	13.00	4 1/2	3 5/8	1 3/4
3 9/16	13.50	5	4	2
3 5/8	14.00	5	4	2
3 11/16	14.50	5	4	2
3 3/4	15.00	5	4	2
3 13/16	15.50	5	4	2
3 7/8	16.00	5	4	2
3 15/16	17.00	5	4	2
4	18.00	5	4	2
4 1/16	18.30	5 1/2	4 3/8	2 1/4
4 1/8	18.60	5 1/2	4 3/8	2 1/4
4 3/16	19.00	5 1/2	4 3/8	2 1/4
4 1/4	19.40	5 1/2	4 3/8	2 1/4
4 5/16	19.80	5 1/2	4 3/8	2 1/4
4 3/8	20.20	5 1/2	4 3/8	2 1/4
4 7/16	20.60	5 1/2	4 3/8	2 1/4
4 1/2	21.00	5 1/2	4 3/8	2 1/4
4 9/16	21.60	6	4 3/4	2 1/2
4 5/8	22.20	6	4 3/4	2 1/2
4 11/16	22.80	6	4 3/4	2 1/2
4 3/4	23.40	6	4 3/4	2 1/2
4 13/16	24.00	6	4 3/4	2 1/2
4 7/8	24.60	6	4 3/4	2 1/2
4 15/16	25.20	6	4 3/4	2 1/2
5	26.00	6	4 3/4	2 1/2

Shell Drills 1 1/16 inches to and including 3 1/2 inches have four flutes; 3 9/16 inches to and including 5 inches have six flutes.

Shell Drills take the same Arbors as regular Shell Reamers. These Arbors are illustrated on pages 85 and 86.

Morse No. 102 1/2 H, with Straight Holes

Diameter Inches	Each	Whole Length Inches	Diameter of Hole Inch
1 1/16	$1.80	2 5/8	1/2
1 1/8	1.90	2 5/8	1/2
1 3/16	2.00	2 5/8	1/2
1 1/4	2.20	2 5/8	1/2
1 5/16	2.40	2 5/8	1/2
1 3/8	2.60	2 3/4	5/8
1 7/16	2.80	2 3/4	5/8
1 1/2	3.00	2 3/4	5/8
1 9/16	3.20	2 3/4	5/8
1 5/8	3.50	2 3/4	5/8
1 11/16	3.80	2 3/4	5/8
1 3/4	4.10	2 3/4	5/8
1 13/16	4.40	2 3/4	5/8
1 7/8	4.70	2 3/4	3/4
1 15/16	5.00	2 3/4	3/4
2	5.20	2 3/4	3/4
2 1/16	5.40	2 3/4	3/4
2 1/8	5.60	2 3/4	3/4
2 3/16	5.80	2 3/4	3/4
2 1/4	6.00	2 3/4	3/4
2 5/16	6.20	2 3/4	3/4
2 3/8	6.40	2 3/4	3/4
2 7/16	6.60	2 3/4	3/4
2 1/2	6.80	3	1
2 9/16	7.00	3	1
2 5/8	7.30	3	1
2 11/16	7.60	3	1
2 3/4	8.00	3	1
2 13/16	8.40	3	1
2 7/8	8.80	3	1
2 15/16	9.20	3	1
3	9.60	3	1

Diameter Inches	Each	Whole Length Inches	Diameter of Hole Inches
3 1/16	$9.90	3	1
3 1/8	10.20	3	1
3 3/16	10.60	3	1
3 1/4	11.00	3 1/4	1 1/4
3 5/16	11.50	3 1/4	1 1/4
3 3/8	12.00	3 1/4	1 1/4
3 7/16	12.50	3 1/4	1 1/4
3 1/2	13.00	3 1/4	1 1/4
3 9/16	13.50	3 1/4	1 1/4
3 5/8	14.00	3 1/4	1 1/4
3 11/16	14.50	3 1/4	1 1/4
3 3/4	15.00	3 5/8	1 1/2
3 13/16	15.50	3 5/8	1 1/2
3 7/8	16.00	3 5/8	1 1/2
3 15/16	17.00	3 5/8	1 1/2
4	18.00	3 5/8	1 1/2
4 1/16	18.30	3 5/8	1 1/2
4 1/8	18.60	3 5/8	1 1/2
4 3/16	19.00	3 5/8	1 1/2
4 1/4	19.40	4	2
4 5/16	19.80	4	2
4 3/8	20.20	4	2
4 7/16	20.60	4	2
4 1/2	21.00	4	2
4 9/16	21.60	4	2
4 5/8	22.20	4	2
4 11/16	22.80	4	2
4 3/4	23.40	4	2
4 13/16	24.00	4	2
4 7/8	24.60	4	2
4 15/16	25.20	4	2
5	26.00	4	2

These Drills are made .010 under size, and are intended to be used as a Roughing Tool in a cored or drilled hole.

For Arbors fitting these Drills see pages 85 and 86.

For Shell Reamers used in connection with these Drills, see Nos. 117C, page 66, and 120M A, page 80.

Suggestions for Ordering Drills

Regular Drills—Always order by catalogue number.

Special Drills—Refer to the catalogue number for general style of tool required, giving also the following information:

Special Straight Shank Drills—Give length over all and length of twist cut.

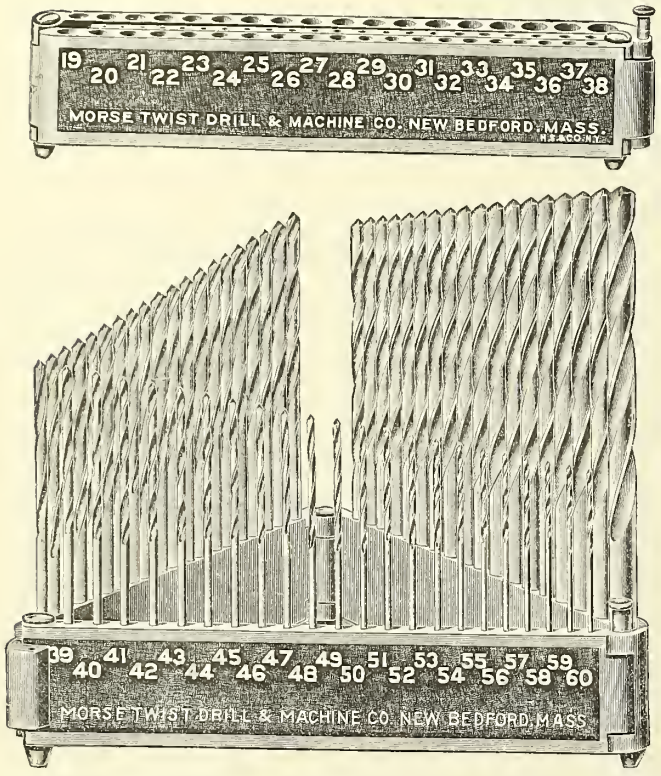
Special Morse Taper Shank Drills—Give length over all and length of twist cut. If a special taper shank is required, give length of shank and diameter at each end. If the shank has a tang give thickness and length. If no tang so state on the order.

Sets of Drills

In Holders and Stands

Morse Straight Shank Drills

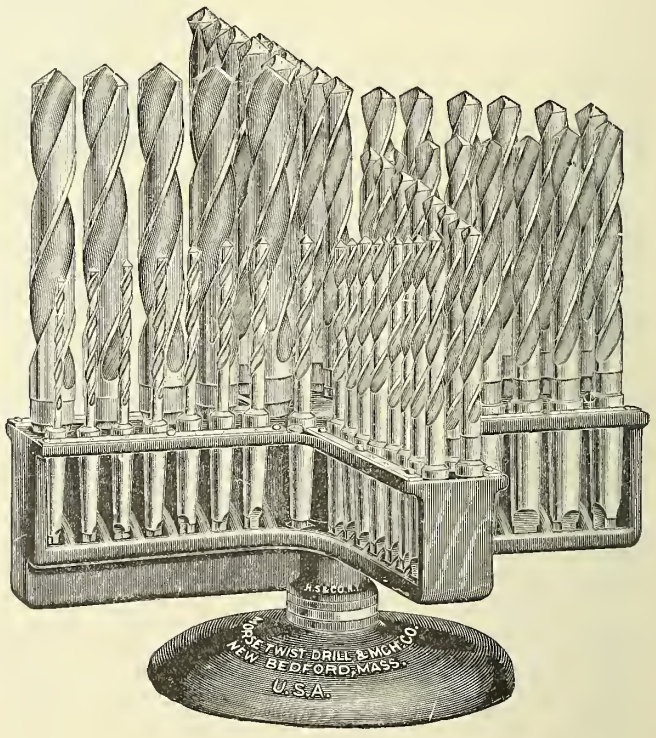
In Folding or Portable Holders



		Per Set
No. 5 B.	Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths, Style No. 105	$12.50
No. 7 B.	Set Drills, from No. 60 to $\frac{3}{8}$ inch, Style Nos. 105 and 107	12.50
No. 8 B.	Set Drills, Wire Drill Gauge from No. 1 to 60, Style No. 107	9.75
No. 15 B.	Set Drills, Straight Shanks, A to Z, Style No. 106	12.50
No. 18 B.	Set Drills, Straight Shanks, .5 mm. to 6 mm. by $\frac{1}{10}$ mm., Style No. 105 A	9.70
No. 19 B.	Set Drills, Straight Shanks, 1 mm. to 13 mm. by $\frac{1}{2}$ mm., Style No. 105 A	10.85
Holders without Drills, for sets 8B and 18B		1.00
Holders without Drills, for sets 5B, 7B, 15B and 19B		1.25

Morse Taper Shank Drills

In Revolving Stands



The Revolving Head in which the Drills are placed is mounted on ball bearings.

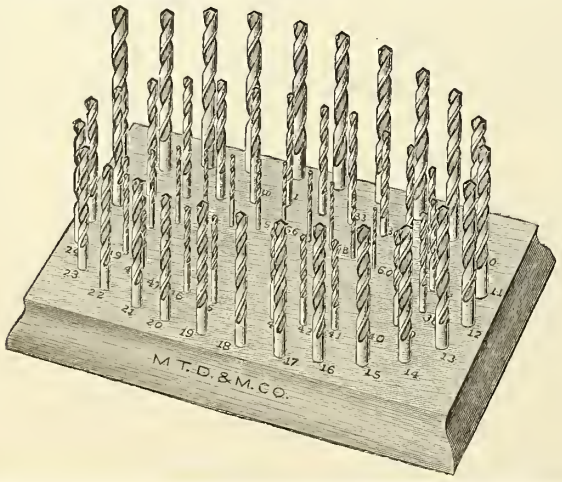
Holds Taper Shank Drills from $\frac{3}{16}$ to 1 inch by 64ths, Style No. 102.

Dimensions of Stand 14 x 14 x 6¼ inches.

Height including Drills 14 inches.

Set of Drills including Stand	$100.00
Stand without Drills	7.50

Morse Straight Shank Drills in Wooden Blocks

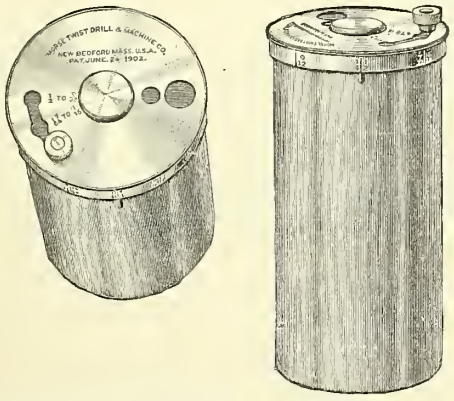


Mounted as Shown

		Per Set
No. 5.	Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths, Style No. 105	$10.00
No. 6.	Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 32nds, Style No. 105	5.40
No. 7.	Set Drills, from No. 60 to $\frac{3}{8}$ inch (65 drills) Style Nos. 105 and 107	9.90
No. 8.	Set Drills, Wire Drill Gauge, from No. 1 to 60, Style No. 107	8.10
No. 9.	Half Set Drills, alternate numbers from 1 to 59, Style No. 107	4.30
No. 15.	Set Drills, Straight Shanks, A to Z, Style No. 106	10.00
No. 16.	Set Drills, Straight Shanks, No. 1 to 70, Style No. 107	8.85
No. 17.	Set Drills, Straight Shanks, No. 1 to 80, Style 107	9.70
No. 18.	Set Drills, Straight Shanks, .5 mm. to 6 mm. by $\frac{1}{10}$ mm., Style No. 105A	8.10
No. 19.	Set Drills, Straight Shanks, 1 mm. to 13 mm. by $\frac{1}{2}$ mm., Style No. 105A	8.70
Block without Drills for sets Nos. 5, 6, 7, 8, 9, 15		.35
Block without Drills for sets Nos. 16, 17, 18		.50
Block without Drills for set No. 19		.45

Sets of Drills

Morse Straight Shank Drills in Indexed Cases



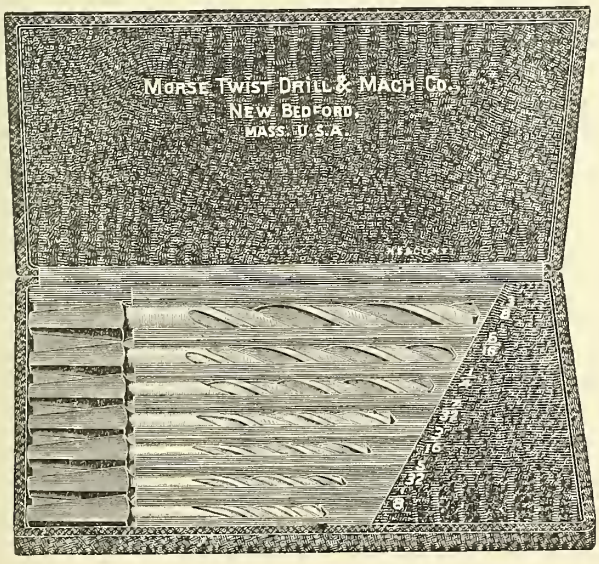
		Per Set
No. 5A.	Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths, Style No. 105	$11.50
No. 6A.	Set Drills, Straight Shanks, $\frac{1}{16}$ to $\frac{1}{2}$ inch by 32nds, Style No. 105	6.90
No. 7A.	Set Drills, from No. 60 to $\frac{3}{8}$ inch, Styles Nos. 105 and 107	11.40
No. 8A.	Set Drills, Wire Drill Gauge, from No. 1 to 60, Style No. 107	9.60
No. 9A.	Half Set Drills, alternate numbers from 1 to 59, Style No. 107	5.80
No. 13A.	Set Bit Stock Drills, $\frac{1}{16}$ to $\frac{1}{4}$ inch by 32nds, $\frac{5}{16}$ to $\frac{3}{8}$ inch by 16ths, Style 109	4.10

The Drills in Patented Indexed Case, as illustrated above, are contained in holes arranged in concentric circles in the block. Over them is a swinging cover with holes to match each circle. The swinging cover can be moved by the small knob shown, so that its holes will register with the holes in the outer cover or cap. Around the edge of the cap are stamped the sizes of the various drills. The cap is turned to bring any size in line with an index mark and by inverting the case the selected drill will drop out.

Morse Indexed Cases Without Drills

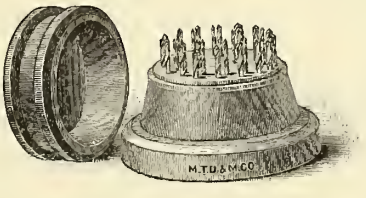
		Each
No. 5A.	Holds Straight Shank Drills $\frac{1}{16}$ to $\frac{1}{2}$ inch by 64ths	$1.25
No. 6A.	Holds Straight Shank Drills $\frac{1}{16}$ to $\frac{1}{2}$ inch by 32nds.	1.25
No. 7A.	Holds Straight Shank Drills from No. 60 to $\frac{3}{8}$ inch	1.25
No. 8A.	Holds Wire Gauge Drills from No. 1 to 60	1.25
No. 9A.	Holds Half Set Drills, alternate numbers from 1 to 59.	1.25
No. 13A.	Holds Bit Stock Drills $\frac{1}{16}$ to $\frac{1}{4}$ by 32nds, $\frac{5}{16}$ to $\frac{3}{8}$ by 16ths	1.25

Morse Bit Stock Drills in Leatherette Cases



		Per Set
No. 25.	Set Bit Stock Drills, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$ inch, in case, Style No. 109	$2.65

Morse Jewelers Drills in Mahogany Cases



		Per Set
No. 10.	Jewelers Set of 36 Drills, No. 30 ($\frac{1}{8}$ inch) to No. 65 Wire Drill Gauge	$4.25
	Case without Drills	.75

Taper Shank Drills



Morse No. 102

		Per Set	
No. 1.	Set of Taper Shank Drills, $\frac{1}{4}$ to 1 inch varying by 16ths	$20.00	
No. 2.	Set of Taper Shank Drills, $\frac{3}{8}$ to $1\frac{1}{4}$ inches varying by 16ths	34.50	
No. 3.	Set of Taper Shank Drills, $\frac{3}{8}$ to $\frac{3}{4}$ inch by 32nds, $\frac{13}{16}$ to $1\frac{1}{4}$ inches by 16ths	42.00	
No. 4.	Set of Taper Shank Drills, $\frac{3}{8}$ to $\frac{3}{4}$ inch by 32nds, $\frac{13}{16}$ to $1\frac{1}{2}$ inches to 16ths,	$64.00	
	$1\frac{9}{16}$ to 2 inches by 16ths	67.00	131.00
No. 11.	Set of Taper Shank Drills, $\frac{3}{8}$ to $1\frac{1}{2}$ in. by 32nds,	109.85	
	$1\frac{17}{32}$ to 2 inches by 32nds	132.70	242.55

Note—Prices of Sets of Straight Shank Taper Length Drills will be the same as above list.

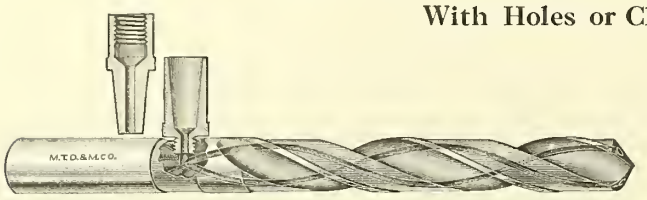
Morse Bit Stock Drills in Wooden Cases



		Per Set
No. 14.	Set of Bit Stock Drills, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{5}{16}$ $\frac{3}{8}$ inch, in case	$2.75

Information as to the Use of Drills

With Holes or Channels for Lubricants



Various devices have been used to convey the lubricant to the points, the early methods providing for an inserted tube. The latest improvements, however, provide holes through the solid metal, drills of this style being made solely by the Morse Twist Drill & Machine Co., under patents owned by it, dated September 7, 1897.

All Oil Drills 2½ inches and smaller in diameter have holes through the solid metal, while with sizes larger than 2½ inches it has been found advisable to mill the oil channels and cover them. These Drills are not made smaller than $\frac{23}{64}$ diameter except at customer's risk. Sizes $\frac{15}{32}$ and smaller are furnished with one oil hole only. They can be furnished with two if especially ordered, but at customer's risk.

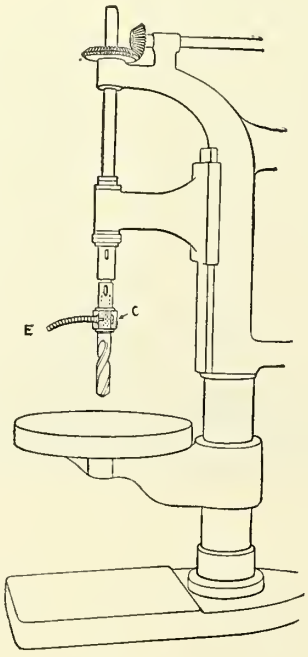
These Drills have holes through the solid metal and have great advantages over any other Drills devised for conveying lubricants as well as air to the points. Air is sometimes used for blowing out the chips and keeping the drill cool.

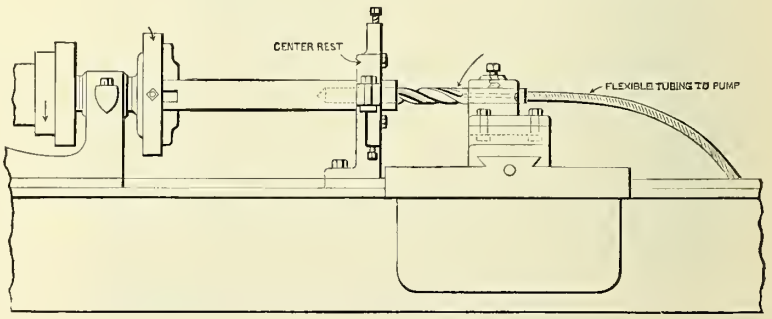
Cut showing method of supplying a Drill with oil, the Drill revolving.

For Drills with oil holes of this style see No. 102C, page 51.

For Sockets of this style see Nos. 100D and 100E, page 55.

A flexible tube E conveys oil from the oil pump to the chuck C, which admits of passage of oil to the point of the Drill.

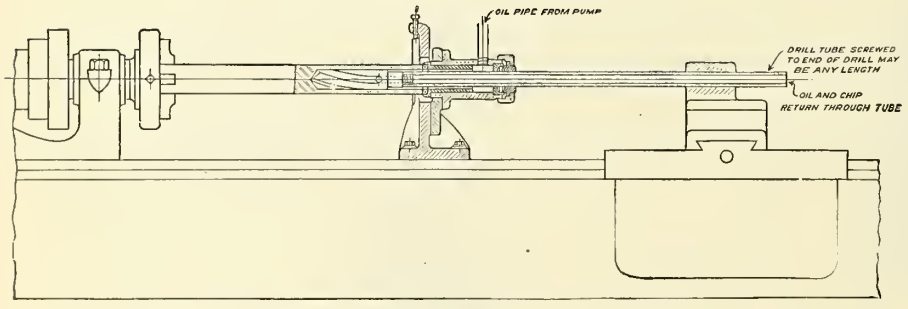




Cut showing method of applying a Drill with oil holes; the Drill not to revolve.

The Drills are furnished with Straight or Taper Shanks, as desired.

For Drills with oil holes of this style see Nos. 102B, 104B, 104D, 104E, 104K and 104L on pages 51, 52 and 53.

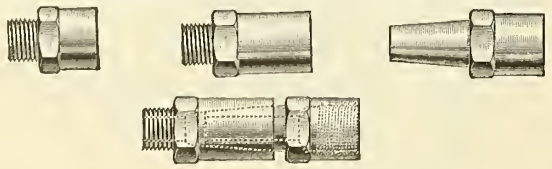


Cut showing manner of applying a Hollow Drill for drilling deep holes.

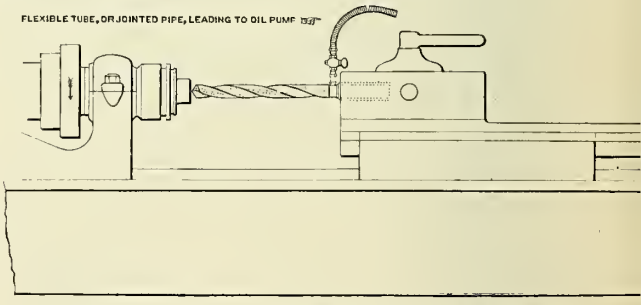
For Hollow Drills, see No. 114D, on page 53.

In using the Hollow Drill the hole is first to be started by means of a short Drill of the size of the hole desired, and drilled to a depth equal to the length of the body of the Hollow Drill afterwards to be employed. The body of the Hollow Drill acts as a stuffing, compelling the oil to follow the grooves and the chips to flow out through the hollow shank.

Cups For Use in Oil Drills



In ordering new cups give size of drill in which they are to be used.



Cut showing a Drill with oil holes as used in a Turret Head Lathe, the Drill not to revolve.

The Drills are furnished with Straight or Taper Shanks, as desired.

For Drills with oil holes of this style, see Nos. 102A and 104A on pages 51 and 52.

Oil Drills of Special Lengths



Morse No. 104C, with Straight Shanks



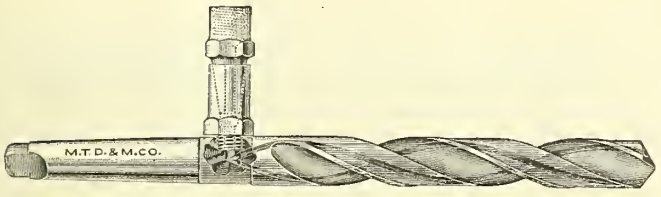
Morse No. 102D, with Taper Shanks

These cuts are a reproduction on a small scale of Drills which were actually made and used with eminent satisfaction, the proportion of the cuts to the drills being correct. The actual dimensions of the drills were, diameter 3½ inches; whole length 52 inches; length of shank $8\frac{5}{16}$ inches.

Oil Twist Drills

Carbon Steel

With Holes Through Solid Metal for Lubricant



Morse No. 102A, with Taper Shanks



Morse No. 102B, with Taper Shanks



Morse No. 102C, with Taper Shanks

Drills $\frac{15}{32}$ and smaller are furnished with one oil hole only. They can be furnished with two if ordered, but at customer's risk
These Drills also furnished in high speed steel. Prices on application

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches No. 102A	Twist Cut Inches Nos. 102B & C	Morse Taper Shank
3/8	$3.00	6 3/4	3 5/16	3 7/16	No. 1
25/64	3.15	7	3 9/16	3 11/16	
13/32	3.15	7	3 9/16	3 11/16	
27/64	3.30	7 1/4	3 13/16	3 15/16	
7/16	3.30	7 1/4	3 13/16	3 15/16	
29/64	3.85	7 1/2	4 1/16	4 3/16	
15/32	3.85	7 1/2	4 1/16	4 3/16	
31/64	4.00	7 3/4	4 5/16	4 7/16	
1/2	4.00	7 3/4	4 5/16	4 7/16	
33/64	4.15	8	4 9/16	4 11/16	
17/32	4.15	8	4 9/16	4 11/16	
35/64	4.30	8 1/4	4 13/16	4 15/16	
9/16	4.30	8 1/4	4 13/16	4 15/16	
37/64	4.50	8 1/2	4 1/2	4 5/8	No. 2
19/32	4.50	8 1/2	4 1/2	4 5/8	
39/64	4.70	8 3/4	4 3/4	4 7/8	
5/8	4.70	8 3/4	4 3/4	4 7/8	
41/64	4.80	9	4 7/8	5 1/8	
21/32	4.80	9	4 7/8	5 1/8	
43/64	4.95	9 1/4	5 1/8	5 3/8	
11/16	4.95	9 1/4	5 1/8	5 3/8	
45/64	5.10	9 1/2	5 3/8	5 5/8	
23/32	5.10	9 1/2	5 3/8	5 5/8	
47/64	5.20	9 3/4	5 5/8	5 7/8	
3/4	5.20	9 3/4	5 5/8	5 7/8	
49/64	5.35	9 7/8	5 3/4	6	
25/32	5.35	9 7/8	5 3/4	6	
51/64	5.50	10	5 7/8	6 1/8	
13/16	5.50	10	5 7/8	6 1/8	
53/64	5.70	10 1/4	6 1/8	6 3/8	
27/32	5.70	10 1/4	6 1/8	6 3/8	
55/64	5.90	10 1/2	6 3/8	6 5/8	
7/8	5.90	10 1/2	6 3/8	6 5/8	
57/64	6.05	10 5/8	6 1/2	6 3/4	
29/32	6.05	10 5/8	6 1/2	6 3/4	
59/64	6.20	10 3/4	5 7/8	6 1/8	No. 3
15/16	6.20	10 3/4	5 7/8	6 1/8	
61/64	6.35	10 7/8	6	6 1/4	
31/32	6.35	10 7/8	6	6 1/4	
63/64	6.50	11	6 1/8	6 3/8	
1	6.50	11	6 1/8	6 3/8	
1 1/64	6.80	11 1/8	6 1/4	6 1/2	
1 1/32	6.80	11 1/8	6 1/4	6 1/2	
1 3/64	7.10	11 1/4	6 3/8	6 5/8	
1 1/16	7.10	11 1/4	6 3/8	6 5/8	
1 5/64	7.45	11 1/2	6 5/8	6 7/8	
1 3/32	7.45	11 1/2	6 5/8	6 7/8	
1 7/64	7.80	11 3/4	6 7/8	7 1/8	
1 1/8	7.80	11 3/4	6 7/8	7 1/8	
1 9/64	8.00	11 7/8	7	7 1/4	
1 5/32	8.00	11 7/8	7	7 1/4	
1 11/64	8.20	12	7 1/8	7 3/8	

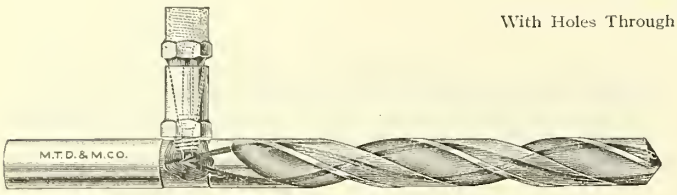
Diameter Inches	Each	Whole Length Inches	Twist Cut Inches No. 102A	Twist Cut Inches Nos. 102B & C	Morse Taper Shank
1 3/16	$8.20	12	7 1/8	7 3/8	No. 3
1 13/64	8.40	12 1/8	7 1/4	7 1/2	
1 7/32	8.40	12 1/8	7 1/4	7 1/2	
1 15/64	8.70	12 1/2	7 5/8	7 7/8	
1 1/4	8.70	12 1/2	7 5/8	7 7/8	
1 17/64	9.40	14 1/8	8 1/4	8 1/2	No. 4
1 9/32	9.40	14 1/8	8 1/4	8 1/2	
1 19/64	10.15	14 1/4	8 3/8	8 5/8	
1 5/16	10.15	14 1/4	8 3/8	8 5/8	
1 21/64	10.95	14 3/8	8 1/2	8 3/4	
1 11/32	10.95	14 3/8	8 1/2	8 3/4	
1 23/64	11.80	14 1/2	8 5/8	8 7/8	
1 3/8	11.80	14 1/2	8 5/8	8 7/8	
1 25/64	12.30	14 5/8	8 5/8	9	
1 13/32	12.30	14 5/8	8 5/8	9	
1 27/64	12.85	14 3/4	8 3/4	9 1/8	
1 7/16	12.85	14 3/4	8 3/4	9 1/8	
1 29/64	13.35	14 7/8	8 7/8	9 1/4	
1 15/32	13.35	14 7/8	8 7/8	9 1/4	
1 31/64	14.00	15	9	9 3/8	
1 1/2	14.00	15	9	9 3/8	
1 33/64	14.20	15	9	9 3/8	
1 17/32	14.20	15	9	9 3/8	
1 35/64	14.40	15 1/4	9 1/4	9 5/8	
1 9/16	14.40	15 1/4	9 1/4	9 5/8	
1 37/64	14.70	15 1/4	9 1/4	9 5/8	
1 19/32	14.70	15 1/4	9 1/4	9 5/8	
1 39/64	15.00	15 1/2	9 1/2	9 7/8	
1 5/8	15.00	15 1/2	9 1/2	9 7/8	
1 41/64	15.35	15 1/2	9 1/2	9 7/8	
1 21/32	15.35	15 1/2	9 1/2	9 7/8	
1 43/64	15.70	15 3/4	9 3/4	10 1/8	
1 11/16	15.70	15 3/4	9 3/4	10 1/8	
1 45/64	16.10	15 3/4	9 3/4	10 1/8	
1 23/32	16.10	15 3/4	9 5/16	9 11/16	
1 47/64	16.50	16	9 9/16	9 15/16	
1 3/4	16.50	16	9 9/16	9 15/16	
1 49/64	16.75	16	9 9/16	9 15/16	
1 25/32	16.75	16	9 9/16	9 15/16	
1 51/64	17.00	16 1/4	9 13/16	10 3/16	
1 13/16	17.00	16 1/4	9 3/4	10 1/8	
1 53/64	17.25	16 1/4	9 3/4	10 1/8	
1 27/32	17.25	16 1/4	9 3/4	10 1/8	
1 55/64	17.50	16 1/2	10	10 3/8	
1 7/8	17.50	16 1/2	10	10 3/8	
1 57/64	17.85	16 1/2	10	10 3/8	
1 29/32	17.85	16 1/2	10	10 3/8	
1 59/64	18.20	16 1/2	10	10 3/8	
1 15/16	18.20	16 1/2	9 7/8	10 1/4	
1 61/64	18.60	16 1/2	9 7/8	10 1/4	
1 31/32	18.60	16 1/2	9 7/8	10 1/4	
1 63/64	19.00	16 1/2	9 7/8	10 1/4	
2	19.00	16 1/2	9 7/8	10 1/4	

For Sockets for these Oil Drills see page 55. For information in regard to manner of use see page 50

Oil Twist Drills

Carbon Steel

With Holes Through Solid Metal For Lubricant



Morse No. 104 A, with Straight Shanks



Morse No. 104 D, with Straight Shanks

These Drills also furnished in High Speed Steel

Prices on Application



Morse No. 104 B, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches
3/8	$3.00	6 3/4	4 1/4
25/64	3.15	7	4 3/8
13/32	3.15	7	4 3/8
27/64	3.30	7 1/4	4 5/8
7/16	3.30	7 1/4	4 5/8
29/64	3.85	7 1/2	4 7/8
*15/32	3.85	7 1/2	4 7/8
31/64	4.00	7 3/4	5
1/2	4.00	7 3/4	5
33/64	4.15	8	5 1/4
17/32	4.15	8	5 1/4
35/64	4.30	8 1/4	5 3/8
9/16	4.30	8 1/4	5 3/8
37/64	4.50	8 1/2	5 5/8
19/32	4.50	8 1/2	5 5/8
39/64	4.70	8 3/4	5 3/4
5/8	4.70	8 3/4	5 3/4
41/64	4.80	9	5 7/8
21/32	4.80	9	5 7/8
43/64	4.95	9 1/4	6
11/16	4.95	9 1/4	6
45/64	5.10	9 1/2	6 3/16
23/32	5.10	9 1/2	6 3/16
47/64	5.20	9 3/4	6 3/8
3/4	5.20	9 3/4	6 3/8
49/64	5.35	9 7/8	6 1/2
25/32	5.35	9 7/8	6 1/2
51/64	5.50	10	6 5/8
13/16	5.50	10	6 5/8
53/64	5.70	10 1/4	6 3/4
27/32	5.70	10 1/4	6 3/4
55/64	5.90	10 1/2	7
7/8	5.90	10 1/2	7
57/64	6.05	10 5/8	7
29/32	6.05	10 5/8	7
59/64	6.20	10 3/4	7
15/16	6.20	10 3/4	7
61/64	6.35	10 7/8	7 1/8
31/32	6.35	10 7/8	7 1/8
63/64	6.50	11	7 3/16
1	6.50	11	7 3/16
1 1/64	6.80	11 1/8	7 5/16
1 1/32	6.80	11 1/8	7 5/16
1 3/64	7.10	11 1/4	7 3/8
1 1/16	7.10	11 1/4	7 3/8
1 5/64	7.45	11 1/2	7 5/8
1 3/32	7.45	11 1/2	7 5/8
1 7/64	7.80	11 3/4	7 7/8
1 1/8	7.80	11 3/4	7 7/8
1 9/64	8.00	11 7/8	8
1 5/32	8.00	11 7/8	8
1 11/64	8.20	12	8 1/8
1 3/16	$8.20	12	8 1/8
1 13/64	8.40	12 1/8	8 1/8
1 7/32	8.40	12 1/8	8 1/8
1 15/64	8.70	12 1/2	8 1/2
1 1/4	8.70	12 1/2	8 1/2
1 17/64	9.40	14 1/8	9 1/8
1 9/32	9.40	14 1/8	9 1/8
1 19/64	10.15	14 1/4	9 1/4
1 5/16	10.15	14 1/4	9 1/4
1 21/64	10.95	14 3/8	9 3/8
1 11/32	10.95	14 3/8	9 3/8
1 23/64	11.80	14 1/2	9 1/2
1 3/8	11.80	14 1/2	9 1/2
1 25/64	12.30	14 5/8	9 1/2
1 13/32	12.30	14 5/8	9 1/2
1 27/64	12.85	14 3/4	9 5/8
1 7/16	12.85	14 3/4	9 5/8
1 29/64	13.35	14 7/8	9 3/4
1 15/32	13.35	14 7/8	9 3/4
1 31/64	14.00	15	9 7/8
1 1/2	14.00	15	9 7/8
1 33/64	14.20	15	9 1/8
1 17/32	14.20	15	9 1/8
1 35/64	14.40	15 1/4	9 3/8
1 9/16	14.40	15 1/4	9 3/8
1 37/64	14.70	15 1/4	9 3/8
1 19/32	14.70	15 1/4	9 3/8
1 39/64	15.00	15 1/2	9 5/8
1 5/8	15.00	15 1/2	9 5/8
1 41/64	15.35	15 1/2	9 5/8
1 21/32	15.35	15 1/2	9 5/8
1 43/64	15.70	15 3/4	9 7/8
1 11/16	15.70	15 3/4	9 7/8
1 45/64	16.10	15 3/4	9 7/8
1 23/32	16.10	15 3/4	9 7/8
1 47/64	16.50	16	10 1/8
1 3/4	16.50	16	10 1/8
1 49/64	16.75	16	10 1/8
1 25/32	16.75	16	10 1/8
1 51/64	17.00	16 1/4	10 3/8
1 13/16	17.00	16 1/4	10 3/8
1 53/64	17.25	16 1/4	10 3/8
1 27/32	17.25	16 1/4	10 3/8
1 55/64	17.50	16 1/2	10 5/8
1 7/8	17.50	16 1/2	10 5/8
1 57/64	17.85	16 1/2	10 5/8
1 29/32	17.85	16 1/2	10 5/8
1 59/64	18.20	16 1/2	10 5/8
1 15/16	18.20	16 1/2	10 5/8
1 61/64	18.60	16 1/2	10 5/8
1 31/32	18.60	16 1/2	10 5/8
1 63/64	19.00	16 1/2	10 5/8
2	19.00	16 1/2	10 5/8

*These Drills 15/32 and smaller are furnished with one oil hole only. They can be furnished with two if ordered, but at customer's risk.

For information in regard to manner of use see page 50.

Diameter Inches	Each	Whole Length 8 1/2 Inches Each	Whole Length 10 1/2 Inches Each	Whole Length 13 Inches Each	Twist Cut Whole Length 8 1/2 Inches	Twist Cut Whole Length 10 1/2 Inches	Twist Cut Whole Length 13 Inches
31/64	1/2	$4.60	$5.30	$5.90	5 1/2	7	9 1/4
33/64	17/32	4.60	5.30	6.00	5 1/4	7	9 1/4
35/64	9/16	4.70	5.40	6.00	5 1/4	7	9 1/4
37/64	19/32	4.70	5.40	6.10	5 1/4	7	9 1/4
39/64	5/8	4.70	5.40	6.10	5 1/4	7	9 1/4
41/64	21/32	4.70	5.40	6.20	5 1/4	7	9 1/4
43/64	11/16	4.80	5.40	6.20	5 1/4	7	9 1/4
45/64	23/32	4.80	5.40	6.30	5 1/4	7	9 1/4
47/64	3/4	4.80	5.40	6.30	5 1/4	7	9 1/4
49/64	25/32	4.90	5.50	6.40	5 1/4	7	9 1/4
51/64	13/16	5.00	5.60	6.50	5 1/4	7	9 1/4
53/64	27/32	5.00	5.80	6.60	5 1/4	7	9 1/4
55/64	7/8	5.10	5.90	6.80	5 1/4	7	9 1/4
57/64	29/32	5.20	6.00	6.90	5 1/4	7	9 1/4
59/64	15/16	5.30	6.10	7.00	5 1/4	7	9 1/4
61/64	31/32	5.40	6.20	7.10	5 1/4	7	9 1/4
63/64	1	5.50	6.30	7.20	5 1/4	7	9 1/4
1 1/64	1 1/32	5.60	6.50	7.40	5	6 3/4	9
1 3/64	1 1/16	5.80	6.80	7.70	5	6 3/4	9
1 5/64	1 3/32	6.00	7.00	7.90	5	6 3/4	9
1 7/64	1 1/8	6.10	7.20	8.10	5	6 3/4	9
1 9/64	1 5/32	6.30	7.40	8.30	5	6 3/4	9
1 11/64	1 3/16	6.50	7.60	8.60	5	6 3/4	9
1 13/64	1 7/32	6.70	7.80	8.80	5	6 3/4	9
1 15/64	1 1/4	6.80	7.90	9.00	5	6 3/4	9
1 17/64	1 9/32	7.10	8.30	9.30	5	6 3/4	9
1 19/64	1 5/16	7.40	8.60	9.60	5	6 3/4	9
1 21/64	1 11/32	7.70	9.00	10.00	5	6 3/4	9
1 23/64	1 3/8	8.00	9.30	10.30	5	6 3/4	9
1 25/64	1 13/32	8.30	9.60	10.70	5	6 3/4	9
1 27/64	1 7/16	8.60	9.90	11.20	5	6 3/4	9
1 29/64	1 15/32	8.90	10.30	11.50	5	6 3/4	9
1 31/64	1 1/2	9.20	10.50	11.90	5	6 3/4	9
1 33/64	1 17/32	9.40	10.70	12.00	4 3/4	6 1/2	8 3/4
1 35/64	1 9/16	9.60	10.90	12.10	4 3/4	6 1/2	8 3/4
1 37/64	1 19/32	9.80	11.00	12.20	4 3/4	6 1/2	8 3/4
1 39/64	1 5/8	10.00	11.20	12.40	4 3/4	6 1/2	8 3/4
1 41/64	1 21/32	10.20	11.40	12.50	4 3/4	6 1/2	8 3/4
1 43/64	1 11/16	10.30	11.50	12.70	4 3/4	6 1/2	8 3/4
1 45/64	1 23/32	10.40	11.60	12.90	4 3/4	6 1/2	8 3/4
1 47/64	1 3/4	10.50	11.80	13.00	4 3/4	6 1/2	8 3/4
1 49/64	1 25/32	10.70	12.00	13.20	4 3/4	6 1/2	8 3/4
1 51/64	1 13/16	10.90	12.20	13.40	4 3/4	6 1/2	8 3/4
1 53/64	1 27/32	11.00	12.40	13.60	4 3/4	6 1/2	8 3/4
1 55/64	1 7/8	11.20	12.50	13.70	4 3/4	6 1/2	8 3/4
1 57/64	1 29/32	11.40	12.70	14.00	4 3/4	6 1/2	8 3/4
1 59/64	1 15/16	11.60	12.90	14.20	4 3/4	6 1/2	8 3/4
1 61/64	1 31/32	11.90	13.10	14.40	4 3/4	6 1/2	8 3/4
1 63/64	2	12.10	13.30	14.60	4 3/4	6 1/2	8 3/4

Drills 1 33/64 to 2 inches diameter, 8 1/2 inches long, have shanks 1 1/2 inches diameter, 3 inches long.

Drills 1 33/64 to 2 inches diameter, 10 1/2 inches long, have shanks 1 1/2 inches diameter, 3 1/4 inches long.

Drills 1 33/64 to 2 inches diameter, 13 inches long, have shanks 1 1/2 inches diameter, 3 1/4 inches long.

These Drills furnished in metric sizes as No. 104K. Prices on application.

For information in regard to manner of use see page 50.

Oil Twist and Hollow Drills

Carbon Steel

With Holes through Solid Metal for Lubricant

Oil Twist

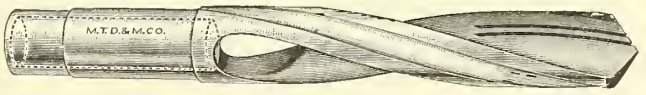


Morse No. 104 E, with Straight Shanks

For Screw or Chucking Machines

Shanks 1¼ Inches Diameter, 3 Inches Long

Hollow



Morse No. 114 D

For Deep Drilling or Long Holes

Diameter Inches		Whole Length 8½ Inches Twist Cut 4½ Inches Each	Whole Length 10½ Inches Twist Cut 6½ Inches Each	Whole Length 13 Inches Twist Cut 9 Inches Each
31/64	1/2	$5.80	$6.80	$7.80
33/64	17/32	5.80	6.80	7.80
35/64	9/16	5.80	6.70	7.70
37/64	19/32	5.70	6.70	7.70
39/64	5/8	5.70	6.70	7.60
41/64	21/32	5.70	6.60	7.60
43/64	11/16	5.60	6.60	7.50
45/64	23/32	5.60	6.50	7.50
47/64	3/4	5.60	6.50	7.40
49/64	25/32	5.70	6.60	7.40
51/64	13/16	5.70	6.60	7.50
53/64	27/32	5.80	6.70	7.50
55/64	7/8	5.80	6.70	7.60
57/64	29/32	5.90	6.80	7.60
59/64	15/16	5.90	6.80	7.70
61/64	31/32	6.00	6.90	7.80
63/64	1	6.00	6.90	7.90
1 1/64	1 1/32	6.10	7.00	8.00
1 3/64	1 1/16	6.20	7.10	8.20
1 5/64	1 3/32	6.30	7.20	8.40
1 7/64	1 1/8	6.40	7.40	8.50
1 9/64	1 5/32	6.50	7.50	8.60
1 11/64	1 3/16	6.60	7.60	8.80
1 13/64	1 7/32	6.70	7.80	8.90
1 15/64	1 1/4	6.80	7.90	9.00
1 17/64	1 9/32	7.10	8.40	9.40
1 19/64	1 5/16	7.50	8.70	9.80
1 21/64	1 11/32	7.80	9.20	10.20
1 23/64	1 3/8	8.20	9.60	10.60
1 25/64	1 13/32	8.60	9.90	11.00
1 27/64	1 7/16	9.00	10.20	11.40
1 29/64	1 15/32	9.20	10.50	11.80
1 31/64	1 1/2	9.50	10.80	12.20
1 33/64	1 17/32	9.70	11.00	12.30
1 35/64	1 9/16	9.90	11.20	12.50
1 37/64	1 19/32	10.10	11.40	12.60
1 39/64	1 5/8	10.40	11.60	12.80
1 41/64	1 21/32	10.50	11.80	13.00
1 43/64	1 11/16	10.60	12.00	13.20
1 45/64	1 23/32	10.80	12.10	13.40
1 47/64	1 3/4	11.00	12.30	13.50
1 49/64	1 25/32	11.20	12.50	13.70
1 51/64	1 13/16	11.40	12.70	13.90
1 53/64	1 27/32	11.60	12.90	14.00
1 55/64	1 7/8	11.80	13.00	14.20
1 57/64	1 29/32	12.00	13.20	14.40
1 59/64	1 15/16	12.20	13.40	14.60
1 61/64	1 31/32	12.40	13.60	14.80
1 63/64	2	12.60	13.80	15.00

These Drills furnished in metric sizes as No. 104 L. Prices on application.

Diameter Inches	Each	Whole Length Inches	Size of Hole Inches
5/8	$3.20	6	3/8
11/16	3.40	6	3/8
3/4	3.60	6	7/16
13/16	3.70	6 1/2	7/16
7/8	3.80	6 1/2	1/2
15/16	3.90	6 1/2	1/2
1	4.20	7	9/16
1 1/16	4.30	7	9/16
1 1/8	4.40	7	5/8
1 3/16	4.50	7	11/16
1 1/4	4.80	7 1/2	3/4
1 5/16	5.00	7 1/2	13/16
1 3/8	5.20	7 1/2	7/8
1 7/16	5.40	7 1/2	7/8
1 1/2	5.80	8	15/16
1 9/16	6.10	8	15/16
1 5/8	6.40	8	1
1 11/16	6.70	8	1
1 3/4	7.20	9	1 1/8
1 13/16	7.60	9	1 1/8
1 7/8	$8.00	9	1 1/8
1 15/16	8.40	9	1 1/8
2	8.80	9	1 1/8
2 1/16	9.10	10	1 1/4
2 1/8	9.40	10	1 1/4
2 3/16	9.70	10	1 1/4
2 1/4	10.00	10	1 3/8
2 5/16	10.40	10	1 3/8
2 3/8	10.80	10	1 3/8
2 7/16	11.20	10	1 3/8
2 1/2	11.60	10	1 3/8
2 9/16	12.00	12	1 1/2
2 5/8	12.40	12	1 1/2
2 11/16	12.80	12	1 1/2
2 3/4	13.20	12	1 1/2
2 13/16	13.60	12	1 1/2
2 7/8	14.00	12	1 1/2
2 15/16	14.50	12	1 1/2
3	15.00	12	1 1/2

The above drills have a hole lengthwise through the shank connecting with the grooves of the drill. The shank can be threaded and fitted to a metal tube of such length as desired.

The lubricant is conveyed to the point of the drill on the outside of tube, as illustrated on page 50, while the hollow tube admits of the passage of oil and chips from the point.

Tubes are made to order and to fit any size of drill. When ordering give diameter of drill and depth of hole to be drilled.

These drills are accurately ground on centers.

In drilling crucible steel the best results are obtained by revolving the work at a speed equalling a periphery speed for the drill of 20 feet per minute and feeding at the rate of .0025 inch per revolution. Machinery steel will admit of increased revolution to 40 feet per minute, and a feed of .0035 inch per revolution.

Suggestions for the Use of High Speed Drills

We recommend in starting, a periphery speed of about 55 feet per minute and a feed from .005 to .010 inch per revolution, for drills larger than ½ inch. These speeds and feeds may be then increased and a maximum speed and feed obtained for the material drilled by observing the following: If the drill wears away on the outside edge the speed is too great; if it chips on the cutting edge the feed is too coarse.

By following the above carefully the best practical result will be obtained.

For steel or wrought iron use an abundant supply of good lard oil or cutting compound. For cast iron, an air blast gives the best results.

Care should be taken to see that the work is properly secured to the table of the machine and should have a support directly under the part to be drilled to avoid any spring from the pressure of the drill, and prevent the drill from "pulling ahead" when breaking through the work.

Steel Drill Sockets



Morse No. 100, for Morse Taper Shank Drills

Size		Each
No. 1.	Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive. Whole length 7 inches; blank end, $1\frac{1}{16}$ inches diameter, 4 inches long.	$1.20
No. 2.	Holds $\frac{37}{64}$ to $\frac{29}{32}$ inch, inclusive. Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	1.80
No. 3.	Holds $\frac{59}{64}$ to $1\frac{1}{4}$ inches, inclusive. Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	2.50
No. 4.	Holds $1\frac{17}{64}$ to 2 inches, inclusive. Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	4.00
No. 5.	Holds $2\frac{1}{64}$ to 3 inches, inclusive. Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	7.50
No. 6.	Holds $3\frac{1}{64}$ to 6 inches, inclusive. Whole length, 22 inches; blank end, $3\frac{5}{8}$ inches diameter, $12\frac{3}{4}$ inches long. Plugs are furnished with these sockets for turning shanks true.	14.00

These Sockets can be furnished hardened and ground, inside and out, at special prices.



Morse 100 M, for Short Shanks, Morse Taper

Size		Each
No. 1.	Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive. Whole length, 7 inches; blank end, $1\frac{1}{16}$ inches diameter, 4 inches long.	$1.20
No. 2.	Holds $\frac{37}{64}$ to $\frac{29}{32}$ inch, inclusive. Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	1.80
No. 3.	Holds $\frac{59}{64}$ to $1\frac{1}{4}$ inches, inclusive. Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	2.50
No. 4.	Holds $1\frac{17}{64}$ to 2 inches, inclusive. Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	4.00
No. 5.	Holds $2\frac{1}{64}$ to 3 inches, inclusive. Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	7.50
No. 6.	Holds $3\frac{1}{64}$ to 6 inches, inclusive. Whole length 22 inches; blank end $3\frac{5}{8}$ inches diameter, $12\frac{3}{4}$ inches long.	14.00

Plugs are furnished with these Sockets for turning shanks true.



Morse No. 100 A, for Morse Taper Shank Drill

Size		Each
No. 1.	With Shank fitted to No. 2 Socket	$ 2.00
No. 1.	With Shank fitted to No. 3 Socket	2.50
No. 1.	With Shank fitted to No. 4 Socket	3.20
No. 1.	With Shank fitted to No. 5 Socket	4.80
No. 2.	With Shank fitted to No. 3 Socket	2.50
No. 2.	With Shank fitted to No. 4 Socket	3.20
No. 2.	With Shank fitted to No. 5 Socket	4.80
No. 3.	With Shank fitted to No. 2 Socket	3.20
No. 3.	With Shank fitted to No. 3 Socket	3.20
No. 3.	With Shank fitted to No. 4 Socket	3.20
No. 3.	With Shank fitted to No. 5 Socket	4.80
No. 4.	With Shank fitted to No. 3 Socket	4.80
No. 4.	With Shank fitted to No. 4 Socket	4.80
No. 4.	With Shank fitted to No. 5 Socket	4.80
No. 4.	With Shank fitted to No. 6 Socket	12.00
No. 5.	With Shank fitted to No. 4 Socket	12.00
No. 5.	With Shank fitted to No. 5 Socket	12.00
No. 5.	With Shank fitted to No. 6 Socket	12.00

These Sockets can be furnished hardened and ground inside and out at special prices.

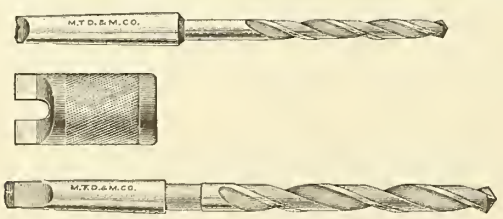


Morse No. 100 N, for Short Shanks, Morse Taper

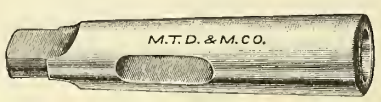
Size		Each
No. 1.	With Shank fitted to No. 2	$2.00
No. 1.	With Shank fitted to No. 3	2.50
No. 2.	With Shank fitted to No. 3	2.50
No. 2.	With Shank fitted to No. 4	3.20
No. 3.	With Shank fitted to No. 4	3.20
No. 3.	With Shank fitted to No. 5	4.80
No. 4.	With Shank fitted to No. 5	4.80
No. 4.	With Shank fitted to No. 6	12.00
No. 5.	With Shank fitted to No. 6	12.00

Short Shank Sockets are for use with drills on which the original tangs have been broken, the shanks reduced in length and fitted with thicker and wider tangs, thus insuring a strong drive. Gauges for fitting drills with broken tangs to Short Shank Sockets can be furnished on receipt of order.

Morse Tang Gauge for Short Shank Sockets



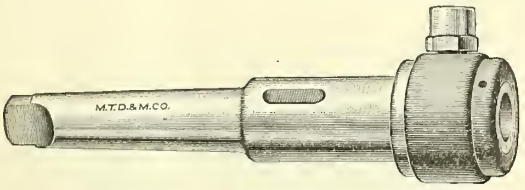
Prices on application.



Morse No. 100 P, Sleeves for Short Shanks, Morse Taper

Size		Each
No. 1.	Fitted to No. 2 Socket	$1.80
No. 1.	Fitted to No. 3 Socket	2.40
No. 2.	Fitted to No. 3 Socket	2.40
No. 2.	Fitted to No. 4 Socket	3.00
No. 3.	Fitted to No. 4 Socket	3.00
No. 3.	Fitted to No. 5 Socket	4.40
No. 4.	Fitted to No. 5 Socket	4.40
No. 4.	Fitted to No. 6 Socket	10.00
No. 5.	Fitted to No. 6 Socket	10.00

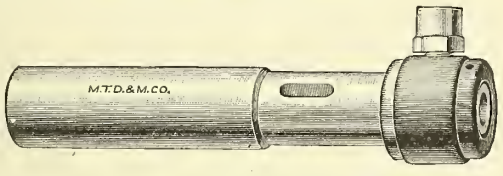
Steel Drill Sockets



Morse No. 100E, Morse Taper
For Oil Drills

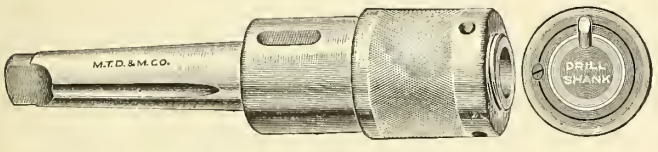
Size		Each
No. 1.	With Shank fitted to No. 2 Socket	$4.50
No. 1.	With Shank fitted to No. 3 Socket	4.50
No. 2.	With Shank fitted to No. 3 Socket	5.50
No. 2.	With Shank fitted to No. 4 Socket	6.75
No. 3.	With Shank fitted to No. 4 Socket	7.00
No. 4.	With Shank fitted to No. 5 Socket	10.00

Sockets Nos. 100D and 100E are used in connection with oil drills No. 102 C which are illustrated on page 51 and the method of using is illustrated on page 50. As the use of oil sockets and oil drills is now quite generally understood we do not furnish further explanation in this catalogue, but will gladly do so when requested.



Morse No. 100D, Morse Taper.
For Oil Drills
See note above

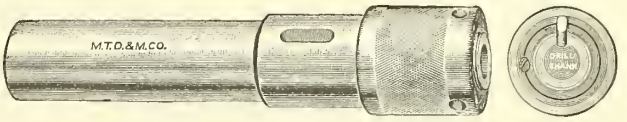
Size		Each
No. 1.	Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive. Whole length, 7 inches; blank end, $1\frac{1}{16}$ inches diameter, 4 inches long.	$4.00
No. 2.	Holds $\frac{37}{64}$ to $\frac{29}{32}$ inch, inclusive. Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	5.00
No. 3.	Holds $\frac{59}{64}$ to $1\frac{1}{4}$ inches, inclusive. Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	6.50
No. 4.	Holds $1\frac{17}{64}$ to 2 inches, inclusive. Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	9.25
No. 5.	Holds $2\frac{1}{64}$ to 3 inches, inclusive. Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	10.25



Morse No. 100H, Andrew Patent
For Morse Taper Shank Drills

Size		Each
No. 1.	With Shank fitted to No. 2 Socket	$5.80
No. 1.	With Shank fitted to No. 3 Socket	5.80
No. 2.	With Shank fitted to No. 3 Socket	7.20
No. 2.	With Shank fitted to No. 4 Socket	8.60
No. 3.	With Shank fitted to No. 4 Socket	9.70
No. 4.	With Shank fitted to No. 5 Socket	12.80
No. 5.	With Shank fitted to No. 6 Socket	19.50

For illustration of Drills fitting these Sockets see No. 102½, page 30.



Morse No. 100G, Andrew Patent
For Morse Taper Shank Drills

These Sockets are fitted with a Key sliding in a radial slot in the holding head. The Key bears upon the inclined seat in the shank of the drill and is forced to its seat by a cap fitting over the holding head. Turning the cap by the hand in one direction holds the drill firmly in place while turning it in the opposite direction releases its grip so that the drill can be easily removed.

Size		Each
No. 1.	Holds $\frac{1}{4}$ to $\frac{9}{16}$ inch, inclusive. Whole length, 7 inches; blank end, $1\frac{1}{16}$ inches diameter, 4 inches long.	$5.00
No. 2.	Holds $\frac{37}{64}$ to $\frac{29}{32}$ inch, inclusive. Whole length, 8 inches; blank end, $1\frac{1}{4}$ inches diameter, $4\frac{1}{4}$ inches long.	6.50
No. 3.	Holds $\frac{59}{64}$ to $1\frac{1}{4}$ inches, inclusive. Whole length, 10 inches; blank end, $1\frac{1}{2}$ inches diameter, $5\frac{3}{8}$ inches long.	9.00
No. 4.	Holds $1\frac{17}{64}$ to 2 inches, inclusive. Whole length, 12 inches; blank end, 2 inches diameter, $6\frac{3}{8}$ inches long.	12.00
No. 5.	Holds $2\frac{1}{64}$ to 3 inches, inclusive. Whole length, 16 inches; blank end, $2\frac{5}{8}$ inches diameter, 9 inches long.	15.00



Morse No. 100T, Solid
With Morse Taper Holes

Number	Morse Taper Hole Number	Diameter of Shank Inches	Length of Shank Inches	Whole Length Inches	Each
1	1	1	$3\frac{1}{2}$	$3\frac{1}{2}$	$2.00
2	1	$1\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	2.00
3	1	$1\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	2.00
4	2	1	$3\frac{5}{8}$	4	2.65
5	2	$1\frac{1}{4}$	$3\frac{5}{8}$	4	2.65
6	2	$1\frac{1}{2}$	$3\frac{5}{8}$	4	2.65
7	2	$1\frac{3}{4}$	$3\frac{5}{8}$	4	2.65
8	2	2	$3\frac{5}{8}$	4	2.65
9	3	$1\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
10	3	$1\frac{1}{2}$	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
11	3	$1\frac{3}{4}$	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
12	3	2	$4\frac{1}{8}$	$4\frac{3}{4}$	3.55
13	4	$1\frac{1}{2}$	$4\frac{5}{8}$	6	4.10
14	4	$1\frac{3}{4}$	$4\frac{5}{8}$	6	4.10
15	4	2	$4\frac{5}{8}$	6	4.10

Nos. 100S, page 57, and 100T Sockets are for use in the turrets of Chucking Machines, Screw Machines and Boring Mills for holding Reamers and Arbors with Morse Taper Shanks.

Other sizes made to order.

Steel Drill Sockets



Armstrong Blacksmiths, with Morse Taper Shank

Number	Size of Socket	Size of Shank Morse Taper	Each
02	½ inch diameter	No. 2	$1.50
03	½ inch diameter	No. 3	1.75
003	⅝ inch diameter	No. 3	1.75
04	½ inch diameter	No. 4	2.00
004	⅝ inch diameter	No. 4	2.00

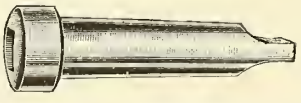
Taking Blacksmiths Drills from ⅛ inch to 1½ inches with Shanks ½ inch or ⅝ inch diameter.



Armstrong Blacksmiths, with Square Taper Shank

Number	Size of Socket	Size of Shank Square Taper	Each
0	½ inch diameter	No. 1	$1.25
00	⅝ inch diameter	No. 1	1.25
01	½ inch diameter	No. 2	1.50
001	⅝ inch diameter	No. 2	1.50

Taking Blacksmiths Drills from ⅛ inch to 1½ inches with Shanks ½ inch or ⅝ inch diameter.



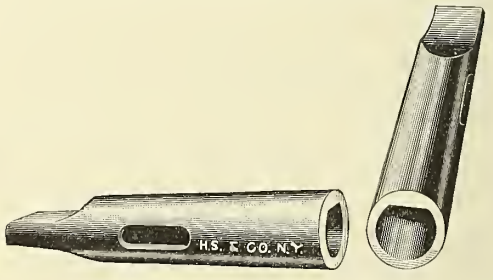
Armstrong Square Taper, with Morse Taper Shank

Number	Size of Socket Square Taper	Size of Shank Morse Taper	Each
1	No. 1—⅜x⅝ inch	No. 1	$1.00
2	No. 1—⅜x⅝ inch	No. 2	1.25
3	No. 1—⅜x⅝ inch	No. 3	1.50
4	No. 2—½x¾ inch	No. 4	1.75
5	No. 2—½x¾ inch	No. 5	2.50



"Use-Em-Up," Socket Type

Size	Description	Each
1–2	Has No. 1 Hole and No. 2 Shank	$2.00
1–3	Has No. 1 Hole and No. 3 Shank	2.50
1–4	Has No. 1 Hole and No. 4 Shank	3.20
1–5	Has No. 1 Hole and No. 5 Shank	4.80
2–3	Has No. 2 Hole and No. 3 Shank	2.50
2–4	Has No. 2 Hole and No. 4 Shank	3.20
2–5	Has No. 2 Hole and No. 5 Shank	4.80
3–2	Has No. 3 Hole and No. 2 Shank	3.20
3–3	Has No. 3 Hole and No. 3 Shank	3.20
3–4	Has No. 3 Hole and No. 4 Shank	3.20
3–5	Has No. 3 Hole and No. 5 Shank	4.80
4–3	Has No. 4 Hole and No. 3 Shank	4.80
4–4	Has No. 4 Hole and No. 4 Shank	4.80
4–5	Has No. 4 Hole and No. 5 Shank	4.80
4–6	Has No. 4 Hole and No. 6 Shank	12.00
5–4	Has No. 5 Hole and No. 4 Shank	12.00
5–5	Has No. 5 Hole and No. 5 Shank	12.00
5–6	Has No. 5 Hole and No. 6 Shank	12.00



"Use-Em-Up," Sleeve Type

Size	Size of Socket Morse Taper	Size of Shank Morse Taper	Each
1–2	No. 1	No. 2	$1.80
1–3	No. 1	No. 3	2.40
1–4	No. 1	No. 4	3.00
1–5	No. 1	No. 5	4.40
2–3	No. 2	No. 3	2.40
2–4	No. 2	No. 4	3.00
2–5	No. 2	No. 5	4.40
3–4	No. 3	No. 4	3.00
3–5	No. 3	No. 5	4.40
4–5	No. 4	No. 5	4.40
4–6	No. 4	No. 6	10.00
5–6	No. 5	No. 6	10.00

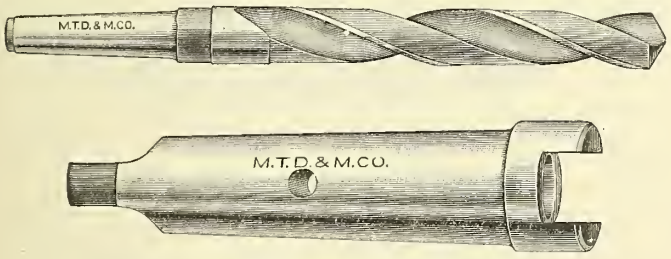
Steel Drill Sockets and Sleeves



Morse No. 100B Sleeves
For Morse Taper Shank Drills

Size		Each
No. 1.	Fitted to No. 2 Socket	$1.80
No. 1.	Fitted to No. 3 Socket	2.40
No. 1.	Fitted to No. 4 Socket	3.00
No. 1.	Fitted to No. 5 Socket	4.40
No. 2.	Fitted to No. 3 Socket	2.40
No. 2.	Fitted to No. 4 Socket	3.00
No. 2.	Fitted to No. 5 Socket	4.40
No. 3.	Fitted to No. 4 Socket	3.00
No. 3.	Fitted to No. 5 Socket	4.40
No. 4.	Fitted to No. 5 Socket	4.40
No. 4.	Fitted to No. 6 Socket	10.00
No. 5.	Fitted to No. 6 Socket	10.00

These Sleeves can be furnished hardened and ground, inside and out, at special prices.



Morse No. 100R Sleeves, with Clutch Drive
For Morse Taper Shank Drills

Designed for use with High Speed Drills or where a strong positive drive is necessary. The drill has no tang, being driven entirely by the clutch. Prices on application.

Center Keys



Morse No. 100C
For Sockets and Sleeves

Size		Each
No. 1.	Key for No. 1 Socket or Sleeve	$ .30
No. 2.	Key for No. 2 Socket or Sleeve	.35
No. 3.	Key for No. 3 Socket or Sleeve	.40
No. 4.	Key for No. 4 Socket or Sleeve	.50
No. 5.	Key for No. 5 Socket or Sleeve	.60
No. 6.	Key for No. 6 Socket or Sleeve	.75

These Keys are drop-forged from steel, and are finished and hardened.



Morse No. 100S Floating Sockets, with Morse Taper Holes

Nos. 100S and 100T (page 55) sockets are for use in the turrets of chucking machines, screw machines and boring mills for holding reamers and arbors with Morse taper shanks. Other sizes made to order.

Number	Morse Taper Hole Number	Diameter of Collet Inches	Length of Collet Inches	Whole Length Inches	Each
1	1	1¼	3	4½	$3.50
2	1	1½	3¼	5¼	3.50
3	1	1¾	3¼	5¼	3.50
4	2	1¼	3	4½	4.00
5	2	1½	3¼	5¼	4.00
6	2	1¾	3¼	5¼	4.00
7	3	1½	3¼	5¼	4.75
8	3	1¾	3¼	5¼	4.75
9	3	2	3½	6¼	4.75
10	4	2	3½	6¼	5.30

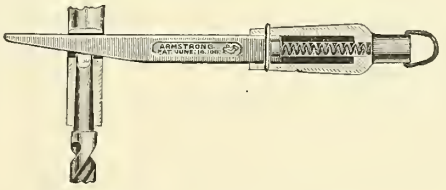


Morse No. 100F Lathe Sockets
For Morse Taper Shank Drills

Size		Each
No. 1.	Holds ¼ to 9/16 inch, inclusive	$1.20
No. 2.	Holds 37/64 to 29/32 inch, inclusive	1.80
No. 3.	Holds 59/64 to 1¼ inches, inclusive	2.50
No. 4.	Holds 1 17/64 to 2 inches, inclusive	4.00
No. 5.	Holds 2 1/64 to 3 inches, inclusive	7.50

The end fitting the Lathe Center is deeply countersunk to insure a good bearing. These Sockets are hardened.

Drill Drifts



Armstrong Automatic

The heavy handle or driver is slidably mounted upon the blade, which is kept extended, when not in operation, by a low tension coil spring.

In operating, the point of the blade is inserted in the slot of drill socket and the handle driven forcibly up the blade, until it strikes the butt end of drift blade—it will strike a blow sufficiently heavy to remove the most stubborn drill.

Size	Capacity Morse Taper	Recommended for	Each	Extra Blades
No. 1A	No. 1, 2 or 3	No. 1 or 2	$1.25	$ .40
No. 2A	No. 2, 3 or 4	No. 2 or 3	1.50	.50
No. 3A	No. 3, 4 or 5	No. 3 or 4	2.00	.65
No. 4A	No. 4, 5 or 6	No. 4 or 5	3.00	1.00

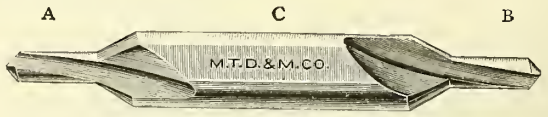
Combined Drills and Countersinks



Morse No. 109B

Included angle, 60 degrees. Other angles made to order at special prices

Size Number	Diameter of Drill at A	Diameter of Drill at B	Approximate Fractional Equivalents	Per Dozen	Diameter of Body, C Inch	Decimal Equivalents A	Decimal Equivalents B
1	No. 57	No. 57	3/64	$1.50	1/8	.043	.043
2	No. 55	No. 55	.....	1.50	13/64	.052	.052
3	No. 52	No. 52	1/16	1.50	13/64	.063	.063
4	No. 49	No. 49	.....	1.50	15/64	.073	.073
5	No. 49	No. 45	.....	1.50	15/64	.073	.082
6	No. 46	No. 46	5/64	1.50	15/64	.081	.081
7	No. 42	No. 42	3/32	1.50	3/10	.093	.093
8	No. 42	No. 30	3/32 x 1/8	1.50	3/10	.093	.128
9	No. 30	No. 30	1/8	1.50	3/10	.128	.128
10	No. 22	No. 22	5/32	3.00	7/16	.157	.157
11	No. 13	No. 13	3/16	3.00	7/16	.185	.185
12	3/64	3/64	.....	1.50	5/32	.046	.046
14	1/16	No. 45	.....	1.50	13/64	.062	.082
15	3/16	5/32	.....	3.00	7/16	.187	.156



Morse No. 109½B

For Drilling and Countersinking Wagon Tires and Irons

Size Number	Diameter of Drill at A	Diameter of Drill at B	Per Dozen	Diameter of Body C, Inch
1	7/32	7/32	$4.60	½
2	7/32	9/32	4.60	½
3	9/32	9/32	4.60	½
4	11/32	11/32	5.00	½
5	11/32	13/32	5.00	½
6	13/32	13/32	5.00	½
7	7/32	7/32	7.25	5/8
8	7/32	9/32	7.25	5/8
9	9/32	9/32	7.25	5/8
10	11/32	11/32	7.75	5/8
11	11/32	13/32	7.75	5/8
12	13/32	13/32	7.75	5/8

Three-Groove Bit Stock Countersinks

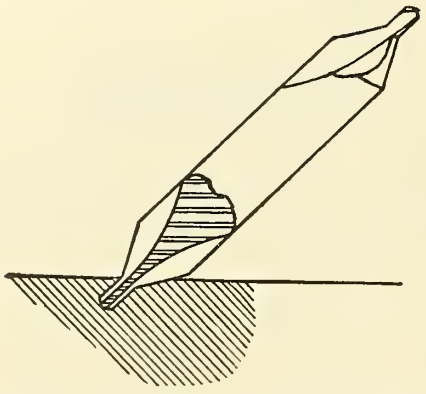


Morse No. 109A

Included angle of cutting point is 82 degrees. Countersinks with other angles made to order at special prices

Diameter Inch	Each	Whole Length Inches	Diameter Inch	Each	Whole Length Inches
3/8	$ .50	4¼	¾	$ .90	5
½	.60	4¼	⅞	1.05	5
5/8	.75	4¼	1	1.20	5

Illustrating a Use of Combined Drill and Countersink



A Combined Drill and Countersink starting a hole at an angle, for which purpose this tool is probably better fitted than any other.

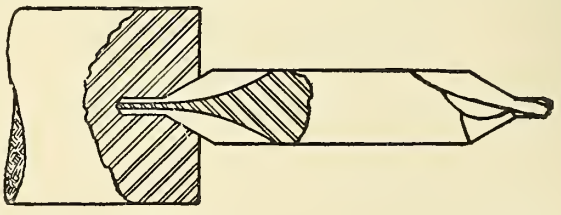


Morse No. 109C

With No. 1 Morse Taper Shanks

Size Number	Diameter of Drill, Inch	Each	Diameter of Body, Inch
1	1/16	$ .75	7/16
2	3/32	.75	7/16
3	1/8	.75	7/16
4	5/32	.75	7/16
5	3/16	.75	7/16

Illustrating a Use of Combined Drill and Countersink

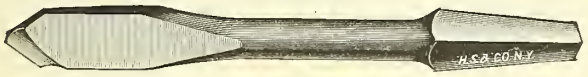


The most common use of a Combined Drill and Countersink—that of centering shafts.

They are made of different angles, and sometimes used in thin pieces for drilling and countersinking for screw heads.

Countersinks

For Metals



Concave Lips

	Inch	½	⅝	¾
No. 15, per dozen		$3.50	3.50	3.50



80 Degrees

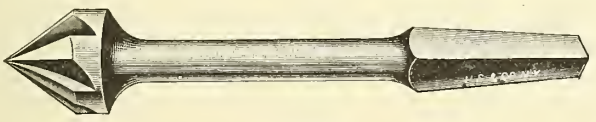
For screw heads, ¾ inch, per dozen $2.50



For Use in Drilling Machines — For Use in Bit Brace

Made with different Tapers: 82 degrees for Machine or Wood Screws, 54 degrees for Bolts.

¼ inch Round Shanks	Brace Shanks	Diameter Inch	Degrees	Each	Per Dozen
No. 01	No. 02	⅝	54	$ .50	$5.75
No. 01½	No. 02½	⅝	82	.50	5.75
No. 03	No. 04	¾	54	.75	8.50
No. 03½	No. 04½	¾	82	.75	8.50
No. 05	No. 06	⅞	54	1.00	11.00
No. 05½	No. 06½	⅞	82	1.00	11.00
No. 07	No. 8	1	54	1.25	14.00
No. 07½	No. 8½	1	82	1.25	14.00



Rose

82 degrees for Machine or Wood Screws

	Inch	½	⅝	¾	⅞	1	As'td to ¾
No. 20—Brace Shank,		$6.00	$6.00	$8.00	$12.00	$16.00	$7.00 per doz.
Round Shank,		6.00	6.00	8.00	12.00	16.00	7.00 per doz.

For Wood and Soft Metals



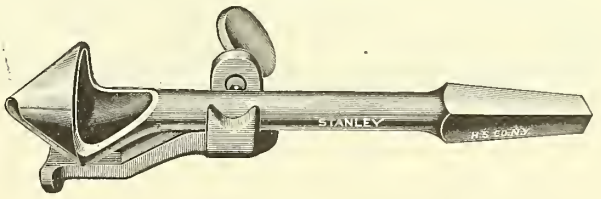
Rose

No. 10. Deep relieved cutter, extra quality

No. 10½. Good quality, somewhat cheaper than No. 10

	Inch	½	⅝	¾	⅞	1
No. 10, per dozen		$4.50	$4.50	$5.00	$6.00	$7.30
No. 10½, per dozen		2.70	3.20	4.00	4.50	8.00

For Wood



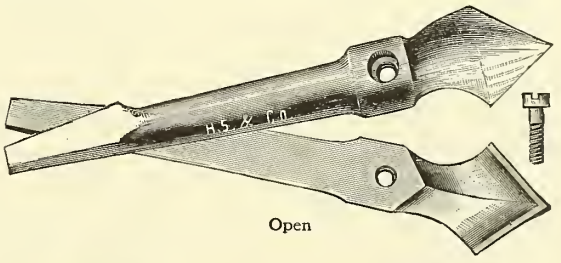
With Gauge



Without Gauge

No. 20. Wheeler's patent. With gauge, ⅞ inch, per dozen $4.50

No. 18. Wheeler's patent. Without gauge, ⅞ inch, per dozen 3.00



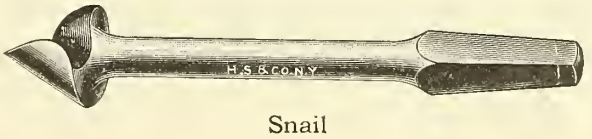
Open



Closed

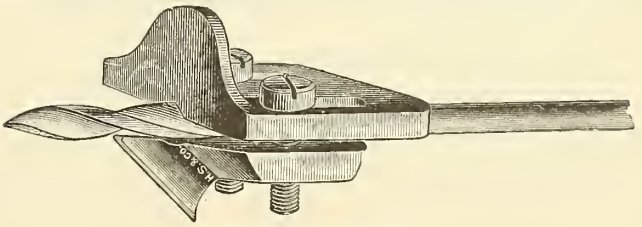
Clark's Double Cut

⅞ inch, per dozen $4.00



Snail

	Inch	½	⅝	¾
No. 5. Deep spiral cutter, per dozen		$4.00	$4.00	$4.50

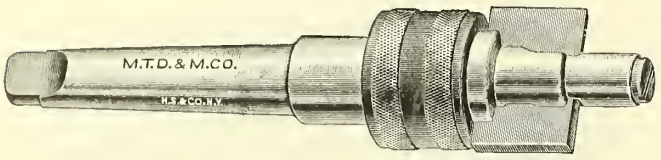


Smith's Adjustable

¾ inch, with depth gauge, will hold bits up to ⅜ inch

Without bits, per dozen $4.80

Counterbores



Morse No. 109F

With Interchangeable Blades and Guides

Size Number	Without Blade and Guide Each	With One Blade and One Guide Each See Lists Below	Capacity Blades Inches	Capacity Guides Inches	Morse Taper Shank Number
1	$3.50	$5.00	¾ to 1½	½ to 1	2
2	4.55	6.25	1 9/16 to 2½	⅞ to 1¼	3
3	5.60	8.00	2 9/16 to 3½	1⅛ to 2	4

Blades

	Each
¾ to 1 inch by 16ths	$ .75
1 1/16 to 1½ inches by 16ths	.85
1 9/16 to 2 inches by 16ths	.95
2 1/16 to 2½ inches by 16ths	1.25
2 9/16 to 3 inches by 16ths	1.65
3 1/16 to 3½ inches by 16ths	1.85

Guides

	Each
½ to 1 inch by 16ths	$ .75
1 1/16 to 1 9/16 inches by 16ths	.75
1⅝ to 2 inches by 16ths	.85

Special sizes made to order. Prices quoted on application



For Round and Fillister Head Machine Screws

	Each
For Numbers 2, 4 and 6 screws	$ .25
For Numbers 8, 10, 12 and 14 screws	.35

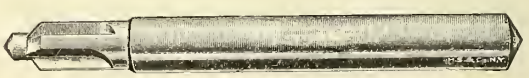


Morse No. 109D, Taper Shank

The Counterbores are furnished to the diameters of the heads of screws and the Guides to the body size.

These Counterbores can be furnished with straight shanks at special prices.

Diameter Counterbore Inches	Diameter Guide Inch	Each	Whole Length Inches	Morse Taper Shank
3/8	1/4	$1.40	4 9/16	No. 1
7/16	5/16	1.40	4 9/16	
1/2	3/8	1.40	4 13/16	
9/16	3/8	1.40	4 13/16	
5/8	7/16	1.40	4 13/16	
11/16	7/16	1.50	5 3/16	
3/4	1/2	1.50	5 3/16	
13/16	1/2	1.50	5 3/16	
7/8	9/16	1.80	6 1/16	No. 2
15/16	5/8	1.80	6 1/16	
1	3/4	1.80	6 1/16	
1 1/16	3/4	1.80	6 5/16	
1 1/8	13/16	2.00	6 5/16	
1 3/16	13/16	2.00	6 5/16	
1 1/4	7/8	2.00	6 5/16	
1 5/16	7/8	2.20	7 1/16	No. 3
1 3/8	15/16	2.40	7 1/16	
1 7/16	15/16	2.60	7 1/16	
1 1/2	1	2.80	7 1/16	



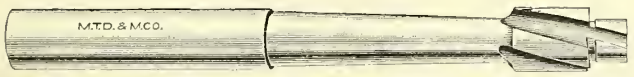
For Flat Head Machine Screws

	Each
For Numbers 2, 4 and 6 screws	$ .25
For Numbers 8 and 10 screws	.35

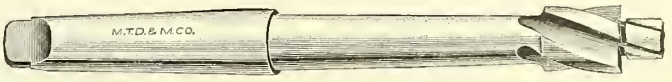
Above tools are perfectly relieved and can be used for working hard rubber, fiber and similar materials as well as metal.

The guide is the diameter of the body of the screw and the counterbore cuts for the head of screw.

Counterbores



Morse No. 109L, with Straight Shanks



Morse No. 109K, with Taper Shanks

Counterbores given in the table below are furnished either singly or in sets. A set consists of one counterbore for head of screw with guide of body size, one counterbore for head with guide of tap drill size, and one counterbore to enlarge a tap drill hole to body size. Counterbores of other sizes are made to order at special prices.

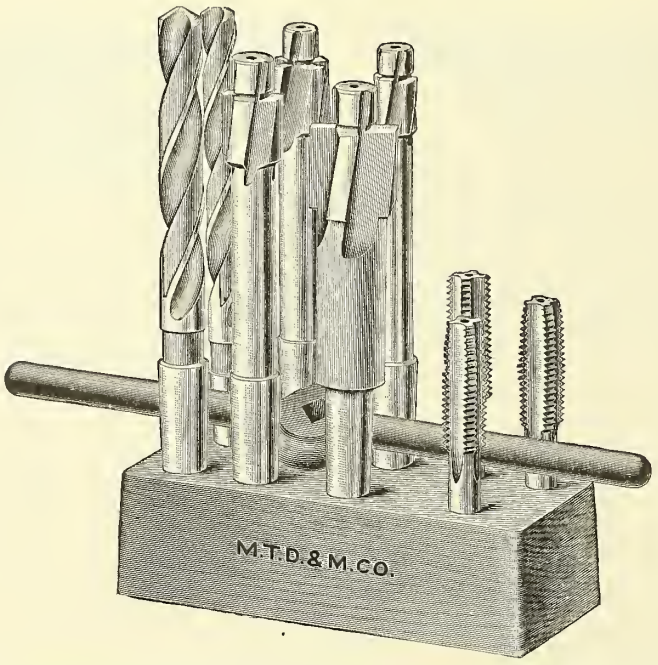
Diameter of Screw and Pitch U. S. Standard	Each	Diameter of Counterbore, Inches: For Head of Screw	Diameter of Counterbore, Inches: For Body of Screw	Diameter of Guide, Inch: For Body Size Hole	Diameter of Guide, Inch: For Tap Drill Hole	Whole Length Inches	Shank: Length Inches	Shank: Diam. Inch
1/4 20	$1.50	3/8	..	1/4	....	5 3/4	2 9/16	1/2
1/4 20	1.50	3/8	..	.	.1865	5 3/4	2 9/16	1/2
1/4 20	1.50	..	1/4	..	.1865	5 3/4	2 9/16	1/2
5/16 18	1.50	7/16	..	5/16	....	6 1/8	2 9/16	1/2
5/16 18	1.50	7/16	..	..	.241	6 1/8	2 9/16	1/2
5/16 18	1.50	..	5/16	..	.241	6 1/8	2 9/16	1/2
3/8 16	1.50	9/16	..	3/8	....	6 1/2	2 9/16	1/2
3/8 16	1.50	9/16	..	..	.301	6 1/2	2 9/16	1/2
3/8 16	1.50	..	3/8	..	.301	6 1/2	2 9/16	1/2
7/16 14	1.60	5/8	..	7/16	....	7	3 1/8	11/16
7/16 14	1.60	5/8	..	..	.347	7	3 1/8	11/16
7/16 14	1.60	..	7/16	..	.347	7	3 1/8	11/16
1/2 13	1.60	3/4	..	1/2	....	7 1/4	3 1/8	11/16
1/2 13	1.60	3/4	..	..	.402	7 1/4	3 1/8	11/16
1/2 13	1.60	..	1/2	..	.402	7 1/4	3 1/8	11/16
9/16 12	1.75	13/16	..	9/16	....	7 1/2	3 1/8	11/16
9/16 12	1.75	13/16	..	..	.452	7 1/2	3 1/8	11/16
9/16 12	1.75	..	9/16	..	.452	7 1/2	3 1/8	11/16
5/8 11	2.00	7/8	..	5/8	....	7 3/4	3 1/8	11/16
5/8 11	2.00	7/8	..	..	.5146	7 3/4	3 1/8	11/16
5/8 11	2.00	..	5/8	..	.5146	7 3/4	3 1/8	11/16
11/16 11	2.10	15/16	..	11/16	....	8 1/2	3 7/8	15/16
11/16 11	2.10	15/16	..	..	.5771	8 1/2	3 7/8	15/16
11/16 11	2.10	..	11/16	..	.5771	8 1/2	3 7/8	15/16
3/4 10	2.20	1	..	3/4	....	9	3 7/8	15/16
3/4 10	2.20	1	..	..	.624	9	3 7/8	15/16
3/4 10	2.20	..	3/4	..	.624	9	3 7/8	15/16
13/16 10	2.30	1 1/16	..	13/16	....	9	3 7/8	1
13/16 10	2.30	1 1/16	..	..	.6865	9	3 7/8	1
13/16 10	2.30	..	13/16	..	.6865	9	3 7/8	1
7/8 9	2.40	1 1/8	..	7/8	....	9 1/4	3 7/8	1
7/8 9	2.40	1 1/8	..	..	.7333	9 1/4	3 7/8	1
7/8 9	2.40	..	7/8	..	.7333	9 1/4	3 7/8	1
15/16 9	2.40	1 3/16	..	15/16	....	9 1/4	3 7/8	1
15/16 9	2.40	1 3/16	..	..	.7958	9 1/4	3 7/8	1
15/16 9	2.40	..	15/16	..	.7958	9 1/4	3 7/8	1
1 8	2.60	1 1/4	..	1	....	9 1/2	3 7/8	1
1 8	2.60	1 1/4	..	..	.8427	9 1/2	3 7/8	1
1 8	2.60	..	1	..	.8427	9 1/2	3 7/8	1

Counterbores given in the table below are furnished either singly or in sets. A set consists of one counterbore for head of screw with guide of body size, one counterbore for head with guide of tap drill size, and one counterbore to enlarge a tap drill hole to body size. Counterbores of other sizes are made to order at special prices.

Diameter of Screw and Pitch U. S. Standard	Each	Diameter of Counterbore, Inches: For Head of Screw	Diameter of Counterbore, Inches: For Body of Screw	Diameter of Guide, Inch: For Body Size Hole	Diameter of Guide, Inch: For Tap Drill Hole	Whole Length Inches	Morse Taper Shank
1/4 20	$1.50	3/8	..	1/4	....	5 3/4	No. 1
1/4 20	1.50	3/8	..	..	.1865	5 3/4	No. 1
1/4 20	1.50	..	1/4	..	.1865	5 3/4	No. 1
5/16 18	1.50	7/16	..	5/16	....	6 1/8	No. 1
5/16 18	1.50	7/16	..	..	.241	6 1/8	No. 1
5/16 18	1.50	..	5/16	..	.241	6 1/8	No. 1
3/8 16	1.50	9/16	..	3/8	....	6 1/2	No. 1
3/8 16	1.50	9/16	..	..	.301	6 1/2	No. 1
3/8 16	1.50	..	3/8	..	.301	6 1/2	No. 1
7/16 14	1.60	5/8	..	7/16	....	7	No. 2
7/16 14	1.60	5/8	..	..	.347	7	No. 2
7/16 14	1.60	..	7/16	..	.347	7	No. 2
1/2 13	1.60	3/4	..	1/2	....	7 1/4	No. 2
1/2 13	1.60	3/4	..	..	.402	7 1/4	No. 2
1/2 13	1.60	..	1/2	..	.402	7 1/4	No. 2
9/16 12	1.75	13/16	..	9/16	....	7 1/2	No. 2
9/16 12	1.75	13/16	..	..	.452	7 1/2	No. 2
9/16 12	1.75	..	9/16	..	.452	7 1/2	No. 2
5/8 11	2.00	7/8	..	5/8	....	7 3/4	No. 2
5/8 11	2.00	7/8	..	..	.5146	7 3/4	No. 2
5/8 11	2.00	..	5/8	..	.5146	7 3/4	No. 2
11/16 11	2.10	15/16	..	11/16	....	8 1/2	No. 3
11/16 11	2.10	15/16	..	..	.5771	8 1/2	No. 3
11/16 11	2.10	..	11/16	..	.5771	8 1/2	No. 3
3/4 10	2.20	1	..	3/4	....	9	No. 3
3/4 10	2.20	1	..	..	.624	9	No. 3
3/4 10	2.20	..	3/4	..	.624	9	No. 3
13/16 10	2.30	1 1/16	..	13/16	....	9	No. 3
13/16 10	2.30	1 1/16	..	..	.6865	9	No. 3
13/16 10	2.30	..	13/16	..	.6865	9	No. 3
7/8 9	2.40	1 1/8	..	7/8	....	9 1/4	No. 3
7/8 9	2.40	1 1/8	..	..	.7333	9 1/4	No. 3
7/8 9	2.40	..	7/8	..	.7333	9 1/4	No. 3
15/16 9	2.40	1 3/16	..	15/16	....	9 1/4	No. 3
15/16 9	2.40	1 3/16	..	..	.7958	9 1/4	No. 3
15/16 9	2.40	..	15/16	..	.7958	9 1/4	No. 3
1 8	2.60	1 1/4	..	1	....	9 1/2	No. 3
1 8	2.60	1 1/4	..	..	.8427	9 1/2	No. 3
1 8	2.60	..	1	..	.8427	9 1/2	No. 3

For sets of Counterbores, Taps, Tap Drills and Wrench in Blocks see next page

Screw Sets in Blocks



They are supplied regularly for U.S. Standard Screws and A.S.M.E. Standard Machine Screws only. Each set complete with Drills, Taps, Counterbores and Wrench as listed

U. S. Standard Screws

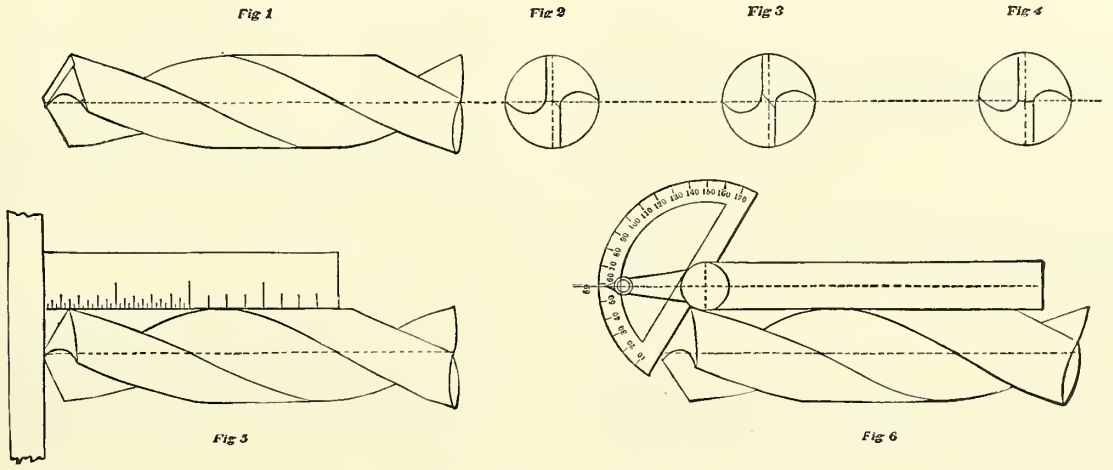
Diameter and Pitch of Screw	Per Set	Taper Shank Drills		TAPER SHANK COUNTERBORES								Taps Taper Plug Bottoming		Wrench Size Number
				Tap Size For Body		Tap Size For Fil. Head		Body Size For Fil. Head		Body Size Seat Hex. Head				
		Tap Size	Body Size	Diameter Guide	Diameter Bore	Diameter Guide	Diameter Bore	Diameter Guide	Diameter Bore	Diameter Guide	Diameter Bore			
*1/4 20	$21.60	3/16	1/4	3/16	1/4	3/16	3/8	1/4	3/8	1/4	5/8	1/4	20	4
5/16 18	19.50	C	5/16	C	5/16	C	7/16	5/16	7/16	5/16	11/16	5/16	18	5
3/8 16	20.60	N	3/8	N	3/8	N	9/16	3/8	9/16	3/8	13/16	3/8	16	6
7/16 14	22.50	S	7/16	S	7/16	S	5/8	7/16	5/8	7/16	15/16	7/16	14	7
1/2 13	23.10	13/32	1/2	13/32	1/2	13/32	3/4	1/2	3/4	1/2	1 1/16	1/2	13	7
1/2 12	23.10	25/64	1/2	25/64	1/2	25/64	3/4	1/2	3/4	1/2	1 1/16	1/2	12	7
9/16 12	24.75	29/64	9/16	29/64	9/16	29/64	13/16	9/16	13/16	9/16	1 1/8	9/16	12	8
5/8 11	27.30	33/64	5/8	33/64	5/8	33/64	7/8	5/8	7/8	5/8	1 1/4	5/8	11	8
3/4 10	31.00	5/8	3/4	5/8	3/4	5/8	1	3/4	1	3/4	1 1/2	3/4	10	9
7/8 9	40.25	47/64	7/8	47/64	7/8	47/64	1 1/8	7/8	1 1/8	7/8	1 11/16	7/8	9	10
1 8	51.25	27/32	1	27/32	1	27/32	1 1/4	1	1 1/4	1	1 15/16	1	8	12

*For 1/4 20 Set only there is furnished in addition to the Counterbores listed, one for flat head screws: Diameter of guide 1/4, diameter of bore 3/8. Price on this size only includes five Counterbores.

A.S.M.E. Standard Machine Screws

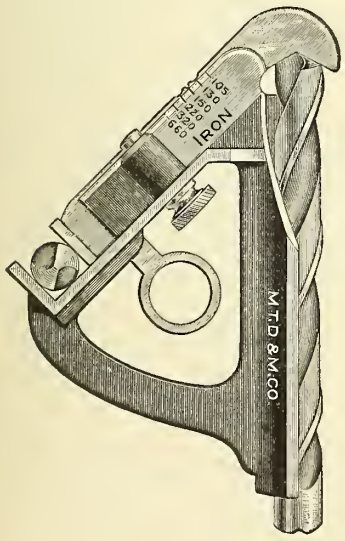
Number and Pitch of Screw	Per Set	Straight Shank Drills		STRAIGHT SHANK COUNTERBORES										Taps Taper Plug Bottoming	Wrench Size Number
				Tap Size For Body		Tap Size For Fil. Head		Body Size For Fil. Head		Body Size For Round Head		Body Size For Flat Head			
		Tap Size	Body Size	Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore	Diam. Guide	Diam. Bore		
0—80	$21.00	No. 56	1/16	.046	.062	.046	.090	.062	.090	.062	.136	.062	.136	0—80	1
1—72	21.00	No. 53	No. 49	.059	.075	.059	.112	.073	.112	.073	.159	.073	.159	1—72	1
2—64	21.00	No. 50	No. 44	.070	.088	.070	.134	.086	.134	.086	.185	.086	.185	2—64	1
3—56	21.00	No. 47	No. 39	.078	.101	.078	.155	.099	.155	.099	.209	.099	.209	3—56	1
4—48	21.00	No. 43	No. 33	.089	.114	.089	.176	.113	.176	.113	.232	.113	.232	4—48	1
5—44	21.50	No. 39	1/8	.099	.127	.099	.198	.125	.198	.125	.256	.125	.256	5—44	2
6—40	21.50	No. 35	No. 28	.110	.140	.110	.219	.140	.219	.140	.280	.140	.280	6—40	2
7—36	21.50	No. 31	No. 24	.120	.153	.120	.240	.152	.240	.152	.304	.152	.304	7—36	2
8—36	21.50	No. 29	No. 19	.136	.166	.136	.262	.166	.262	166	.328	.166	.328	8—36	3
9—32	21.50	No. 28	No. 16	.140	.179	.140	.284	.177	.284	.177	.352	.177	.352	9—32	3
10—30	21.50	No. 24	No. 11	.152	.192	.152	.305	.191	.305	.191	.375	.191	.375	10—30	3
12—28	22.00	No. 17	7/32	.173	.218	.173	.348	.218	.348	.218	.424	.218	.424	12—28	4
14—24	22.00	No. 10	C	.193	.244	.193	.390	.242	.390	.242	.476	.242	.476	14—24	4
16—22	22.00	No. 3	I	.213	.270	.213	.433	.272	.433	.272	.528	.272	.528	16—22	4
18—20	22.00	A	M	.234	.296	.234	.476	.295	.476	.295	.580	.295	.580	18—20	5
20—20	22.75	G	P	.261	.322	.261	.518	.323	.518	.323	.632	.323	.632	20—20	5
22—18	23.35	K	S	.281	.348	.281	.561	.348	.561	.348	.684	.348	.684	22—18	5
24—16	23.55	19/64	3/8	.297	.374	.297	.604	.375	.604	.375	.736	.375	.736	24—16	6

Grinding Twist Drills

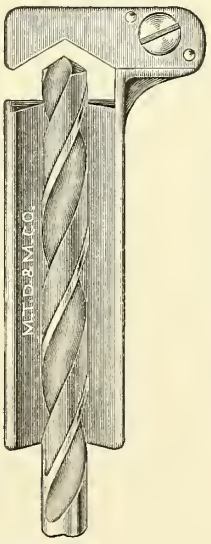


Few operations on tools in the shop are more frequently disappointing than the grinding or sharpening of drills. That the cutting edges have a proper and uniform angle with the longitudinal axis of the drill (see Fig. 6) having them of exactly equal length, and the lips of the drill well and sufficiently backed off or cleared, are points generally understood as requisite to the satisfactory performance of a drill, though not always attained. Practical suggestions for the grinding of drills have been published from time to time. We append in part from these, hoping they will be found useful. If the clearance of a drill is insufficient or imperfect it will not cut. When force is applied it resists the power of the drilling machine, and is crushed or split. It is well to start a drill, after grinding, by hand, observing the character of the chips, which should characterize a clean cutting tool. In wrought metal the chip will sometimes attain a length of several feet. Prof. Sweet suggests that the rear of the lip of a drill be removed, as shown by the cut No. 1; this makes the cutting edge much like a flat drill. Drills properly made have their cutting edges straight when ground to proper angle, which is 59 degrees, as shown in cut No. 6. Grinding to less angle leaves the lip hooking, and is likely to produce a crooked and irregular hole. The grinding lines to a drill are placed slightly above the center, to allow for the proper angle of point, which is an important factor. This angle is an index to the clearance. If the angle is too much, the drill cuts rank; if not enough, the drill may not cut. Fig. 2 shows a proper angle. In Fig. 3 the angle is too sharp. In Fig. 4 the angle runs backward, and shows the want of clearance. An effective method of determining the clearance is to set the point of the drill on a plane surface, holding a scale as shown in cut No. 5; by revolving the drill its clearance is shown, as well as the height of the cutting lips, which should be equal; also the cutting edges should be of exactly equal length—any inequality of lengths doubles itself in work. To strengthen the drill, the center is made thicker toward the shank. As the drill is shortened through use, the center shows thicker, and will work hard in drilling. To overcome this, the center should be thinned, care being taken to remove an equal amount of stock on each side, and so keep the point central. In grinding a drill preserve the original form, which usually will insure rapid and satisfactory work.

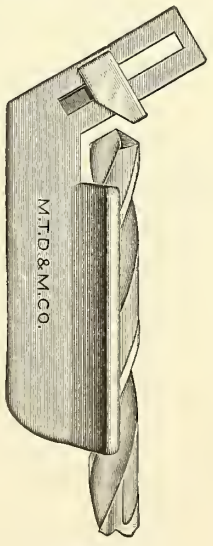
Gauges for Grinding Drills



Style No. 1



Style No. 2



Style No. 3

For Drills ¾ inch and smaller



Style No. 4

This style made in two sizes for ¼ in. and smaller, for ¾ in. and smaller

Style	Capacity	Each
No. 1	0 to ¾ inch	$10.50
No. 2	0 to ¾ inch	5.00
No. 3	0 to ¾ inch	6.25

Style	Capacity	Each
No. 4A	0 to ¼ inch	$3.50
No. 4B	¼ to ¾ inch	5.00

Jobbers Reamers

Carbon Steel



Morse No. 115, with Straight Shanks and Flutes



Morse No. 115A, with Taper Shanks and Straight Flutes



Morse No. 115B, with Straight Shanks and Spiral Flutes



Morse No. 115D, with Taper Shanks and Spiral Flutes



Morse No. 115C, with Straight Shanks and Flutes

Threaded Ends

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/8	$1.00	3	1 1/2
5/32	1.10	3 1/4	1 5/8
3/16	1.20	3 1/2	1 3/4
7/32	1.30	3 3/4	1 7/8
1/4	1.40	4	2
9/32	1.45	4 1/4	2 1/8
5/16	1.50	4 1/2	2 1/4
11/32	1.55	4 3/4	2 3/8
3/8	1.60	5	2 1/2
13/32	1.70	5 1/4	2 5/8
7/16	1.75	5 1/2	2 3/4
15/32	1.85	5 3/4	2 7/8
1/2	1.90	6	3
17/32	1.95	6 1/4	3 1/8
9/16	2.00	6 1/2	3 1/4
19/32	2.10	6 3/4	3 3/8
5/8	2.20	7	3 1/2
21/32	2.30	7 3/8	3 11/16
11/16	2.40	7 3/4	3 7/8
23/32	2.50	8 1/8	4 1/16
3/4	2.60	8 3/8	4 3/16
25/32	2.70	8 3/4	4 3/8
13/16	2.80	9 1/8	4 9/16
27/32	2.95	9 3/8	4 11/16
7/8	3.10	9 3/4	4 7/8
29/32	3.25	10	5
15/16	3.40	10 1/4	5 1/8
31/32	3.55	10 5/8	5 5/16
1	3.70	10 7/8	5 7/16
1 1/32	3.85	11 1/8	5 9/16
1 1/16	4.00	11 1/4	5 5/8
1 3/32	4.15	11 1/2	5 3/4
1 1/8	4.30	11 5/8	5 13/16
1 5/32	4.45	11 7/8	5 15/16
1 3/16	4.60	12	6
1 7/32	4.75	12 1/8	6 1/16
1 1/4	4.90	12 1/4	6 1/8
1 9/32	5.05	12 3/8	6 3/16
1 5/16	5.20	12 1/2	6 1/4
1 11/32	$5.40	12 1/2	6 1/4
1 3/8	5.60	12 5/8	6 5/16
1 13/32	5.80	12 5/8	6 5/16
1 7/16	6.00	12 7/8	6 7/16
1 15/32	6.20	12 7/8	6 7/16
1 1/2	6.40	13	6 1/2
1 17/32	6.60	13	6 1/2
1 9/16	6.80	13	6 1/2
1 19/32	7.00	13	6 1/2
1 5/8	7.20	13	6 1/2
1 21/32	7.40	13	6 1/2
1 11/16	7.60	13 1/2	6 3/4
1 23/32	7.80	13 1/2	6 3/4
1 3/4	8.00	13 1/2	6 3/4
1 25/32	8.20	13 1/2	6 3/4
1 13/16	8.40	13 1/2	6 3/4
1 27/32	8.60	13 1/2	6 3/4
1 7/8	8.80	14	7
1 29/32	9.00	14	7
1 15/16	9.20	14	7
1 31/32	9.40	14	7
2	9.60	14	7
2 1/16	10.00	14 1/2	7 1/4
2 1/8	10.40	14 1/2	7 1/4
2 3/16	10.80	14 1/2	7 1/4
2 1/4	11.30	14 1/2	7 1/4
2 5/16	11.80	15	7 1/2
2 3/8	12.30	15	7 1/2
2 7/16	12.80	15	7 1/2
2 1/2	13.40	15	7 1/2
2 9/16	14.00	15 1/2	7 3/4
2 5/8	14.60	15 1/2	7 3/4
2 11/16	15.40	15 1/2	7 3/4
2 3/4	16.20	15 1/2	7 3/4
2 13/16	17.00	16	8
2 7/8	17.80	16	8
2 15/16	18.60	16	8
3	19.40	16	8

32nd sizes not listed furnished at intermediate prices and 64th sizes at price of next larger 32nd size.

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/4	$1.50	5 3/16	2	No. 1
9/32	1.55	5 1/16	2 1/8	No. 1
5/16	1.60	5 1/2	2 1/4	No. 1
11/32	1.65	5 5/8	2 3/8	No. 1
3/8	1.70	5 13/16	2 1/2	No. 1
13/32	1.80	5 15/16	2 5/8	No. 1
7/16	1.85	6 1/8	2 3/4	No. 1
15/32	1.95	6 1/4	2 7/8	No. 1
1/2	2.00	6 1/16	3	No. 1
17/32	2.10	6 9/16	3 1/8	No. 1
9/16	2.15	6 3/4	3 1/4	No. 1
19/32	2.25	6 7/8	3 3/8	No. 1
5/8	2.30	7 9/16	3 1/2	No. 2
21/32	2.40	7 3/4	3 11/16	No. 2
11/16	2.50	8	3 7/8	No. 2
23/32	2.60	8 3/16	4 1/16	No. 2
3/4	2.70	8 3/8	4 3/16	No. 2
25/32	2.80	8 9/16	4 3/8	No. 2
13/16	2.90	8 13/16	4 9/16	No. 2
27/32	3.05	8 15/16	4 11/16	No. 2
7/8	3.20	9 3/16	4 7/8	No. 2
29/32	3.35	9 5/16	5	No. 2
15/16	3.50	10 3/16	5 1/8	No. 3
31/32	3.65	10 3/8	5 5/16	No. 3
1	3.80	10 9/16	5 7/16	No. 3
1 1/32	3.95	10 11/16	5 9/16	No. 3
1 1/16	4.10	10 13/16	5 5/8	No. 3
1 3/32	4.25	10 15/16	5 3/4	No. 3
1 1/8	4.40	11 1/16	5 13/16	No. 3
1 5/32	4.55	11 3/16	5 15/16	No. 3
1 3/16	4.70	11 5/16	6	No. 3
1 7/32	4.85	11 3/8	6 1/16	No. 3
1 1/4	5.00	12 1/2	6 1/8	No. 4
1 9/32	5.15	12 9/16	6 3/16	No. 4
1 5/16	5.30	12 11/16	6 1/4	No. 4
1 11/32	5.50	12 11/16	6 1/4	No. 4
1 3/8	$5.70	12 13/16	6 5/16	No. 4
1 13/32	5.90	12 13/16	6 5/16	No. 4
1 7/16	6.10	13	6 7/16	No. 4
1 15/32	6.30	13	6 7/16	No. 4
1 1/2	6.50	13 1/8	6 1/2	No. 4
1 17/32	6.70	13 1/8	6 1/2	No. 4
1 9/16	6.90	13 1/8	6 1/2	No. 4
1 19/32	7.10	13 1/8	6 1/2	No. 4
1 5/8	7.30	13 1/8	6 1/2	No. 4
1 21/32	7.50	13 1/8	6 1/2	No. 4
1 11/16	7.70	13 7/16	6 3/4	No. 4
1 23/32	7.85	13 7/16	6 3/4	No. 4
1 3/4	8.00	14 11/16	6 3/4	No. 5
1 25/32	8.20	14 11/16	6 3/4	No. 5
1 13/16	8.40	14 11/16	6 3/4	No. 5
1 27/32	8.60	14 11/16	6 3/4	No. 5
1 7/8	8.80	15	7	No. 5
1 29/32	9.00	15	7	No. 5
1 15/16	9.20	15	7	No. 5
1 31/32	9.40	15	7	No. 5
2	9.60	15	7	No. 5
2 1/16	10.00	15 1/2	7 1/4	No. 5
2 1/8	10.40	15 1/2	7 1/4	No. 5
2 3/16	10.80	15 1/2	7 1/4	No. 5
2 1/4	11.30	15 1/2	7 1/4	No. 5
2 5/16	11.80	16	7 1/2	No. 5
2 3/8	12.30	16	7 1/2	No. 5
2 7/16	12.80	16	7 1/2	No. 5
2 1/2	13.40	16	7 1/2	No. 5
2 9/16	14.00	16 1/2	7 3/4	No. 5
2 5/8	14.60	16 1/2	7 3/4	No. 5
2 11/16	15.40	16 1/2	7 3/4	No. 5
2 3/4	16.20	16 1/2	7 3/4	No. 5
2 13/16	17.00	17	8	No. 5
2 7/8	17.80	17	8	No. 5
2 15/16	18.60	17	8	No. 5
3	19.40	17	8	No. 5

32nd sizes not listed furnished at intermediate prices and 64th sizes at price of next larger 32nd size. Flutes are slightly tapered on end.

In Sets

Morse Nos. 115, 115 B and 115 C

Set, 1/4 to 1 inch in diameter, by 16ths	$30.00
Set, 1/4 to 1 1/4 inches in diameter, by 16ths	48.00
Set, 1/4 to 1 1/2 inches in diameter, by 16ths	70.00
Set, 1/4 to 2 inches in diameter, by 16ths	135.00
Set, 1/4 to 1 inch in diameter, by 32nds	$57.50
Set, 1/4 to 1 1/4 inches in diameter, by 32nds	92.00
Set, 1/4 to 1 1/2 inches in diameter, by 32nds	137.00
Set, 1/4 to 2 inches in diameter, by 32nds	265.00

For these Reamers in High Speed Steel see next page. Reamers of any style, size or length made to order at special prices

Jobbers Reamers

High Speed Steel



Morse No. 115, with Straight Shanks and Flutes



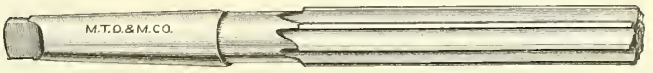
Morse No. 115 B, with Straight Shanks and Spiral Flutes



Morse No. 115 C, with Straight Shanks and Flutes
Threaded Ends

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/8	$3.00	3	1 1/2
3/16	3.25	3 1/2	1 3/4
1/4	3.50	4	2
5/16	3.75	4 1/2	2 1/4
3/8	4.25	5	2 1/2
7/16	4.75	5 1/2	2 3/4
1/2	5.25	6	3
9/16	5.75	6 1/2	3 1/4
5/8	6.25	7	3 1/2
11/16	6.75	7 3/4	3 7/8
3/4	7.25	8 3/8	4 3/16
13/16	7.75	9 1/8	4 9/16
7/8	8.50	9 3/4	4 7/8
15/16	9.50	10 1/4	5 1/8
1	10.50	10 7/8	5 7/16
1 1/16	11.50	11 1/4	5 5/8
1 1/8	12.75	11 5/8	5 13/16
1 3/16	14.25	12	6
1 1/4	15.75	12 1/4	6 1/8
1 5/16	17.25	12 1/2	6 1/4
1 3/8	18.75	12 5/8	6 5/16
1 7/16	20.50	12 7/8	6 7/16
1 1/2	22.25	13	6 1/2
1 9/16	24.00	13	6 1/2
1 5/8	$25.75	13	6 1/2
1 11/16	27.50	13 1/2	6 3/4
1 3/4	29.50	13 1/2	6 3/4
1 13/16	31.50	13 1/2	6 3/4
1 7/8	33.50	14	7
1 15/16	35.75	14	7
2	38.00	14	7
2 1/16	40.75	14 1/2	7 1/4
2 1/8	43.50	14 1/2	7 1/4
2 3/16	46.25	14 1/2	7 1/4
2 1/4	49.00	14 1/2	7 1/4
2 5/16	51.75	15	7 1/2
2 3/8	55.00	15	7 1/2
2 7/16	58.25	15	7 1/2
2 1/2	61.50	15	7 1/2
2 9/16	64.75	15 1/2	7 3/4
2 5/8	68.00	15 1/2	7 3/4
2 11/16	71.25	15 1/2	7 3/4
2 3/4	74.50	15 1/2	7 3/4
2 13/16	77.75	16	8
2 7/8	81.00	16	8
2 15/16	84.25	16	8
3	87.50	16	8

64th and 32nd sizes take price of next larger listed size



Morse No. 115A, with Taper Shanks and Straight Flutes

Diam. Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/4	$4.00	5 3/16	2	No. 1
5/16	4.25	5 1/2	2 1/4	
3/8	4.75	5 13/16	2 1/2	
7/16	5.25	6 1/8	2 3/4	
1/2	5.75	6 7/16	3	
9/16	6.25	6 3/4	3 1/4	
5/8	6.75	7 9/16	3 1/2	No. 2
11/16	7.25	8	3 7/8	
3/4	7.75	8 3/8	4 3/16	
13/16	8.50	8 13/16	4 9/16	
7/8	9.50	9 3/16	4 7/8	
15/16	10.50	10 3/16	5 1/8	No. 3
1	11.50	10 9/16	5 7/16	
1 1/16	12.50	10 13/16	5 5/8	
1 1/8	13.75	11 1/16	5 13/16	
1 3/16	15.25	11 5/16	6	
1 1/4	16.75	12 1/2	6 1/8	No. 4
1 5/16	18.25	12 11/16	6 1/4	
1 3/8	19.75	12 13/16	6 5/16	
1 7/16	21.50	13	6 7/16	
1 1/2	23.25	13 1/8	6 1/2	
1 9/16	25.00	13 1/8	6 1/2	
1 5/8	$26.75	13 1/8	6 1/2	No. 4
1 11/16	28.50	13 7/16	6 3/4	
1 3/4	30.50	14 11/16	6 3/4	No. 5
1 13/16	32.50	14 11/16	6 3/4	
1 7/8	34.50	15	7	
1 15/16	36.75	15	7	
2	39.00	15	7	
2 1/16	41.75	15 1/2	7 1/4	
2 1/8	44.50	15 1/2	7 1/4	
2 3/16	47.25	15 1/2	7 1/4	
2 1/4	50.00	15 1/2	7 1/4	
2 5/16	53.25	16	7 1/2	
2 3/8	56.50	16	7 1/2	
2 7/16	59.75	16	7 1/2	
2 1/2	63.00	16	7 1/2	
2 9/16	66.25	16 1/2	7 3/4	
2 5/8	69.50	16 1/2	7 3/4	
2 11/16	72.75	16 1/2	7 3/4	
2 3/4	76.00	16 1/2	7 3/4	
2 13/16	79.25	17	8	
2 7/8	82.50	17	8	
2 15/16	86.25	17	8	
3	90.00	17	8	

64th and 32nd sizes take price of next larger listed size

Solid Reamers

Carbon Steel



Morse No. 116, with Straight Shanks and Flutes
Short Set

Diameter Inch	Each	Whole Length Inches	Length of Flutes Inches
1/4	$1.30	3 9/16	2
9/32	1.35	3 13/16	2 1/8
5/16	1.40	4	2 1/4
11/32	1.45	4 1/8	2 5/16
3/8	1.50	4 1/4	2 3/8
13/32	1.55	4 3/8	2 3/8
7/16	1.60	4 1/2	2 7/16
15/32	1.65	4 5/8	2 1/2
1/2	1.70	4 3/4	2 9/16
17/32	1.75	4 7/8	2 9/16
9/16	1.80	5	2 5/8
19/32	1.85	5 1/8	2 11/16
5/8	1.90	5 1/4	2 3/4
21/32	1.95	5 3/8	2 13/16
11/16	2.05	5 1/2	2 7/8
23/32	2.15	5 5/8	2 15/16
3/4	$2.20	5 3/4	3
25/32	2.30	5 7/8	3 1/16
13/16	2.35	6	3 1/8
27/32	2.40	6 1/16	3 3/16
7/8	2.50	6 3/8	3 1/4
29/32	2.60	6 9/16	3 5/16
15/16	2.70	6 3/4	3 7/16
31/32	2.80	6 15/16	3 1/2
1	2.90	7 1/8	3 5/8
1 1/32	3.00	7 5/16	3 11/16
1 1/16	3.10	7 1/2	3 3/4
1 3/32	3.20	7 11/16	3 15/16
1 1/8	3.30	7 7/8	4
1 5/32	3.40	8 1/16	4 1/8
1 3/16	3.50	8 1/4	4 1/4
1 7/32	3.60	8 7/16	4 3/8



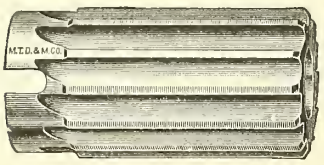
Morse No. 116A, with Straight Shanks and Flutes
Threaded Ends, Short Set

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1 1/4	$3.70	8 5/8	4 1/2
1 9/32	3.80	8 13/16	4 5/8
1 5/16	3.90	9	4 3/4
1 11/32	4.00	9 3/16	4 7/8
1 3/8	4.10	9 3/8	5
1 13/32	4.20	9 9/16	5 1/8
1 7/16	4.35	9 3/4	5 1/4
1 1/2	4.70	10	5 1/2
1 9/16	5.20	10 1/4	5 5/8
1 5/8	5.70	10 1/2	5 3/4
1 11/16	6.20	10 3/4	5 7/8
1 3/4	6.70	11	6
1 13/16	7.10	11 1/4	6 1/8
1 7/8	7.50	11 1/2	6 1/4
1 15/16	7.90	11 3/4	6 3/8
2	8.30	12	6 1/2
2 1/16	$8.70	12 1/8	6 1/2
2 1/8	9.10	12 1/4	6 5/8
2 3/16	9.50	12 3/8	6 5/8
2 1/4	9.90	12 1/2	6 3/4
2 5/16	10.30	12 5/8	6 3/4
2 3/8	10.80	12 3/4	6 7/8
2 7/16	11.40	12 7/8	7
2 1/2	12.00	13	7
2 9/16	12.60	13 1/8	7 1/8
2 5/8	13.20	13 1/4	7 1/8
2 11/16	13.85	13 3/8	7 1/4
2 3/4	14.50	13 1/2	7 1/4
2 13/16	15.20	13 5/8	7 3/8
2 7/8	15.95	13 3/4	7 3/8
2 15/16	16.70	13 7/8	7 1/2
3	17.50	14	7 1/2

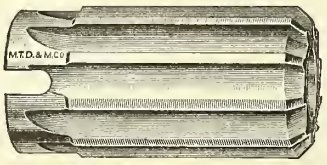
32nd sizes not listed furnished at intermediate prices and 64th sizes at prices of next larger 32nd size.

Shell Reamers

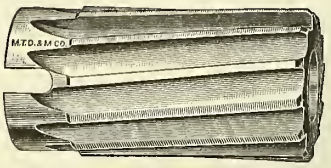
Carbon Steel



Morse No. 117
with Straight Flutes



Morse No. 117A, Rose
with Straight Flutes



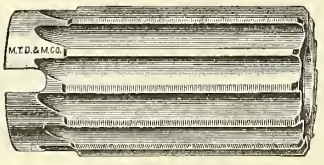
Morse No. 117½
with Spiral Flutes

These Shell Reamers have Taper Holes, the diameter given being at the large end

Diameter Inches	Each	Whole Length Inches	Size Hole Inches
1/2	$1.40	2	1/4
9/16	1.50	2	1/4
5/8	1.60	2 1/4	3/8
11/16	1.60	2 1/4	3/8
3/4	1.60	2 1/2	1/2
13/16	1.60	2 1/2	1/2
7/8	1.70	2 1/2	1/2
15/16	1.70	2 1/2	1/2
1	1.80	2 3/4	5/8
1 1/16	1.80	2 3/4	5/8
1 1/8	1.90	2 3/4	5/8
1 3/16	2.00	2 3/4	5/8
1 1/4	2.20	2 3/4	5/8
1 5/16	2.40	3	3/4
1 3/8	2.60	3	3/4
1 7/16	2.80	3	3/4
1 1/2	3.00	3	3/4
1 9/16	3.20	3	3/4
1 5/8	3.50	3	3/4
1 11/16	3.80	3 1/2	1
1 3/4	4.10	3 1/2	1
1 13/16	4.40	3 1/2	1
1 7/8	4.70	3 1/2	1
1 15/16	5.00	3 1/2	1
2	5.20	3 1/2	1
2 1/16	5.40	3 3/4	1 1/4
2 1/8	5.60	3 3/4	1 1/4
2 3/16	$5.80	3 3/4	1 1/4
2 1/4	6.00	3 3/4	1 1/4
2 5/16	6.20	3 3/4	1 1/4
2 3/8	6.40	3 3/4	1 1/4
2 7/16	6.60	3 3/4	1 1/4
2 1/2	6.80	3 3/4	1 1/4
2 9/16	7.00	4	1 1/2
2 5/8	7.30	4	1 1/2
2 11/16	7.60	4	1 1/2
2 3/4	8.00	4	1 1/2
2 13/16	8.40	4	1 1/2
2 7/8	8.80	4	1 1/2
2 15/16	9.20	4	1 1/2
3	9.60	4	1 1/2
3 1/16	9.90	4 1/2	1 3/4
3 1/8	10.20	4 1/2	1 3/4
3 3/16	10.60	4 1/2	1 3/4
3 1/4	11.00	4 1/2	1 3/4
3 5/16	11.50	4 1/2	1 3/4
3 3/8	12.00	4 1/2	1 3/4
3 7/16	12.50	4 1/2	1 3/4
3 1/2	13.00	4 1/2	1 3/4
3 9/16	13.50	5	2
3 5/8	14.00	5	2
3 11/16	14.50	5	2
3 3/4	15.00	5	2
3 13/16	15.50	5	2
3 7/8	$16.00	5	2
3 15/16	17.00	5	2
4	18.00	5	2
4 1/16	18.30	5 1/2	2 1/4
4 1/8	18.60	5 1/2	2 1/4
4 3/16	19.00	5 1/2	2 1/4
4 1/4	19.40	5 1/2	2 1/4
4 5/16	19.80	5 1/2	2 1/4
4 3/8	20.20	5 1/2	2 1/4
4 7/16	20.60	5 1/2	2 1/4
4 1/2	21.00	5 1/2	2 1/4
4 9/16	21.60	6	2 1/2
4 5/8	22.20	6	2 1/2
4 11/16	22.80	6	2 1/2
4 3/4	23.40	6	2 1/2
4 13/16	24.00	6	2 1/2
4 7/8	24.60	6	2 1/2
4 15/16	25.20	6	2 1/2
5	26.00	6	2 1/2
5 1/16	27.00	6	2 1/2
5 1/8	28.00	6	2 1/2
5 3/16	29.00	6	2 1/2
5 1/4	30.00	6	2 1/2
5 5/16	31.00	6	2 1/2
5 3/8	32.00	6	2 1/2
5 7/16	33.00	6	2 1/2
5 1/2	34.00	6	2 1/2
5 9/16	$35.25	6 1/2	2 3/4
5 5/8	36.50	6 1/2	2 3/4
5 11/16	37.75	6 1/2	2 3/4
5 3/4	39.00	6 1/2	2 3/4
5 13/16	40.50	6 1/2	2 3/4
5 7/8	42.00	6 1/2	2 3/4
5 15/16	43.50	6 1/2	2 3/4
6	45.00	6 1/2	2 3/4
6 1/16	46.75	6 1/2	2 3/4
6 1/8	48.50	6 1/2	2 3/4
6 3/16	50.25	6 1/2	2 3/4
6 1/4	52.00	6 1/2	2 3/4
6 5/16	54.00	6 1/2	2 3/4
6 3/8	56.00	6 1/2	2 3/4
6 7/16	58.00	6 1/2	2 3/4
6 1/2	60.00	6 1/2	2 3/4
6 9/16	62.50	7	3
6 5/8	65.00	7	3
6 11/16	67.50	7	3
6 3/4	70.00	7	3
6 13/16	72.50	7	3
6 7/8	75.00	7	3
6 15/16	77.50	7	3
7	80.00	7	3

For Arbors fitting these Reamers see Index.

Reamers Style 117 A have no radial clearance but are ground with a longitudinal clearance. Keep cutting points sharp.



Morse No. 117C, with Straight Holes and Flutes

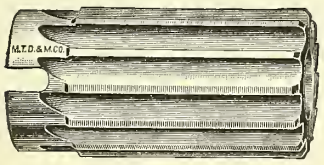
Diameter Inches	Each	Whole Length Inches	Length of Flute Inches	Diam. of Hole Inch
1 1/16	$1.80	2 5/8	2 1/4	1/2
1 1/8	1.90	2 5/8	2 1/4	1/2
1 3/16	2.00	2 5/8	2 1/4	1/2
1 1/4	2.20	2 5/8	2 1/4	1/2
1 5/16	2.40	2 5/8	2 1/4	1/2
1 3/8	2.60	2 3/4	2 3/8	5/8
1 7/16	2.80	2 3/4	2 3/8	5/8
1 1/2	3.00	2 3/4	2 3/8	5/8
1 9/16	3.20	2 3/4	2 3/8	5/8
1 5/8	3.50	2 3/4	2 3/8	5/8
1 11/16	$3.80	2 3/4	2 3/8	5/8
1 3/4	4.10	2 3/4	2 3/8	5/8
1 13/16	4.40	2 3/4	2 3/8	5/8
1 7/8	4.70	2 3/4	2 3/8	3/4
1 15/16	5.00	2 3/4	2 3/8	3/4
2	5.20	2 3/4	2 3/8	3/4
2 1/16	5.40	2 3/4	2 3/8	3/4
2 1/8	5.60	2 3/4	2 3/8	3/4
2 3/16	5.80	2 3/4	2 3/8	3/4
2 1/4	6.00	2 3/4	2 3/8	3/4
2 5/16	$6.20	2 3/4	2 3/8	3/4
2 3/8	6.40	2 3/4	2 3/8	3/4
2 7/16	6.60	2 3/4	2 3/8	3/4
2 1/2	6.80	3	2 1/2	1
2 9/16	7.00	3	2 1/2	1
2 5/8	7.30	3	2 1/2	1
2 11/16	7.60	3	2 1/2	1
2 3/4	8.00	3	2 1/2	1
2 13/16	8.40	3	2 1/2	1
2 7/8	8.80	3	2 1/2	1
2 15/16	9.20	3	2 1/2	1
3	9.60	3	2 1/2	1
3 1/16	9.90	3	2 1/2	1
3 1/8	10.20	3	2 1/2	1
3 3/16	10.60	3	2 1/2	1
3 1/4	11.00	3 1/4	2 3/4	1 1/4
3 5/16	11.50	3 1/4	2 3/4	1 1/4
3 3/8	12.00	3 1/4	2 3/4	1 1/4
3 7/16	12.50	3 1/4	2 3/4	1 1/4
3 1/2	13.00	3 1/4	2 3/4	1 1/4
3 9/16	13.50	3 1/4	2 3/4	1 1/4
3 5/8	14.00	3 1/4	2 3/4	1 1/4
3 11/16	$14.50	3 1/4	2 3/4	1 1/4
3 3/4	15.00	3 5/8	3 1/8	1 1/2
3 13/16	15.50	3 5/8	3 1/8	1 1/2
3 7/8	16.00	3 5/8	3 1/8	1 1/2
3 15/16	17.00	3 5/8	3 1/8	1 1/2
4	18.00	3 5/8	3 1/8	1 1/2
4 1/16	18.30	3 5/8	3 1/8	1 1/2
4 1/8	18.60	3 5/8	3 1/8	1 1/2
4 3/16	19.00	3 5/8	3 1/8	1 1/2
4 1/4	19.40	4	3 3/8	2
4 5/16	19.80	4	3 3/8	2
4 3/8	20.20	4	3 3/8	2
4 7/16	20.60	4	3 3/8	2
4 1/2	21.00	4	3 3/8	2
4 9/16	21.60	4	3 3/8	2
4 5/8	22.20	4	3 3/8	2
4 11/16	22.80	4	3 3/8	2
4 3/4	23.40	4	3 3/8	2
4 13/16	24.00	4	3 3/8	2
4 7/8	24.60	4	3 3/8	2
4 15/16	25.20	4	3 3/8	2
5	26.00	4	3 3/8	2

These Reamers are made .003 under size and are used as Roughing Reamers to follow Shell Drills No. 102½ H on page 47, and to precede Expansion Shell Reamer No. 120 M-A on page 80.

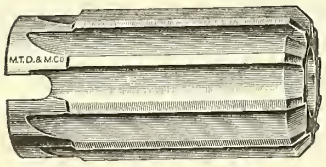
For Arbors fitting these Reamers see Index.

Shell Reamers

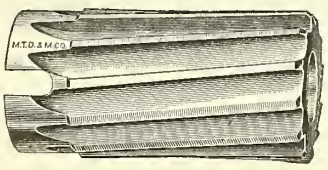
High Speed Steel



Morse No. 117
with Straight Flutes



Morse No. 117A Rose
with Straight Flutes



Morse No. 117½
with Spiral Flutes

These Shell Reamers have Taper Holes, the diameter given being at the large end

Diameter Inches	Each	Whole Length Inches	Size Hole Inch	Diameter Inches	Each	Whole Length Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Size Hole Inches	Diameter Inches	Each	Whole Length Inches	Size Hole Inches
½	$3.25	2	¼	1 13/16	$11.25	3½	1	3 1/16	$31.50	4½	1¾	4 5/16	$88.75	5½	2¼
9/16	3.40	2	¼	1⅞	12.00	3½	1	3⅛	33.25	4½	1¾	4⅜	92.00	5½	2¼
⅝	3.55	2¼	⅜	1 15/16	12.75	3½	1	3 3/16	35.25	4½	1¾	4 7/16	95.25	5½	2¼
11/16	3.70	2¼	⅜	2	13.50	3½	1	3¼	37.50	4½	1¾	4½	98.50	5½	2¼
¾	3.85	2½	½	2 1/16	14.25	3¾	1¼	3 5/16	40.00	4½	1¾	4 9/16	101.75	6	2½
13/16	4.00	2½	½	2⅛	15.00	3¾	1¼	3⅜	42.50	4½	1¾	4⅝	105.00	6	2½
⅞	4.25	2½	½	2 3/16	15.75	3¾	1¼	3 7/16	45.25	4½	1¾	4 11/16	108.25	6	2½
15/16	4.50	2½	½	2¼	16.50	3¾	1¼	3½	48.00	4½	1¾	4¾	111.50	6	2½
1	4.75	2¾	⅝	2 5/16	17.25	3¾	1¼	3 9/16	50.75	5	2	4 13/16	114.75	6	2½
1 1/16	5.00	2¾	⅝	2⅜	18.00	3¾	1¼	3⅝	53.50	5	2	4⅞	118.00	6	2½
1⅛	5.25	2¾	⅝	2 7/16	18.75	3¾	1¼	3 11/16	56.50	5	2	4 15/16	121.25	6	2½
1 3/16	5.50	2¾	⅝	2½	19.50	3¾	1¼	3¾	59.50	5	2	5	125.00	6	2½
1¼	5.75	2¾	⅝	2 9/16	20.50	4	1½	3 13/16	62.75	5	2	5⅛	132.50	6	2½
1 5/16	6.00	3	¾	2⅝	21.75	4	1½	3⅞	66.00	5	2	5¼	140.00	6	2½
1⅜	6.50	3	¾	2 11/16	23.00	4	1½	3 15/16	69.25	5	2	5⅜	147.50	6	2½
1 7/16	7.00	3	¾	2¾	24.25	4	1½	4	72.50	5	2	5½	155.00	6	2½
1½	7.50	3	¾	2 13/16	25.50	4	1½	4 1/16	75.75	5½	2¼	5⅝	163.75	6½	2¾
1 9/16	8.25	3	¾	2⅞	27.00	4	1½	4⅛	79.00	5½	2¼	5¾	172.50	6½	2¾
1⅝	9.00	3	¾	2 15/16	28.50	4	1½	4 3/16	82.25	5½	2¼	5⅞	181.25	6½	2¾
1 11/16	9.75	3½	1	3	30.00	4	1½	4¼	85.50	5½	2¼	6	190.00	6½	2¾
1¾	10.50	3½	1												

For Arbors fitting these Reamers see Index.

Reamers Style 117A have no radial clearance but are ground with longitudinal clearance. Keep cutting points sharp. 32nd and 64th sizes furnished at price of next larger size.

Floating Reamers

Carbon Steel



Morse No. 119D, with Straight Shanks



Morse No. 119E, Expansion, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Bushing Inches	Length of Bushing Inches
⅝	$6.15	8½	2	1½	3¼
11/16	6.35	8½	2	1½	3¼
¾	6.60	9	2	1½	3¼
13/16	6.80	9	2	1½	3¼
⅞	7.05	9½	2	1½	3¼
15/16	7.25	10	2	1½	3¼
1	7.50	10½	2	1½	3¼
1 1/16	7.70	10½	2	1½	3¼
1⅛	7.95	11	2	1½	3¼
1 3/16	8.15	11	2	1½	3¼

These Reamers are made .003 undersize and are designed to be used in connection with Four-Groove Chucking Reamers No. 120 F-H on page 78 and as a Roughing Reamer for Floating Expansion Reamers No. 119E.

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Bushing Inches	Length of Bushing Inches
⅝	$ 9.15	8½	1⅞	1½	3¼
11/16	9.40	8½	1⅞	1½	3¼
¾	9.65	9	1⅞	1½	3¼
13/16	9.90	9	1⅞	1½	3¼
⅞	10.15	9½	1⅞	1½	3¼
15/16	10.50	10	1⅞	1½	3¼
1	10.80	10½	1⅞	1½	3¼
1 1/16	11.15	10½	2⅛	1½	3¼
1⅛	11.50	11	2⅛	1½	3¼
1 3/16	11.85	11	2⅛	1½	3¼

These Reamers are designed to be used as finishing reamers in connection with Floating Reamers No. 119D, and Four-Groove Chucking Reamers No. 120 F-H listed on page 78.

Chucking Reamers

Carbon Steel



Morse No. 119, Fluted, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/4	$ .90	6	1 1/2
9/32	.95	6	1 1/2
5/16	1.00	6	1 1/2
11/32	1.05	6	1 1/2
3/8	1.10	7	1 3/4
13/32	1.15	7	1 3/4
7/16	1.20	7	1 3/4
15/32	1.25	7	1 3/4
1/2	1.30	8	2
17/32	1.35	8	2
9/16	1.40	8	2
19/32	1.45	8	2
5/8	1.50	9	2 1/4
21/32	1.55	9	2 1/4
11/16	1.60	9	2 1/4
23/32	1.65	9	2 1/4
3/4	1.70	9 1/2	2 1/2
25/32	1.80	9 1/2	2 1/2
13/16	1.85	9 1/2	2 1/2
27/32	1.90	9 1/2	2 1/2
7/8	2.00	10	2 5/8
29/32	2.10	10	2 5/8
15/16	2.15	10	2 5/8
31/32	2.25	10	2 5/8
1	2.30	10 1/2	2 3/4
1 1/32	2.40	10 1/2	2 3/4
1 1/16	2.45	10 1/2	2 3/4
1 3/32	2.55	10 1/2	2 3/4
1 1/8	2.60	11	2 7/8
1 5/32	2.70	11	2 7/8
1 3/16	2.75	11	2 7/8
1 7/32	$2.85	11	2 7/8
1 1/4	2.90	11 1/2	3
1 5/16	3.05	11 1/2	3
1 3/8	3.20	12	3 1/4
1 7/16	3.35	12	3 1/4
1 1/2	3.50	12 1/2	3 1/2
1 9/16	3.65	12 1/2	3 1/2
1 5/8	3.80	13	3 3/4
1 11/16	4.00	13	3 3/4
1 3/4	4.20	13 1/2	4
1 13/16	4.40	13 1/2	4
1 7/8	4.60	14	4 1/4
1 15/16	4.80	14	4 1/4
2	5.00	14	4 1/4
2 1/16	5.30	14 1/2	4 1/2
2 1/8	5.60	14 1/2	4 1/2
2 3/16	5.90	14 1/2	4 1/2
2 1/4	6.20	14 1/2	4 1/2
2 5/16	6.50	15	4 3/4
2 3/8	6.80	15	4 3/4
2 7/16	7.10	15	4 3/4
2 1/2	7.40	15	4 3/4
2 9/16	7.70	15 1/2	5
2 5/8	8.00	15 1/2	5
2 11/16	8.35	15 1/2	5
2 3/4	8.70	15 1/2	5
2 13/16	9.00	16	5 1/4
2 7/8	9.35	16	5 1/4
2 15/16	9.70	16	5 1/4
3	10.00	16	5 1/4

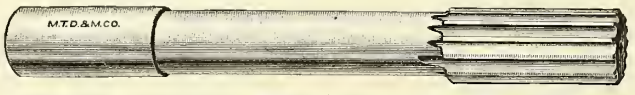


Morse No. 119A, Fluted, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Length Flutes Inches	Morse Taper Shank
1/4	$1.20	6	1 1/2	No. 1
9/32	1.20	6	1 1/2	
5/16	1.30	6	1 1/2	
11/32	1.30	6	1 1/2	
3/8	1.45	7	1 3/4	
13/32	1.50	7	1 3/4	
7/16	1.55	7	1 3/4	
15/32	1.60	7	1 3/4	
1/2	1.65	8	2	
17/32	1.70	8	2	
9/16	1.75	8	2	
19/32	1.80	8	2	
5/8	1.90	9	2 1/4	No. 2
21/32	1.95	9	2 1/4	
11/16	2.00	9	2 1/4	
23/32	2.10	9	2 1/4	
3/4	2.20	9 1/2	2 1/2	
25/32	2.30	9 1/2	2 1/2	
13/16	2.40	9 1/2	2 1/2	
27/32	2.50	9 1/2	2 1/2	
7/8	2.55	10	2 5/8	
29/32	2.60	10	2 5/8	
15/16	2.65	10	2 5/8	No. 3
31/32	2.70	10	2 5/8	
1	2.75	10 1/2	2 3/4	
1 1/32	2.80	10 1/2	2 3/4	
1 1/16	2.85	10 1/2	2 3/4	
1 3/32	2.95	10 1/2	2 3/4	
1 1/8	3.10	11	2 7/8	
1 5/32	3.20	11	2 7/8	

Diameter Inches	Each	Whole Length Inches	Length Flutes Inches	Morse Taper Shank
1 3/16	$3.30	11	2 7/8	No. 3
1 7/32	3.40	11	2 7/8	
1 1/4	3.50	11 1/2	3	No. 4
1 5/16	3.70	11 1/2	3	
1 3/8	3.95	12	3 1/4	
1 7/16	4.15	12	3 1/4	
1 1/2	4.40	12 1/2	3 1/2	
1 9/16	4.60	12 1/2	3 1/2	
1 5/8	4.85	13	3 3/4	
1 11/16	5.10	13	3 3/4	
1 3/4	5.30	13 1/2	4	No. 5
1 13/16	5.50	13 1/2	4	
1 7/8	5.70	14	4 1/4	
1 15/16	5.95	14	4 1/4	
2	6.20	14	4 1/4	
2 1/16	6.50	14 1/2	4 1/2	
2 1/8	6.80	14 1/2	4 1/2	
2 3/16	7.10	14 1/2	4 1/2	
2 1/4	7.40	14 1/2	4 1/2	
2 5/16	7.70	15	4 3/4	
2 3/8	8.00	15	4 3/4	
2 7/16	8.40	15	4 3/4	
2 1/2	8.80	15	4 3/4	
2 9/16	9.20	15 1/2	5	
2 5/8	9.60	15 1/2	5	
2 11/16	10.00	15 1/2	5	
2 3/4	10.40	15 1/2	5	
2 13/16	10.80	16	5 1/4	
2 7/8	11.20	16	5 1/4	
2 15/16	11.60	16	5 1/4	
3	12.00	16	5 1/4	

For High Speed Steel Reamers of above styles, see page 70



Morse No. 119B, Fluted, with Straight Shanks

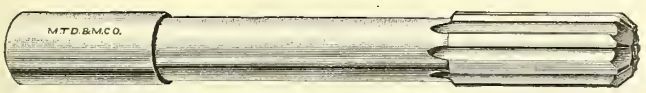
For Screw and Chucking Machines

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Shank Inch	Length of Shank Inches
1/4	$1.20	6	1 1/2	1/4	1 1/2
9/32	1.20	6	1 1/2	1/4	1 1/2
5/16	1.30	6	1 1/2	1/4	1 1/2
11/32	1.30	6	1 1/2	1/4	1 1/2
3/8	1.45	7	1 3/4	3/8	1 3/4
13/32	1.50	7	1 3/4	3/8	1 3/4
7/16	1.55	7	1 3/4	3/8	1 3/4
15/32	1.60	7	1 3/4	3/8	1 3/4
1/2	1.65	8	2	1/2	2
17/32	1.70	8	2	1/2	2
9/16	1.75	8	2	1/2	2
19/32	1.80	8	2	1/2	2
5/8	1.90	9	2 1/4	5/8	2 1/4
21/32	1.95	9	2 1/4	5/8	2 1/4
11/16	2.00	9	2 1/4	5/8	2 1/4
23/32	2.10	9	2 1/4	5/8	2 1/4
3/4	2.20	9 1/2	2 1/2	3/4	2 1/4
25/32	2.30	9 1/2	2 1/2	3/4	2 1/4
13/16	2.40	9 1/2	2 1/2	3/4	2 1/4
27/32	2.50	9 1/2	2 1/2	3/4	2 1/4
7/8	2.55	10	2 5/8	7/8	2 1/2
29/32	2.60	10	2 5/8	7/8	2 1/2
15/16	2.65	10	2 5/8	7/8	2 1/2
31/32	2.70	10	2 5/8	7/8	2 1/2
1	2.75	10 1/2	2 3/4	1	2 3/4
1 1/32	2.80	10 1/2	2 3/4	1	2 3/4
1 1/16	2.85	10 1/2	2 3/4	1	2 3/4
1 3/32	2.95	10 1/2	2 3/4	1	2 3/4
1 1/8	3.10	11	2 7/8	1	2 3/4
1 5/32	3.20	11	2 7/8	1	2 3/4
1 3/16	3.30	11	2 7/8	1	2 3/4
1 7/32	3.40	11	2 7/8	1	2 3/4
1 1/4	3.50	11 1/2	3	1 1/4	3
1 5/16	3.70	11 1/2	3	1 1/4	3
1 3/8	3.95	12	3 1/4	1 1/4	3
1 7/16	4.15	12	3 1/4	1 1/4	3
1 1/2	4.40	12 1/2	3 1/2	1 1/4	3
1 9/16	4.60	12 1/2	3 1/2	1 1/4	3
1 5/8	4.85	13	3 3/4	1 1/4	3
1 11/16	5.10	13	3 3/4	1 1/4	3
1 3/4	5.30	13 1/2	4	1 1/4	3
1 13/16	5.50	13 1/2	4	1 1/4	3
1 7/8	5.70	14	4 1/4	1 1/4	3
1 15/16	5.95	14	4 1/4	1 1/4	3
2	6.20	14	4 1/4	1 1/4	3
2 1/16	6.50	14 1/2	4 1/2	1 1/2	3 1/2
2 1/8	6.80	14 1/2	4 1/2	1 1/2	3 1/2
2 3/16	7.10	14 1/2	4 1/2	1 1/2	3 1/2
2 1/4	7.40	14 1/2	4 1/2	1 1/2	3 1/2
2 5/16	7.70	15	4 3/4	1 1/2	3 1/2
2 3/8	8.00	15	4 3/4	1 1/2	3 1/2
2 7/16	8.40	15	4 3/4	1 1/2	3 1/2
2 1/2	8.80	15	4 3/4	1 1/2	3 1/2
2 9/16	9.20	15 1/2	5	1 1/2	3 1/2
2 5/8	9.60	15 1/2	5	1 1/2	3 1/2
2 11/16	10.00	15 1/2	5	1 1/2	3 1/2
2 3/4	10.40	15 1/2	5	1 1/2	3 1/2
2 13/16	10.80	16	5 1/4	1 1/2	3 1/2
2 7/8	11.20	16	5 1/4	1 1/2	3 1/2
2 15/16	11.60	16	5 1/4	1 1/2	3 1/2
3	12.00	16	5 1/4	1 3/4	4

These Reamers will be furnished to order .001 to .010 inch undersize at regular prices

Rose Chucking Reamers

Carbon Steel

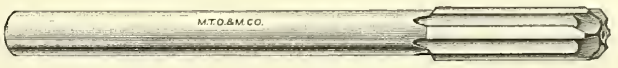


Morse 119 C, with Straight Shanks

For Screw or Chucking Machines

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Shank Inches	Length of Shank Inches
1/4	$1.20	6	1 1/2	1/4	1 1/2
9/32	1.20	6	1 1/2	1/4	1 1/2
5/16	1.30	6	1 1/2	1/4	1 1/2
11/32	1.30	6	1 1/2	1/4	1 1/2
3/8	1.45	7	1 3/4	3/8	1 3/4
13/32	1.50	7	1 3/4	3/8	1 3/4
7/16	1.55	7	1 3/4	3/8	1 3/4
15/32	1.60	7	1 3/4	3/8	1 3/4
1/2	1.65	8	2	1/2	2
17/32	1.70	8	2	1/2	2
9/16	1.75	8	2	1/2	2
19/32	1.80	8	2	1/2	2
5/8	1.90	9	2 1/4	5/8	2 1/4
21/32	1.95	9	2 1/4	5/8	2 1/4
11/16	2.00	9	2 1/4	5/8	2 1/4
23/32	2.10	9	2 1/4	5/8	2 1/4
3/4	2.20	9 1/2	2 1/2	3/4	2 1/4
25/32	2.30	9 1/2	2 1/2	3/4	2 1/4
13/16	2.40	9 1/2	2 1/2	3/4	2 1/4
27/32	2.50	9 1/2	2 1/2	3/4	2 1/4
7/8	2.55	10	2 5/8	7/8	2 1/2
29/32	2.60	10	2 5/8	7/8	2 1/2
15/16	2.65	10	2 5/8	7/8	2 1/2
31/32	2.70	10	2 5/8	7/8	2 1/2
1	2.75	10 1/2	2 3/4	1	2 3/4
1 1/32	2.80	10 1/2	2 3/4	1	2 3/4
1 1/16	2.85	10 1/2	2 3/4	1	2 3/4
1 3/32	2.95	10 1/2	2 3/4	1	2 3/4
1 1/8	3.10	11	2 7/8	1	2 3/4
1 5/32	3.20	11	2 7/8	1	2 3/4
1 3/16	3.30	11	2 7/8	1	2 3/4
1 7/32	3.40	11	2 7/8	1	2 3/4
1 1/4	3.50	11 1/2	3	1 1/4	3
1 5/16	3.70	11 1/2	3	1 1/4	3
1 3/8	3.95	12	3 1/4	1 1/4	3
1 7/16	4.15	12	3 1/4	1 1/4	3
1 1/2	4.40	12 1/2	3 1/2	1 1/4	3
1 9/16	4.60	12 1/2	3 1/2	1 1/4	3
1 5/8	4.85	13	3 3/4	1 1/4	3
1 11/16	5.10	13	3 3/4	1 1/4	3
1 3/4	5.30	13 1/2	4	1 1/4	3
1 13/16	5.50	13 1/2	4	1 1/4	3
1 7/8	5.70	14	4 1/4	1 1/4	3
1 15/16	5.95	14	4 1/4	1 1/4	3
2	6.20	14	4 1/4	1 1/4	3
2 1/16	6.50	14 1/2	4 1/2	1 1/2	3 1/2
2 1/8	6.80	14 1/2	4 1/2	1 1/2	3 1/2
2 3/16	7.10	14 1/2	4 1/2	1 1/2	3 1/2
2 1/4	7.40	14 1/2	4 1/2	1 1/2	3 1/2
2 5/16	7.70	15	4 3/4	1 1/2	3 1/2
2 3/8	8.00	15	4 3/4	1 1/2	3 1/2
2 7/16	8.40	15	4 3/4	1 1/2	3 1/2
2 1/2	8.80	15	4 3/4	1 1/2	3 1/2
2 9/16	9.20	15 1/2	5	1 1/2	3 1/2
2 5/8	9.60	15 1/2	5	1 1/2	3 1/2
2 11/16	10.00	15 1/2	5	1 1/2	3 1/2
2 3/4	10.40	15 1/2	5	1 1/2	3 1/2
2 13/16	10.80	16	5 1/4	1 1/2	3 1/2
2 7/8	11.20	16	5 1/4	1 1/2	3 1/2
2 15/16	11.60	16	5 1/4	1 1/2	3 1/2
3	12.00	16	5 1/4	1 3/4	4

These Reamers have no radial clearance but are ground with a longitudinal clearance. Keep cutting points sharp.



Morse 120, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/4	$ .80	6	1 1/2	1 7/32	$2.65	11	2 7/8
9/32	.85	6	1 1/2	1 1/4	2.70	11 1/2	3
5/16	90	6	1 1/2	1 5/16	2.85	11 1/2	3
11/32	95	6	1 1/2	1 3/8	3.00	12	3 1/4
3/8	1.00	7	1 3/4	1 7/16	3.15	12	3 1/4
13/32	1.05	7	1 3/4	1 1/2	3.30	12 1/2	3 1/2
7/16	1.10	7	1 3/4	1 9/16	3.45	12 1/2	3 1/2
15/32	1.15	7	1 3/4	1 5/8	3.60	13	3 3/4
1/2	1.20	8	2	1 11/16	3.75	13	3 3/4
17/32	1.25	8	2	1 3/4	3.90	13 1/2	4
9/16	1.30	8	2	1 13/16	4.05	13 1/2	4
19/32	1.35	8	2	1 7/8	4.20	14	4 1/4
5/8	1.40	9	2 1/4	1 15/16	4.40	14	4 1/4
21/32	1.45	9	2 1/4	2	4.60	14	4 1/4
11/16	1.50	9	2 1/4	2 1/16	4.90	14 1/2	4 1/2
23/32	1.55	9	2 1/4	2 1/8	5.20	14 1/2	4 1/2
3/4	1.60	9 1/2	2 1/2	2 3/16	5.50	14 1/2	4 1/2
25/32	1.65	9 1/2	2 1/2	2 1/4	5.80	14 1/2	4 1/2
13/16	1.70	9 1/2	2 1/2	2 5/16	6.10	15	4 3/4
27/32	1.75	9 1/2	2 1/2	2 3/8	6.40	15	4 3/4
7/8	1.80	10	2 5/8	2 7/16	6.80	15	4 3/4
29/32	1.90	10	2 5/8	2 1/2	7.20	15	4 3/4
15/16	1.95	10	2 5/8	2 9/16	7.50	15 1/2	5
31/32	2.05	10	2 5/8	2 5/8	7.80	15 1/2	5
1	2.10	10 1/2	2 3/4	2 11/16	8.10	15 1/2	5
1 1/32	2.20	10 1/2	2 3/4	2 3/4	8.40	15 1/2	5
1 1/16	2.25	10 1/2	2 3/4	2 13/16	8.80	16	5 1/4
1 3/32	2.35	10 1/2	2 3/4	2 7/8	9.20	16	5 1/4
1 1/8	2.40	11	2 7/8	2 15/16	9.60	16	5 1/4
1 5/32	2.50	11	2 7/8	3	10.00	16	5 1/4
1 3/16	2.55	11	2 7/8				



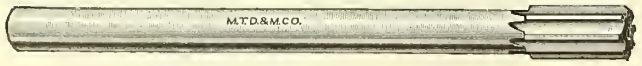
Morse 120 1/2, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank	Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/4	$1.20	6	1 1/2	No. 1	1 3/16	$3.30	11	2 7/8	No. 3
9/32	1.20	6	1 1/2		1 7/32	3.40	11	2 7/8	
5/16	1.30	6	1 1/2		1 1/4	3.50	11 1/2	3	No. 4
11/32	1.30	6	1 1/2		1 5/16	3.70	11 1/2	3	
3/8	1.45	7	1 3/4		1 3/8	3.95	12	3 1/4	
13/32	1.50	7	1 3/4		1 7/16	4.15	12	3 1/4	
7/16	1.55	7	1 3/4		1 1/2	4.40	12 1/2	3 1/2	
15/32	1.60	7	1 3/4		1 9/16	4.60	12 1/2	3 1/2	
1/2	1.65	8	2		1 5/8	4.85	13	3 3/4	
17/32	1.70	8	2		1 11/16	5.10	13	3 3/4	
9/16	1.75	8	2		1 3/4	5.30	13 1/2	4	
19/32	1.80	8	2		1 13/16	5.50	13 1/2	4	
5/8	1.90	9	2 1/4	No. 2	1 7/8	5.70	14	4 1/4	
21/32	1.95	9	2 1/4		1 15/16	5.95	14	4 1/4	
11/16	2.00	9	2 1/4		2	6.20	14	4 1/4	
23/32	2.10	9	2 1/4		2 1/16	6.50	14 1/2	4 1/2	
3/4	2.20	9 1/2	2 1/2		2 1/8	6.80	14 1/2	4 1/2	
25/32	2.30	9 1/2	2 1/2		2 3/16	7.10	14 1/2	4 1/2	
13/16	2.40	9 1/2	2 1/2		2 1/4	7.40	14 1/2	4 1/2	
27/32	2.50	9 1/2	2 1/2		2 5/16	7.70	15	4 3/4	
7/8	2.55	10	2 5/8		2 3/8	8.00	15	4 3/4	
29/32	2.60	10	2 5/8		2 7/16	8.40	15	4 3/4	
15/16	2.65	10	2 5/8	No. 3	2 1/2	8.80	15	4 3/4	
31/32	2.70	10	2 5/8		2 9/16	9.20	15 1/2	5	
1	2.75	10 1/2	2 3/4		2 5/8	9.60	15 1/2	5	
1 1/32	2.80	10 1/2	2 3/4		2 11/16	10.00	15 1/2	5	
1 1/16	2.85	10 1/2	2 3/4		2 3/4	10.40	15 1/2	5	
1 3/32	2.95	10 1/2	2 3/4		2 13/16	10.80	16	5 1/4	
1 1/8	3.10	11	2 7/8		2 7/8	11.20	16	5 1/4	
1 5/32	3.20	11	2 7/8		2 15/16	11.60	16	5 1/4	
					3	12.00	16	5 1/4	No. 5

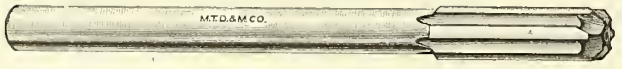
For High Speed Steel Reamers of this style see following page

Reamers

Fluted Chucking. High Speed Steel



Morse No. 119, with Straight Shanks



Morse No. 120, Rose, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/4	$3.00	6	1 1/2
5/16	3.25	6	1 1/2
3/8	3.75	7	1 3/4
7/16	4.25	7	1 3/4
1/2	4.75	8	2
9/16	5.25	8	2
5/8	5.75	9	2 1/4
11/16	6.25	9	2 1/4
3/4	6.75	9 1/2	2 1/2
13/16	7.25	9 1/2	2 1/2
7/8	8.00	10	2 5/8
15/16	9.00	10	2 5/8
1	10.00	10 1/2	2 3/4
1 1/16	11.25	10 1/2	2 3/4
1 1/8	12.50	11	2 7/8
1 3/16	13.75	11	2 7/8
1 1/4	15.25	11 1/2	3
1 5/16	17.00	11 1/2	3
1 3/8	18.75	12	3 1/4
1 7/16	20.50	12	3 1/4
1 1/2	22.25	12 1/2	3 1/2
1 9/16	24.00	12 1/2	3 1/2
1 5/8	25.75	13	3 3/4
1 11/16	$27.50	13	3 3/4
1 3/4	29.50	13 1/2	4
1 13/16	31.50	13 1/2	4
1 7/8	33.50	14	4 1/4
1 15/16	35.75	14	4 1/4
2	38.00	14	4 1/4
2 1/16	40.75	14 1/2	4 1/2
2 1/8	43.50	14 1/2	4 1/2
2 3/16	46.25	14 1/2	4 1/2
2 1/4	49.00	14 1/2	4 1/2
2 5/16	51.75	15	4 3/4
2 3/8	55.00	15	4 3/4
2 7/16	58.25	15	4 3/4
2 1/2	61.50	15	4 3/4
2 9/16	64.75	15 1/2	5
2 5/8	68.00	15 1/2	5
2 11/16	71.25	15 1/2	5
2 3/4	74.50	15 1/2	5
2 13/16	77.75	16	5 1/4
2 7/8	81.00	16	5 1/4
2 15/16	84.25	16	5 1/4
3	87.50	16	5 1/4



Morse No. 119A, with Taper Shanks



Morse No. 120½, Rose, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Length Flutes Inches	Morse Taper Shank
1/4	$3.50	6	1 1/2	No. 1
5/16	3.75	6	1 1/2	
3/8	4.25	7	1 3/4	
7/16	4.75	7	1 3/4	
1/2	5.25	8	2	
9/16	5.75	8	2	
5/8	6.25	9	2 1/4	No. 2
11/16	6.75	9	2 1/4	
3/4	7.25	9 1/2	2 1/2	
13/16	8.00	9 1/2	2 1/2	
7/8	9.00	10	2 5/8	
15/16	10.00	10	2 5/8	No. 3
1	11.00	10 1/2	2 3/4	
1 1/16	12.25	10 1/2	2 3/4	
1 1/8	13.50	11	2 7/8	
1 3/16	14.75	11	2 7/8	
1 1/4	16.25	11 1/2	3	No. 4
1 5/16	18.00	11 1/2	3	
1 3/8	19.75	12	3 1/4	
1 7/16	21.50	12	3 1/4	
1 1/2	23.25	12 1/2	3 1/2	
1 9/16	$25.00	12 1/2	3 1/2	No. 4
1 5/8	26.75	13	3 3/4	
1 11/16	28.50	13	3 3/4	
1 3/4	30.50	13 1/2	4	No. 5
1 13/16	32.50	13 1/2	4	
1 7/8	34.50	14	4 1/4	
1 15/16	36.75	14	4 1/4	
2	39.00	14	4 1/4	
2 1/16	41.75	14 1/2	4 1/2	
2 1/8	44.50	14 1/2	4 1/2	
2 3/16	47.25	14 1/2	4 1/2	
2 1/4	50.00	14 1/2	4 1/2	
2 5/16	53.25	15	4 3/4	
2 3/8	56.50	15	4 3/4	
2 7/16	59.75	15	4 3/4	
2 1/2	63.00	15	4 3/4	
2 9/16	66.25	15 1/2	5	
2 5/8	69.50	15 1/2	5	
2 11/16	72.75	15 1/2	5	
2 3/4	76.00	15 1/2	5	
2 13/16	79.25	16	5 1/4	
2 7/8	82.50	16	5 1/4	
2 15/16	86.25	16	5 1/4	
3	90.00	16	5 1/4	

64th and 32nd sizes take list price of next larger listed size.
Style No. 119A furnished to order .001 to .010 inch undersize at regular prices.

Locomotive Taper. Carbon Steel



Morse No. 120A, with Straight Shanks

Diameter ½ Inch from Small End Inch	Each	Whole Length Inches	Length of Flutes Inches
1/4	$2.20	5 5/16	4
9/32	2.20	5 5/16	4
5/16	2.25	5 5/16	4
11/32	2.25	5 5/16	4
3/8	2.30	6 5/16	5
13/32	2.40	6 5/16	5
7/16	2.55	7 5/16	6
15/32	2.70	7 5/16	6
1/2	3.00	8 5/8	7
9/16	3.20	9 1/8	8
5/8	3.50	9 7/8	8
11/16	3.80	9 7/8	8
3/4	4.10	9 7/8	8
13/16	4.50	11 1/4	9
7/8	4.80	11 1/4	9
15/16	5.10	11 1/4	9
1	5.40	11 1/4	9
1 1/16	$5.70	11 1/4	9
1 1/8	6.20	12 1/4	10
1 3/16	6.60	12 1/4	10
1 1/4	7.00	12 1/4	10
1 5/16	7.60	14 1/2	12
1 3/8	8.00	14 1/2	12
1 7/16	8.50	14 1/2	12
1 1/2	9.00	14 1/2	12
1 9/16	9.60	16 1/2	14
1 5/8	10.20	16 1/2	14
1 11/16	10.85	16 1/2	14
1 3/4	11.60	16 1/2	14
1 13/16	12.40	18 1/2	16
1 7/8	14.00	18 1/2	16
1 15/16	15.00	18 1/2	16
2	16.00	18 1/2	16



Morse No. 120½A, with Taper Shanks

Diameter ½ Inch from Small End Inches	Each	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
1/4	$3.10	7 5/16	4	No. 1
9/32	3.10	7 5/16	4	
5/16	3.15	7 5/16	4	
11/32	3.15	7 5/16	4	
3/8	3.20	8 5/16	5	
13/32	3.25	8 5/16	5	
7/16	3.30	9 5/16	6	
15/32	3.45	9 5/16	6	
1/2	3.50	10 5/16	7	
9/16	3.50	11 5/16	8	
5/8	4.00	11 13/16	8	No. 2
11/16	4.50	11 13/16	8	
3/4	4.90	11 13/16	8	
13/16	5.30	12 13/16	9	
7/8	5.70	12 13/16	9	
15/16	6.05	13 1/2	9	No. 3
1	6.40	13 1/2	9	
1 1/16	6.60	13 1/2	9	
1 1/8	6.80	14 1/2	10	
1 3/16	7.25	14 1/2	10	
1 1/4	7.70	15 1/2	10	No. 4
1 5/16	8.35	17 1/2	12	
1 3/8	8.80	17 1/2	12	
1 7/16	9.35	17 1/2	12	
1 1/2	9.90	17 1/2	12	
1 9/16	10.55	19 1/2	14	
1 5/8	11.20	19 1/2	14	
1 11/16	11.95	19 1/2	14	
1 3/4	12.75	20 3/4	14	No. 5
1 13/16	13.65	22 3/4	16	
1 7/8	14.60	22 3/4	16	
1 15/16	15.70	22 3/4	16	
2	16.80	22 3/4	16	

Taper either 1/16 inch or 3/32 inch per foot.
Unless otherwise specified on orders 1/16 inch taper will be furnished.

Taper Reamers

Carbon Steel



Morse No. 118, Finishing, with Straight Shanks



Morse No. 118B, Finishing, with Taper Shanks



Morse No. 118½, Roughing, with Straight Shanks



Morse No. 118½B, Roughing, with Taper Shanks

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches	Size of Finishing Reamer Large End	Size of Finishing Reamer Small End
0	$1.60	3¾	2¼	.367	.250
1	2.00	5½	3	.517	.367
2	2.60	7	3½	.745	.569
3	3.40	8	4¼	.988	.775
4	4.20	9	5¼	1.289	1.017
5	6.60	10	6¼	1.799	1.471
6	12.00	12	8½	2.555	2.112
7	35.00	16	12	3.371	2.746

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches	Size of Finishing Reamer Large End	Size of Finishing Reamer Small End	Morse Taper Shank
0	$2.65	5 11/32	2¼	.367	.250	0
1	2.95	6 5/16	3	.517	.367	1
2	3.25	7⅜	3½	.745	.569	2
3	4.45	8⅞	4¼	.988	.775	3
4	6.00	10⅞	5¼	1.289	1.017	4
5	10.10	13⅛	6¼	1.799	1.471	5
6	21.35	17 13/16	8½	2.555	2.112	6
7	37.50	21 5/16	12	3.371	2.746	6

Set of No. 118 Reamers Nos. 1, 2, 3, 4 and 5, $18.50 per Set

Morse Taper Reamers, larger than No. 1, can be made with oil holes as illustrated in Three-Groove Chucking Reamers, pages 76 and 77. Reamers for Short Shanks made to order. Prices quoted on application.



Morse No. 118C, with Taper Square Shanks Fitting Ratchets

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches	Diameter of Flutes Large End	Diameter of Flutes Small End	Size of Shank Inches
3	$3.40	6¾	4¼	.988	.775	½ x ¾ x 1¾

Used by Street Railways in Bonding work

Special Dimensions



Morse No. 118A, Finishing, with Straight Shanks



Morse No. 118½A, Roughing, with Straight Shanks

When ordering above give diameter at large and small ends, whole length, length of flutes and taper per foot required

Prices quoted on application.

Brown & Sharpe Standard



Morse No. 118D, Finishing, with Straight Shanks



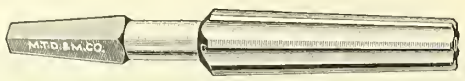
Morse No. 118½D, Roughing, with Straight Shanks

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches
1	$1.75	4¾	2⅞
2	2.00	5⅛	3⅛
3	2.25	5½	3⅜
4	2.50	5⅞	3 11/16
5	3.00	6⅜	4
6	3.25	6⅞	4⅜
7	3.50	7½	4⅞
8	3.75	8⅛	5½
9	4.00	8⅞	6⅛

Number of Taper	Each	Whole Length Inches	Length of Flutes Inches
10	$ 5.00	9¾	6⅞
11	6.00	10⅝	7⅝
12	8.00	11⅜	8¼
13	10.00	12	8¾
14	12.00	12½	9¼
15	14.00	13⅛	9¾
16	16.00	13½	10¼
17	19.00	13¾	10¾
18	22.00	14¼	11¼

Taper Reamers

Carbon Steel



Morse No. 120 B, Bit Stock, with Square Taper Shanks



Morse No. 120 D, Taper Pin, with Straight Shanks

Taper ¼ inch per foot



Morse No. 120½ B, with Straight Shanks

Straight Shanks ½ inch diameter by 2 inches long



Morse No. 120 D-E, Half Round Taper Pin with Straight Shanks

Taper ¼ inch per foot

Nominal Size Inches	Each	120 B Whole Length Inches	120½ B Whole Length Inches	Length of Flutes Inches	Diameter Small End Inches	Diameter Large End Inches
1/8	$ .35	3 3/4	4	1 5/8	.052	3/16
3/16	.35	3 7/8	4 1/4	1 3/4	.104	1/4
1/4	.45	4	4 3/4	1 7/8	.156	5/16
5/16	.50	4 1/8	4 7/8	2	.208	3/8
3/8	.55	4 1/4	5	2 1/8	.260	7/16
7/16	.60	4 3/8	5 1/8	2 1/4	.313	1/2
1/2	.70	4 1/2	5 1/4	2 3/8	.365	9/16
9/16	.80	4 5/8	5 3/8	2 1/2	.417	5/8
5/8	.90	4 3/4	5 1/2	2 5/8	.469	11/16
11/16	1.05	4 7/8	5 5/8	2 3/4	.521	3/4
3/4	1.20	5	5 3/4	2 7/8	.573	13/16
13/16	1.40	5 1/8	5 7/8	3	.626	7/8
7/8	1.60	5 1/4	6	3 1/8	.677	15/16
15/16	1.80	5 3/8	6 1/8	3 1/4	.730	1
1	2.00	5 1/2	6 1/4	3 3/8	.782	1 1/16
1 1/16	2.20	5 5/8	6 3/8	3 1/2	.833	1 1/8
1 1/8	2.40	5 3/4	6 1/2	3 5/8	.886	1 3/16
1 3/16	2.60	5 7/8	6 5/8	3 3/4	.938	1 1/4
1 1/4	2.80	6	6 3/4	3 7/8	.990	1 5/16
1 5/16	3.00	6 1/8	6 7/8	4	1.042	1 3/8
1 3/8	3.20	6 1/4	7	4 1/8	1.094	1 7/16
1 7/16	3.40	6 3/8	7 1/8	4 1/4	1.146	1 1/2
1 1/2	3.60	6 1/2	7 1/4	4 3/8	1.198	1 9/16

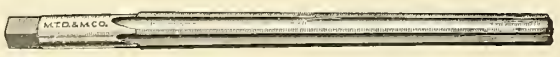
Taper 1 inch to the foot. Diameter at large end of flutes is 1/16 inch larger than nominal size.

In Sets



Morse No. 120 B, Bit Stock, with Square Taper Shank

Set of No. 120 B Reamers consisting of 1 each ¼ to ¾ by 16ths $6.50



Morse No. 120 D, Taper Pin, with Straight Shanks

Set of No. 120 D Reamers consisting of 1 each Nos. 0 to 10 inclusive $23.50

Size Number	Each	Diameter at Small Ends Inches	Whole Length Inches	Length of Body Inches
0	$1.00	.135	2 1/4	1 1/2
1	1.00	.146	2 1/2	1 3/4
2	1.25	.162	3	2
3	1.50	.183	3 1/2	2 1/4
4	1.75	.208	4	2 1/2
5	2.00	.240	4 1/2	3
6	2.25	.279	5	3 5/8
7	2.50	.331	6	4 1/2
8	3.00	.398	6 3/4	5 1/4
9	3.50	.482	8	6 1/8
10	4.00	.581	9	7
11	4.75	.706	11 1/4	8 1/4
12	5.50	.842	13 3/8	10
13	6.50	1.009	16	12
14	7.75	1.250	18 1/4	14



Morse No. 120 D-A, Taper Pin, with Taper Shanks

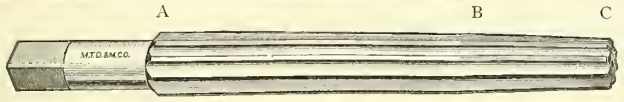
Taper ¼ inch per foot

Size Number	Each	Diameter at Small End Inches	Whole Length Inches	Length of Flutes Inches	Morse Taper Shank
0	$2.15	.135	4 3/8	1 1/2	1
1	2.25	.146	4 5/8	1 3/4	1
2	2.40	.162	4 7/8	2	1
3	2.50	.183	5 1/8	2 1/4	1
4	2.65	.208	5 1/2	2 1/2	1
5	2.85	.240	6	3	1
6	3.30	.279	6 3/4	3 5/8	1
7	3.60	.331	7 5/8	4 1/2	1
8	3.95	.398	8 3/8	5 1/4	1
9	4.20	.482	9 1/4	6 1/8	1
10	4.75	.581	10 7/8	7	2
11	5.70	.706	12 1/8	8 1/4	2
12	7.60	.842	14 5/8	10	3
13	9.65	1.009	17 5/8	12	4
14	13.10	1.250	19 5/8	14	4

These Reamers have the same taper, and each will overlay in convenient measure the next size smaller. Special sizes made to order at special prices.

Taper Bridge Reamers

Carbon Steel



Morse No. 120C, with Straight Shanks



Morse No. 120½C, with Taper Shanks

Special sizes made to order at special prices.

For Taper Reamers especially designed for use in Structural Iron and Steel, Boiler Plate, etc., where precision is not required, see Nos. 120 R and 120 S below.

To Sharpen Reamers

Hand Reamers, when dull through wear, should be stoned first on the face of the flutes, then on top of the flutes. The stone should be always held perfectly flat with the face and clearance, that the original shape of the flutes may be preserved.

The stones giving quickest results and particularly adapted for this work are India Stones Nos. 56 and 56½, see Index.

End Cutting Reamers should be first ground on centers with a wheel, and then recleared to insure reaming a hole the same size of Reamer.

Diameter, Inches, at A	B	C	Carbon Each	120C Whole Length Inches	120½C Whole Length Inches	Length of Flutes Inches	Length from B to C Inches	120½C Morse Taper Shank
5/16	1/4	3/16	$2.75	5 3/4	7 9/16	4 1/4	1 1/8	No. 1
3/8	5/16	1/4	2.75	5 3/4	7 9/16	4 1/4	1 1/8	
7/16	3/8	5/16	2.75	5 3/4	7 9/16	4 1/4	1 1/8	
1/2	7/16	3/8	2.75	5 3/4	7 9/16	4 1/4	1 1/8	
9/16	15/32	5/16	2.80	9 1/2	10 5/16	7	2	
5/8	17/32	3/8	2.90	9 1/2	10 7/8	7	2	No. 2
11/16	19/32	7/16	3.00	9 1/2	10 7/8	7	2	
3/4	21/32	1/2	3.10	9 1/2	10 7/8	7	2	
13/16	23/32	9/16	3.30	9 1/2	10 7/8	7	2	
7/8	25/32	5/8	3.50	9 1/2	10 7/8	7	2	
15/16	27/32	11/16	3.70	9 1/2	11 5/8	7	2	No. 3
1	29/32	3/4	3.90	9 1/2	11 5/8	7	2	
1 1/16	31/32	13/16	4.00	9 1/2	11 5/8	7	2	
1 1/8	1 1/32	7/8	4.30	9 1/2	11 5/8	7	2	
1 3/16	1 3/32	15/16	4.60	9 1/2	11 5/8	7	2	
1 1/4	1 5/32	1	4.90	9 1/2	12 5/8	7	2	No. 4
1 5/16	1 7/32	1 1/16	5.20	9 1/2	12 5/8	7	2	
1 3/8	1 9/32	1 1/8	5.60	9 1/2	12 5/8	7	2	
1 7/16	1 11/32	1 3/16	6.00	9 1/2	12 5/8	7	2	
1 1/2	1 13/32	1 1/4	6.40	9 1/2	12 5/8	7	2	

Straight Reamers with Taper Ends

Carbon and High Speed Steel



Morse No. 120R, with Taper Shanks



Morse No. 120S, with Straight Shanks

For Boiler Makers, Bridge and Ship Builders

Diameter, Inches, at A	B	C	Carbon Each	High Speed Each	Whole Length Inches	Length Flutes Inches	Length Taper B to C Inches	Morse Taper Shank
1/4	1/4	3/16	$1.75	$3.00	6 3/8	3 3/8	1	No. 1
5/16	5/16	1/4	1.75	3.25	6 3/4	3 3/4	1	
3/8	3/8	5/16	1.85	3.50	7 1/4	4	1	
7/16	7/16	3/8	2.75	3.75	8 1/4	4 3/8	1	No. 2
1/2	1/2	1/4	2.75	4.00	9	5 1/8	2	
9/16	9/16	5/16	2.80	4.25	9	5 1/8	2	
5/8	5/8	11/32	2.90	4.50	10	6 1/8	2	
11/16	11/16	3/8	3.00	4.75	11 3/4	7 1/8	3	No. 3
3/4	3/4	7/16	3.10	5.00	12	7 3/8	3	
13/16	13/16	1/2	3.30	5.30	12	7 3/8	3	
7/8	7/8	9/16	3.50	5.70	12	7 3/8	3	
15/16	15/16	5/8	3.70	6.00	12	7 3/8	3	
1	1	11/16	3.90	6.50	12	7 3/8	3	
1 1/16	1 1/16	3/4	4.00	7.00	12	7 3/8	3	
1 1/8	1 1/8	13/16	4.30	7.50	12	7 3/8	3	
1 3/16	1 3/16	7/8	4.60	8.00	12	7 3/8	3	
1 1/4	1 1/4	15/16	4.90	8.75	13	7 3/8	3	
1 5/16	1 5/16	1	5.20	9.50	13	7 3/8	3	No. 4
1 3/8	1 3/8	1 1/16	5.60	10.50	13	7 3/8	3	
1 7/16	1 7/16	1 1/8	6.00	12.00	13	7 3/8	3	
1 1/2	1 1/2	1 3/16	6.40	14.00	13	7 3/8	3	

Diameter, Inches, at A	B	C	Carbon Each	High Speed Each	Whole Length Inches	Length Flutes Inches	Length of Taper B to C Inches
1/4	1/4	3/16	$1.75	$2.50	4 1/4	3 3/8	1
5/16	5/16	1/4	1.75	2.70	4 3/4	3 3/4	1
3/8	3/8	5/16	1.85	2.90	5 1/2	4	1
7/16	7/16	3/8	2.75	3.10	6 1/2	4 3/8	1
1/2	1/2	1/4	2.75	3.30	8 1/8	5 3/8	2
9/16	9/16	5/16	2.80	3.50	8 1/8	5 3/8	2
5/8	5/8	11/32	2.90	3.70	9 1/8	6 1/8	2
11/16	11/16	3/8	3.00	3.90	10 1/8	7 1/8	3
3/4	3/4	7/16	3.10	4.10	10 1/2	7 3/8	3
13/16	13/16	1/2	3.30	4.40	10 1/2	7 3/8	3
7/8	7/8	9/16	3.50	4.70	10 5/8	7 3/8	3
15/16	15/16	5/8	3.70	5.00	10 5/8	7 3/8	3
1	1	11/16	3.90	5.30	10 5/8	7 3/8	3
1 1/16	1 1/16	3/4	4.00	5.85	10 5/8	7 3/8	3
1 1/8	1 1/8	13/16	4.30	6.40	10 5/8	7 3/8	3
1 3/16	1 3/16	7/8	4.60	6.95	10 5/8	7 3/8	3
1 1/4	1 1/4	15/16	4.90	7.50	10 5/8	7 3/8	3
1 5/16	1 5/16	1	5.20	8.25	10 5/8	7 3/8	3
1 3/8	1 3/8	1 1/16	5.60	9.00	10 5/8	7 3/8	3
1 7/16	1 7/16	1 1/8	6.00	10.00	10 5/8	7 3/8	3
1 1/2	1 1/2	1 3/16	6.40	11.00	10 5/8	7 3/8	3

These Reamers are designed for hard and rough work and are not ground closely to size. 1/4 inch to 5/8 inch inclusive have 4 flutes; from 11/16 inch to 1 1/4 inches inclusive have 5 flutes; from 1 5/16 inches to 1 1/2 inches inclusive have 6 flutes.

For Reamers designed for use in cases where a smooth, accurate hole is required see 120C and 120½C.

Three-Groove Chucking Reamers

Carbon Steel



Morse No. 120 F, with Taper Shanks

These Reamers are specially adapted for enlarging cored holes, and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
1/4	$1.70	6 1/8	2 13/16	No. 1
17/64	1.70	6 1/4	2 15/16	
9/32	1.70	6 1/4	2 15/16	
19/64	1.70	6 3/8	3 1/16	
5/16	1.70	6 3/8	3 1/16	
21/64	1.70	6 1/2	3 3/16	
11/32	1.70	6 1/2	3 3/16	
23/64	1.70	6 3/4	3 7/16	
3/8	1.70	6 3/4	3 7/16	
25/64	1.75	7	3 11/16	
13/32	1.75	7	3 11/16	
27/64	1.80	7 1/4	3 15/16	
7/16	1.80	7 1/4	3 15/16	
29/64	1.85	7 1/2	4 3/16	
15/32	1.85	7 1/2	4 3/16	
31/64	1.90	7 3/4	4 7/16	
1/2	1.90	7 3/4	4 7/16	
33/64	1.95	8	4 11/16	
17/32	1.95	8	4 11/16	
35/64	2.00	8 1/4	4 15/16	
9/16	2.00	8 1/4	4 15/16	
37/64	2.30	8 1/2	4 5/8	No. 2
19/32	2.30	8 1/2	4 5/8	
39/64	2.60	8 3/4	4 7/8	
5/8	2.60	8 3/4	4 7/8	
41/64	2.70	9	5 1/8	
21/32	2.70	9	5 1/8	
43/64	2.75	9 1/4	5 3/8	
11/16	2.75	9 1/4	5 3/8	
45/64	2.85	9 1/2	5 5/8	
23/32	2.85	9 1/2	5 5/8	
47/64	2.90	9 3/4	5 7/8	
3/4	2.90	9 3/4	5 7/8	
49/64	3.00	9 7/8	6	
25/32	3.00	9 7/8	6	
51/64	3.05	10	6 1/8	
13/16	3.05	10	6 1/8	
53/64	3.15	10 1/4	6 3/8	
27/32	3.15	10 1/4	6 3/8	
55/64	3.20	10 1/2	6 5/8	
7/8	3.20	10 1/2	6 5/8	
57/64	3.30	10 5/8	6 3/4	
29/32	3.30	10 5/8	6 3/4	
59/64	3.40	10 3/4	6 1/8	No. 3
15/16	3.40	10 3/4	6 1/8	
61/64	3.50	10 7/8	6 1/4	
31/32	3.50	10 7/8	6 1/4	
63/64	3.60	11	6 3/8	
1	3.60	11	6 3/8	
1 1/64	3.70	11 1/8	6 1/2	
1 1/32	3.70	11 1/8	6 1/2	
1 3/64	3.80	11 1/4	6 5/8	
1 1/16	3.80	11 1/4	6 5/8	
1 5/64	3.90	11 1/2	6 7/8	
1 3/32	3.90	11 1/2	6 7/8	
1 7/64	4.00	11 3/4	7 1/8	
1 1/8	4.00	11 3/4	7 1/8	
1 9/64	4.25	11 7/8	7 1/4	
1 5/32	4.25	11 7/8	7 1/4	
1 11/64	4.50	12	7 3/8	
1 3/16	4.50	12	7 3/8	
1 13/64	4.65	12 1/8	7 1/2	
1 7/32	4.65	12 1/8	7 1/2	
1 15/64	4.80	12 1/2	7 7/8	
1 1/4	4.80	12 1/2	7 7/8	

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
1 17/64	$5.00	14 1/8	8 1/2	No. 4
1 9/32	5.00	14 1/8	8 1/2	
1 19/64	5.20	14 1/4	8 5/8	
1 5/16	5.20	14 1/4	8 5/8	
1 21/64	5.35	14 3/8	8 3/4	
1 11/32	5.35	14 3/8	8 3/4	
1 23/64	5.60	14 1/2	8 7/8	
1 3/8	5.60	14 1/2	8 7/8	
1 25/64	5.80	14 5/8	9	
1 13/32	5.80	14 5/8	9	
1 27/64	6.00	14 3/4	9 1/8	
1 7/16	6.00	14 3/4	9 1/8	
1 29/64	6.20	14 7/8	9 1/4	
1 15/32	6.20	14 7/8	9 1/4	
1 31/64	6.40	15	9 3/8	
1 1/2	6.40	15	9 3/8	
1 17/32	6.65	15	9 3/8	
1 9/16	6.90	15 1/4	9 5/8	
1 19/32	7.15	15 1/4	9 5/8	
1 5/8	7.40	15 1/2	9 7/8	
1 21/32	7.65	15 1/2	9 7/8	
1 11/16	7.90	15 3/4	10 1/8	
1 23/32	8.15	15 3/4	9 11/16	
1 3/4	8.40	16	9 15/16	
1 25/32	8.60	16	9 15/16	
1 13/16	8.80	16 1/4	10 1/8	
1 27/32	9.00	16 1/4	10 1/8	
1 7/8	9.20	16 1/2	10 3/8	
1 29/32	9.35	16 1/2	10 3/8	
1 15/16	9.50	16 1/2	10 1/4	
1 31/32	9.65	16 1/2	10 1/4	
2	9.80	16 1/2	10 1/4	
2 1/32	10.20	16 1/2	9 1/2	No. 5
2 1/16	10.60	17	10	
2 3/32	10.90	17	10	
2 1/8	11.20	17	10	
2 5/32	11.60	17	10	
2 3/16	12.00	17	10	
2 7/32	12.40	17 1/2	10 1/2	
2 1/4	12.80	17 1/2	10 1/8	
2 9/32	13.20	17 1/2	10 1/8	
2 5/16	13.60	17 1/2	10 1/8	
2 11/32	14.00	18	10 5/8	
2 3/8	14.40	18	10 1/2	
2 13/32	14.70	18 1/2	11	
2 7/16	15.00	18 1/2	11	
2 15/32	15.30	19	11 1/2	
2 1/2	15.60	19	11 3/8	
2 17/32	15.90	19 1/4	11 5/8	
2 9/16	16.20	19 1/4	11 5/8	
2 19/32	16.50	19 1/2	11 7/8	
2 5/8	16.80	19 1/2	11 3/4	
2 21/32	17.35	20	12 1/4	
2 11/16	17.90	20	12 1/4	
2 23/32	18.45	20 1/2	12 3/4	
2 3/4	19.00	20 1/2	12 5/8	
2 25/32	19.50	20 1/2	12 5/8	
2 13/16	20.00	20 1/2	12 5/8	
2 27/32	20.50	21	13 1/8	
2 7/8	21.00	21	13	
2 29/32	22.00	21	13	
2 15/16	23.00	21	13	
2 31/32	24.00	22	14	
3	25.00	22	13 7/8	

For High Speed Steel Reamers of this style see page 78. 64th sizes not listed furnished at price of next larger size

Three-Groove Chucking Reamers

Carbon Steel



Morse No. 120F-B

For Screw or Chucking Machines

These Reamers are specially adapted for enlarging cored holes, and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches
1/4	$1.70	6 1/8	3 7/8	1/4	1 1/2
17/64	1.70	6 1/4	4	1/4	1 1/2
9/32	1.70	6 1/4	4	1/4	1 1/2
19/64	1.70	6 3/8	4 1/8	1/4	1 1/2
5/16	1.70	6 3/8	4 1/8	1/4	1 1/2
21/64	1.70	6 1/2	4 1/4	1/4	1 1/2
11/32	1.70	6 1/2	4 1/4	1/4	1 1/2
23/64	1.70	6 3/4	4 1/4	3/8	1 3/4
3/8	1.70	6 3/4	4 1/4	3/8	1 3/4
25/64	1.75	7	4 1/2	3/8	1 3/4
13/32	1.75	7	4 1/2	3/8	1 3/4
27/64	1.80	7 1/4	4 3/4	3/8	1 3/4
7/16	1.80	7 1/4	4 3/4	3/8	1 3/4
29/64	1.85	7 1/2	5	3/8	1 3/4
15/32	1.85	7 1/2	5	3/8	1 3/4
31/64	1.90	7 3/4	5	1/2	2
1/2	1.90	7 3/4	5	1/2	2
33/64	1.95	8	5 1/4	1/2	2
17/32	1.95	8	5 1/4	1/2	2
35/64	2.00	8 1/4	5 1/2	1/2	2
9/16	2.00	8 1/4	5 1/2	1/2	2
37/64	2.30	8 1/2	5 3/4	1/2	2
19/32	2.30	8 1/2	5 3/4	1/2	2
39/64	2.60	8 3/4	5 3/4	5/8	2 1/4
5/8	2.60	8 3/4	5 3/4	5/8	2 1/4
41/64	2.70	9	6	5/8	2 1/4
21/32	2.70	9	6	5/8	2 1/4
43/64	2.75	9 1/4	6 1/4	5/8	2 1/4
11/16	2.75	9 1/4	6 1/4	5/8	2 1/4
45/64	2.85	9 1/2	6 1/2	5/8	2 1/4
23/32	2.85	9 1/2	6 1/2	5/8	2 1/4
47/64	2.90	9 3/4	6 3/4	3/4	2 1/4
3/4	2.90	9 3/4	6 3/4	3/4	2 1/4
49/64	3.00	9 7/8	6 7/8	3/4	2 1/4
25/32	3.00	9 7/8	6 7/8	3/4	2 1/4
51/64	3.05	10	7	3/4	2 1/4
13/16	3.05	10	7	3/4	2 1/4
53/64	3.15	10 1/4	7 1/4	3/4	2 1/4
27/32	3.15	10 1/4	7 1/4	3/4	2 1/4
55/64	3.20	10 1/2	7 1/4	7/8	2 1/2
7/8	3.20	10 1/2	7 1/4	7/8	2 1/2
57/64	3.30	10 5/8	7 3/8	7/8	2 1/2
29/32	3.30	10 5/8	7 3/8	7/8	2 1/2
59/64	3.40	10 3/4	7 1/2	7/8	2 1/2
15/16	3.40	10 3/4	7 1/2	7/8	2 1/2
61/64	3.50	10 7/8	7 5/8	7/8	2 1/2
31/32	3.50	10 7/8	7 5/8	7/8	2 1/2
63/64	3.60	11	7 1/2	1	2 3/4
1	3.60	11	7 1/2	1	2 3/4
1 1/64	3.70	11 1/8	7 5/8	1	2 3/4
1 1/32	3.70	11 1/8	7 5/8	1	2 3/4
1 3/64	3.80	11 1/4	7 3/4	1	2 3/4
1 1/16	3.80	11 1/4	7 3/4	1	2 3/4
1 5/64	3.90	11 1/2	8	1	2 3/4
1 3/32	3.90	11 1/2	8	1	2 3/4
1 7/64	4.00	11 3/4	8 1/4	1	2 3/4
1 1/8	4.00	11 3/4	8 1/4	1	2 3/4
1 9/64	4.25	11 7/8	8 3/8	1	2 3/4
1 5/32	4.25	11 7/8	8 3/8	1	2 3/4
1 11/64	4.50	12	8 1/2	1	2 3/4
1 3/16	4.50	12	8 1/2	1	2 3/4
1 13/64	4.65	12 1/8	8 5/8	1	2 3/4
1 7/32	4.65	12 1/8	8 5/8	1	2 3/4
1 15/64	4.80	12 1/2	8 3/4	1 1/4	3
1 1/4	4.80	12 1/2	8 3/4	1 1/4	3

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches
1 17/64	5.00	14 1/8	10 3/8	1 1/4	3
1 9/32	5.00	14 1/8	10 3/8	1 1/4	3
1 19/64	5.20	14 1/4	10 1/2	1 1/4	3
1 5/16	5.20	14 1/4	10 1/2	1 1/4	3
1 21/64	5.35	14 3/8	10 5/8	1 1/4	3
1 11/32	5.35	14 3/8	10 5/8	1 1/4	3
1 23/64	5.60	14 1/2	10 3/4	1 1/4	3
1 3/8	5.60	14 1/2	10 3/4	1 1/4	3
1 25/64	5.80	14 5/8	10 7/8	1 1/4	3
1 13/32	5.80	14 5/8	10 7/8	1 1/4	3
1 27/64	6.00	14 3/4	11	1 1/4	3
1 7/16	6.00	14 3/4	11	1 1/4	3
1 29/64	6.20	14 7/8	11 1/8	1 1/4	3
1 15/32	6.20	14 7/8	11 1/8	1 1/4	3
1 31/64	6.40	15	11 1/4	1 1/4	3
1 1/2	6.40	15	11 1/4	1 1/4	3
1 17/32	6.65	15	11 1/4	1 1/4	3
1 9/16	6.90	15 1/4	11 1/2	1 1/4	3
1 19/32	7.15	15 1/4	11 1/2	1 1/4	3
1 5/8	7.40	15 1/2	11 3/4	1 1/4	3
1 21/32	7.65	15 1/2	11 3/4	1 1/4	3
1 11/16	7.90	15 3/4	12	1 1/4	3
1 23/32	8.15	15 3/4	12	1 1/4	3
1 3/4	8.40	16	11 7/8	1 1/4	3
1 25/32	8.60	16	11 7/8	1 1/4	3
1 13/16	8.80	16 1/4	12 1/8	1 1/4	3
1 27/32	9.00	16 1/4	12 1/8	1 1/4	3
1 7/8	9.20	16 1/2	12 1/4	1 1/4	3
1 29/32	9.35	16 1/2	12 1/4	1 1/4	3
1 15/16	9.50	16 1/2	12 1/4	1 1/4	3
1 31/32	9.65	16 1/2	12 1/4	1 1/4	3
2	9.80	16 1/2	12 1/8	1 1/4	3
2 1/32	10.20	16 1/2	11 3/4	1 1/2	3 1/2
2 1/16	10.60	17	12 1/4	1 1/2	3 1/2
2 3/32	10.90	17	12 1/4	1 1/2	3 1/2
2 1/8	11.20	17	12 1/8	1 1/2	3 1/2
2 5/32	11.60	17	12 1/8	1 1/2	3 1/2
2 3/16	12.00	17	12 1/8	1 1/2	3 1/2
2 7/32	12.40	17 1/2	12 5/8	1 1/2	3 1/2
2 1/4	12.80	17 1/2	12 1/2	1 1/2	3 1/2
2 9/32	13.20	17 1/2	12 1/2	1 1/2	3 1/2
2 5/16	13.60	17 1/2	12 1/2	1 1/2	3 1/2
2 11/32	14.00	18	13	1 1/2	3 1/2
2 3/8	14.40	18	12 7/8	1 1/2	3 1/2
2 13/32	14.70	18 1/2	13 3/8	1 1/2	3 1/2
2 7/16	15.00	18 1/2	13 3/8	1 1/2	3 1/2
2 15/32	15.30	19	13 7/8	1 1/2	3 1/2
2 1/2	15.60	19	13 3/4	1 1/2	3 1/2
2 17/32	15.90	19 1/4	14	1 1/2	3 1/2
2 9/16	16.20	19 1/4	14	1 1/2	3 1/2
2 19/32	16.50	19 1/2	14 1/4	1 1/2	3 1/2
2 5/8	16.80	19 1/2	14 1/8	1 1/2	3 1/2
2 21/32	17.35	20	14 5/8	1 1/2	3 1/2
2 11/16	17.90	20	14 5/8	1 1/2	3 1/2
2 23/32	18.45	20 1/2	15 1/8	1 1/2	3 1/2
2 3/4	19.00	20 1/2	15	1 1/2	3 1/2
2 25/32	19.50	20 1/2	14 1/2	1 3/4	4
2 13/16	20.00	20 1/2	14 1/2	1 3/4	4
2 27/32	20.50	21	15	1 3/4	4
2 7/8	21.00	21	14 7/8	1 3/4	4
2 29/32	22.00	21	14 7/8	1 3/4	4
2 15/16	23.00	21	14 7/8	1 3/4	4
2 31/32	24.00	22	15 7/8	1 3/4	4
3	25.00	22	15 3/4	1 3/4	4

For High Speed Steel Reamers of this style see page 78. 64th sizes not listed furnished at price of next larger size.

Three-Groove Oil Chucking Reamers

Carbon Steel



Morse No. 120 F-C, with Taper Shanks



Morse No. 120 F-F, with Taper Shanks

Can be made to use in the same manner as oil drills listed on pages 50 to 53
Are to be used for passing completely through the work

With holes through solid metal for lubricant

These Reamers are specially adapted for enlarging cored holes and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices.

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
3/8	$2.75	6 3/4	3 7/16	No. 1
25/64	2.75	7	3 11/16	
13/32	2.75	7	3 11/16	
27/64	2.75	7 1/4	3 15/16	
7/16	2.85	7 1/4	3 15/16	
29/64	2.85	7 1/2	4 3/16	
15/32	2.85	7 1/2	4 3/16	
31/64	2.85	7 3/4	4 7/16	
1/2	2.85	7 3/4	4 7/16	
33/64	2.95	8	4 11/16	
17/32	2.95	8	4 11/16	
35/64	3.00	8 1/4	4 15/16	
9/16	3.00	8 1/4	4 15/16	No. 2
37/64	3.45	8 1/2	4 5/8	
19/32	3.45	8 1/2	4 5/8	
39/64	3.90	8 3/4	4 7/8	
5/8	3.90	8 3/4	4 7/8	
41/64	4.00	9	5 1/8	
21/32	4.00	9	5 1/8	
43/64	4.15	9 1/4	5 3/8	
11/16	4.15	9 1/4	5 3/8	
45/64	4.25	9 1/2	5 5/8	
23/32	4.25	9 1/2	5 5/8	
47/64	4.35	9 3/4	5 7/8	
3/4	4.35	9 3/4	5 7/8	
49/64	4.50	9 7/8	6	
25/32	4.50	9 7/8	6	
51/64	4.60	10	6 1/8	
13/16	4.60	10	6 1/8	
53/64	4.70	10 1/4	6 3/8	
27/32	4.70	10 1/4	6 3/8	
55/64	4.80	10 1/2	6 5/8	
7/8	4.80	10 1/2	6 5/8	
57/64	4.95	10 5/8	6 3/4	
29/32	4.95	10 5/8	6 3/4	
59/64	5.10	10 3/4	6 1/8	No. 3
15/16	5.10	10 3/4	6 1/8	
61/64	5.25	10 7/8	6 1/4	
31/32	5.25	10 7/8	6 1/4	
63/64	5.40	11	6 3/8	
1	5.40	11	6 3/8	
1 1/64	5.55	11 1/8	6 1/2	
1 1/32	5.55	11 1/8	6 1/2	
1 3/64	5.70	11 1/4	6 5/8	
1 1/16	5.70	11 1/4	6 5/8	
1 5/64	5.85	11 1/2	6 7/8	
1 3/32	5.85	11 1/2	6 7/8	
1 7/64	6.00	11 3/4	7 1/8	
1 1/8	6.00	11 3/4	7 1/8	
1 9/64	6.40	11 7/8	7 1/4	
1 5/32	6.40	11 7/8	7 1/4	
1 11/64	6.75	12	7 3/8	
1 3/16	6.75	12	7 3/8	
1 13/64	6.95	12 1/8	7 1/2	
1 7/32	6.95	12 1/8	7 1/2	
1 15/64	7.20	12 1/2	7 7/8	
1 1/4	7.20	12 1/2	7 7/8	
1 17/64	7.40	14 1/8	8 1/2	No. 4
1 9/32	7.40	14 1/8	8 1/2	
1 19/64	7.80	14 1/4	8 5/8	

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Morse Taper Shank
1 5/16	$7.80	14 1/4	8 5/8	No. 4
1 21/64	8.10	14 3/8	8 3/4	
1 11/32	8.10	14 3/8	8 3/4	
1 23/64	8.40	14 1/2	8 7/8	
1 3/8	8.40	14 1/2	8 7/8	
1 25/64	8.70	14 5/8	9	
1 13/32	8.70	14 5/8	9	
1 27/64	9.00	14 3/4	9 1/8	
1 7/16	9.00	14 3/4	9 1/8	
1 29/64	9.30	14 7/8	9 1/4	
1 15/32	9.30	14 7/8	9 1/4	
1 31/64	9.60	15	9 3/8	
1 1/2	9.60	15	9 3/8	
1 17/32	10.00	15	9 3/8	
1 9/16	10.35	15 1/4	9 5/8	
1 19/32	10.75	15 1/4	9 5/8	
1 5/8	11.10	15 1/2	9 7/8	
1 21/32	11.50	15 1/2	9 7/8	
1 11/16	11.85	15 3/4	10 1/8	
1 23/32	12.25	15 3/4	9 11/16	
1 3/4	12.60	16	9 15/16	
1 25/32	12.90	16	9 15/16	
1 13/16	13.20	16 1/4	10 1/8	
1 27/32	13.50	16 1/4	10 1/8	
1 7/8	13.80	16 1/2	10 3/8	
1 29/32	14.05	16 1/2	10 3/8	
1 15/16	14.25	16 1/2	10 1/4	
1 31/32	14.50	16 1/2	10 1/4	
2	14.70	16 1/2	10 1/4	
2 1/32	14.80	16 1/2	9 1/2	No. 5
2 1/16	14.85	17	10	
2 3/32	15.30	17	10	
2 1/8	15.70	17	10	
2 5/32	16.25	17	10	
2 3/16	16.80	17	10	
2 7/32	17.40	17 1/2	10 1/2	
2 1/4	17.95	17 1/2	10 1/8	
2 9/32	18.50	17 1/2	10 1/8	
2 5/16	19.00	17 1/2	10 1/8	
2 11/32	19.60	18	10 5/8	
2 3/8	20.15	18	10 1/2	
2 13/32	20.60	18 1/2	11	
2 7/16	21.00	18 1/2	11	
2 15/32	21.45	19	11 1/2	
2 1/2	21.85	19	11 3/8	
2 17/32	22.30	19 1/4	11 5/8	
2 9/16	22.70	19 1/4	11 5/8	
2 19/32	23.10	19 1/2	11 7/8	
2 5/8	23.50	19 1/2	11 3/4	
2 21/32	24.25	20	12 1/4	
2 11/16	25.00	20	12 1/4	
2 23/32	25.80	20 1/2	12 3/4	
2 3/4	26.60	20 1/2	12 5/8	
2 25/32	27.30	20 1/2	12 5/8	
2 13/16	28.00	20 1/2	12 5/8	
2 27/32	28.70	21	13 1/8	
2 7/8	29.40	21	13	
2 29/32	30.80	21	13	
2 15/16	32.20	21	13	
2 31/32	33.60	22	14	
3	35.00	22	13 7/8	

64th sizes not listed furnished at price of next larger size

Three-Groove Oil Chucking Reamers

Carbon Steel



Morse No. 120 F-E



Morse No. 120 F-G

Can be made to use in the same manner as oil drills listed on pages 50 to 53
Are to be used for passing completely through the work

With holes through solid metal for lubricant

These Reamers are specially adapted for enlarging cored holes and have shank and fluted portion ground on centers to size. Special lengths made to order at special prices

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches
3/8	$2.75	6 3/4	4 1/4	3/8	1 3/4
25/64	2.75	7	4 1/2	3/8	1 3/4
13/32	2.75	7	4 1/2	3/8	1 3/4
27/64	2.75	7 1/4	4 3/4	3/8	1 3/4
7/16	2.85	7 1/4	4 3/4	3/8	1 3/4
29/64	2.85	7 1/2	5	3/8	1 3/4
15/32	2.85	7 1/2	5	3/8	1 3/4
31/64	2.85	7 3/4	5	1/2	2
1/2	2.85	7 3/4	5	1/2	2
33/64	2.95	8	5 1/4	1/2	2
17/32	2.95	8	5 1/4	1/2	2
35/64	3.00	8 1/4	5 1/2	1/2	2
9/16	3.00	8 1/4	5 1/2	1/2	2
37/64	3.45	8 1/2	5 3/4	1/2	2
19/32	3.45	8 1/2	5 3/4	1/2	2
39/64	3.90	8 3/4	5 3/4	5/8	2 1/4
5/8	3.90	8 3/4	5 3/4	5/8	2 1/4
41/64	4.00	9	6	5/8	2 1/4
21/32	4.00	9	6	5/8	2 1/4
43/64	4.15	9 1/4	6 1/4	5/8	2 1/4
11/16	4.15	9 1/4	6 1/4	5/8	2 1/4
45/64	4.25	9 1/2	6 1/2	5/8	2 1/4
23/32	4.25	9 1/2	6 1/2	5/8	2 1/4
47/64	4.35	9 3/4	6 3/4	3/4	2 1/4
3/4	4.35	9 3/4	6 3/4	3/4	2 1/4
49/64	4.50	9 7/8	6 7/8	3/4	2 1/4
25/32	4.50	9 7/8	6 7/8	3/4	2 1/4
51/64	4.60	10	7	3/4	2 1/4
13/16	4.60	10	7	3/4	2 1/4
53/64	4.70	10 1/4	7 1/4	3/4	2 1/4
27/32	4.70	10 1/4	7 1/4	3/4	2 1/4
55/64	4.80	10 1/2	7 1/4	7/8	2 1/2
7/8	4.80	10 1/2	7 1/4	7/8	2 1/2
57/64	4.95	10 5/8	7 3/8	7/8	2 1/2
29/32	4.95	10 5/8	7 3/8	7/8	2 1/2
59/64	5.10	10 3/4	7 1/2	7/8	2 1/2
15/16	5.10	10 3/4	7 1/2	7/8	2 1/2
61/64	5.25	10 7/8	7 5/8	7/8	2 1/2
31/32	5.25	10 7/8	7 5/8	7/8	2 1/2
63/64	5.40	11	7 1/2	1	2 3/4
1	5.40	11	7 1/2	1	2 3/4
1 1/64	5.55	11 1/8	7 5/8	1	2 3/4
1 1/32	5.55	11 1/8	7 5/8	1	2 3/4
1 3/64	5.70	11 1/4	7 3/4	1	2 3/4
1 1/16	5.70	11 1/4	7 3/4	1	2 3/4
1 5/64	5.85	11 1/2	8	1	2 3/4
1 3/32	5.85	11 1/2	8	1	2 3/4
1 7/64	6.00	11 3/4	8 1/4	1	2 3/4
1 1/8	6.00	11 3/4	8 1/4	1	2 3/4
1 9/64	6.40	11 7/8	8 3/8	1	2 3/4
1 5/32	6.40	11 7/8	8 3/8	1	2 3/4
1 11/64	6.75	12	8 1/2	1	2 3/4
1 3/16	6.75	12	8 1/2	1	2 3/4
1 13/64	6.95	12 1/8	8 5/8	1	2 3/4
1 7/32	6.95	12 1/8	8 5/8	1	2 3/4
1 15/64	7.20	12 1/2	8 3/4	1 1/4	3
1 1/4	7.20	12 1/2	8 3/4	1 1/4	3
1 17/64	7.40	14 1/8	10 3/8	1 1/4	3
1 9/32	7.40	14 1/8	10 3/8	1 1/4	3
1 19/64	7.80	14 1/4	10 1/2	1 1/4	3
1 5/16	7.80	14 1/4	10 1/2	1 1/4	3

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches	Diameter of Shank Inches	Length of Shank Inches
1 21/64	$8.10	14 3/8	10 5/8	1 1/4	3
1 11/32	8.10	14 3/8	10 5/8	1 1/4	3
1 23/64	8.40	14 1/2	10 3/4	1 1/4	3
1 3/8	8.40	14 1/2	10 3/4	1 1/4	3
1 25/64	8.70	14 5/8	10 7/8	1 1/4	3
1 13/32	8.70	14 5/8	10 7/8	1 1/4	3
1 27/64	9.00	14 3/4	11	1 1/4	3
1 7/16	9.00	14 3/4	11	1 1/4	3
1 29/64	9.30	14 7/8	11 1/8	1 1/4	3
1 15/32	9.30	14 7/8	11 1/8	1 1/4	3
1 31/64	9.60	15	11 1/4	1 1/4	3
1 1/2	9.60	15	11 1/4	1 1/4	3
1 17/32	10.00	15	11 1/4	1 1/4	3
1 9/16	10.35	15 1/4	11 1/2	1 1/4	3
1 19/32	10.75	15 1/4	11 1/2	1 1/4	3
1 5/8	11.10	15 1/2	11 3/4	1 1/4	3
1 21/32	11.50	15 1/2	11 3/4	1 1/4	3
1 11/16	11.85	15 3/4	12	1 1/4	3
1 23/32	12.25	15 3/4	12	1 1/4	3
1 3/4	12.60	16	11 7/8	1 1/4	3
1 25/32	12.90	16	11 7/8	1 1/4	3
1 13/16	13.20	16 1/4	12 1/8	1 1/4	3
1 27/32	13.50	16 1/4	12 1/8	1 1/4	3
1 7/8	13.80	16 1/2	12 1/4	1 1/4	3
1 29/32	14.05	16 1/2	12 1/4	1 1/4	3
1 15/16	14.25	16 1/2	12 1/4	1 1/4	3
1 31/32	14.50	16 1/2	12 1/4	1 1/4	3
2	14.70	16 1/2	12 1/8	1 1/4	3
2 1/32	14.80	16 1/2	11 3/4	1 1/2	3 1/2
2 1/16	14.85	17	12 1/4	1 1/2	3 1/2
2 3/32	15.30	17	12 1/4	1 1/2	3 1/2
2 1/8	15.70	17	12 1/8	1 1/2	3 1/2
2 5/32	16.25	17	12 1/8	1 1/2	3 1/2
2 3/16	16.80	17	12 1/8	1 1/2	3 1/2
2 7/32	17.40	17 1/2	12 5/8	1 1/2	3 1/2
2 1/4	17.95	17 1/2	12 1/2	1 1/2	3 1/2
2 9/32	18.50	17 1/2	12 1/2	1 1/2	3 1/2
2 5/16	19.00	17 1/2	12 1/2	1 1/2	3 1/2
2 11/32	19.60	18	13	1 1/2	3 1/2
2 3/8	20.15	18	12 7/8	1 1/2	3 1/2
2 13/32	20.60	18 1/2	13 3/8	1 1/2	3 1/2
2 7/16	21.00	18 1/2	13 3/8	1 1/2	3 1/2
2 15/32	21.45	19	13 7/8	1 1/2	3 1/2
2 1/2	21.85	19	13 3/4	1 1/2	3 1/2
2 17/32	22.30	19 1/4	14	1 1/2	3 1/2
2 9/16	22.70	19 1/4	14	1 1/2	3 1/2
2 19/32	23.10	19 1/2	14 1/4	1 1/2	3 1/2
2 5/8	23.50	19 1/2	14 1/8	1 1/2	3 1/2
2 21/32	24.25	20	14 5/8	1 1/2	3 1/2
2 11/16	25.00	20	14 5/8	1 1/2	3 1/2
2 23/32	25.80	20 1/2	15 1/8	1 1/2	3 1/2
2 3/4	26.60	20 1/2	15	1 1/2	3 1/2
2 25/32	27.30	20 1/2	14 1/2	1 3/4	4
2 13/16	28.00	20 1/2	14 1/2	1 3/4	4
2 27/32	28.70	21	15	1 3/4	4
2 7/8	29.40	21	14 7/8	1 3/4	4
2 29/32	30.80	21	14 7/8	1 3/4	4
2 15/16	32.20	21	14 7/8	1 3/4	4
2 31/32	33.60	22	15 7/8	1 3/4	4
3	35.00	22	15 3/4	1 3/4	4

64th sizes not listed furnished at price of next larger size

Reamers

Carbon and High Speed Steel

Three-Groove Chucking



Morse No. 120F, with Taper Shanks



Morse No. 120F-B, with Straight Shanks

Four-Groove Chucking



Morse No. 120F-H, with Taper Shanks

Diameter Inches	High Speed Each	Whole Length Inches	Morse Taper Shank
1/4	$4.00	6 1/8	No. 1
5/16	4.25	6 3/8	No. 1
3/8	4.75	6 3/4	No. 1
7/16	5.25	7 1/4	No. 1
1/2	5.75	7 3/4	No. 1
9/16	6.25	8 1/4	No. 1
5/8	6.75	8 3/4	No. 2
11/16	7.25	9 1/4	No. 2
3/4	7.75	9 3/4	No. 2
13/16	8.50	10	No. 2
7/8	9.50	10 1/2	No. 2
15/16	10.50	10 3/4	No. 3
1	11.50	11	No. 3
1 1/16	12.50	11 1/4	No. 3
1 1/8	13.75	11 3/4	No. 3
1 3/16	15.25	12	No. 3
1 1/4	16.75	12 1/2	No. 3
1 5/16	18.25	14 1/4	No. 4
1 3/8	19.75	14 1/2	No. 4
1 7/16	21.50	14 3/4	No. 4
1 1/2	23.25	15	No. 4
1 9/16	25.00	15 1/4	No. 4
1 5/8	$26.75	15 1/2	No. 4
1 11/16	28.50	15 3/4	No. 4
1 3/4	30.50	16	No. 4
1 13/16	32.50	16 1/4	No. 4
1 7/8	34.50	16 1/2	No. 4
1 15/16	36.75	16 1/2	No. 4
2	39.00	16 1/2	No. 4
2 1/16	41.75	17	No. 5
2 1/8	44.50	17	No. 5
2 3/16	47.25	17	No. 5
2 1/4	50.00	17 1/2	No. 5
2 5/16	53.25	17 1/2	No. 5
2 3/8	56.50	18	No. 5
2 7/16	59.75	18 1/2	No. 5
2 1/2	63.00	19	No. 5
2 9/16	66.25	19 1/4	No. 5
2 5/8	69.50	19 1/2	No. 5
2 11/16	72.75	20	No. 5
2 3/4	76.00	20 1/2	No. 5
2 13/16	79.25	20 1/2	No. 5
2 7/8	82.50	21	No. 5
2 15/16	86.25	21	No. 5
3	90.00	22	No. 5

64th and 32nd sizes take price of next larger listed size

Diameter Inches	Carbon Each	Whole Length Inches	Length of Flutes Inches	Length of Body Inches	Morse Taper Shank Number
5/8	$1.90	9	2	3 15/16	2
11/16	2.00	9	2	3 15/16	2
3/4	2.20	9 1/2	2	4 7/16	2
25/32	2.30	9 1/2	2	4 7/16	2
13/16	2.40	9 1/2	2	4 7/16	2
27/32	2.50	9 1/2	2	4 7/16	2
7/8	2.55	10	2	4 15/16	2
29/32	2.60	10	2	4 15/16	2
15/16	2.65	10	2 1/4	4	3
31/32	2.70	10	2 1/4	4	3
1	2.75	10 1/2	2 1/4	4 1/2	3
1 1/32	2.80	10 1/2	2 1/4	4 1/2	3
1 1/16	2.85	10 1/2	2 1/4	4 1/2	3
1 3/32	2.95	10 1/2	2 1/4	4 1/2	3
1 1/8	3.10	11	2 1/2	4 3/4	3
1 5/32	3.20	11	2 1/2	4 3/4	3
1 3/16	3.30	11	2 1/2	4 3/4	3

These Reamers are made .010 inch under size and are intended to be used as roughing reamers for Floating Reamers No. 119D and Floating Expansion Reamers No. 119 E listed on page 67.

For Sockets designed for use with these Reamers see Nos. 100S, page 57, and 100T on page 55.

Adjustable



Morse No. 120E, with Straight Shanks

For illustration and sizes of Wrench furnished with each Reamer see page 80

Diameter Inches	Carbon Each	Whole Length Inches	Diameter Inches	Carbon Each	Whole Length Inches
1	$5.90	9	2 5/16	$19.50	14
1 1/16	6.20	10	2 3/8	21.00	14
1 1/8	6.50	10	2 7/16	22.50	14
1 3/16	6.80	10	2 1/2	24.00	14
1 1/4	7.10	10	2 9/16	25.00	14 1/2
1 5/16	7.40	11	2 5/8	26.00	14 1/2
1 3/8	7.80	11	2 11/16	27.00	14 1/2
1 7/16	8.20	11	2 3/4	28.00	14 1/2
1 1/2	8.60	11	2 13/16	28.75	15
1 9/16	9.00	12	2 7/8	29.50	15
1 5/8	9.30	12	2 15/16	30.75	15
1 11/16	9.60	12	3	32.00	15
1 3/4	9.90	12	3 1/8	36.00	15 1/2
1 13/16	10.20	13	3 1/4	40.00	15 1/2
1 7/8	10.40	13	3 3/8	44.00	16
1 15/16	10.60	13	3 1/2	48.50	16
2	10.80	13	3 5/8	53.50	16 1/2
2 1/16	11.80	13 1/2	3 3/4	58.50	16 1/2
2 1/8	12.80	13 1/2	3 7/8	63.50	17
2 3/16	15.60	13 1/2	4	67.50	17
2 1/4	18.00	13 1/2			

A ground, tapered plug, acting upon the chasers, adjusts the Reamer to the size desired.

To operate the plug, the Head Nut should be loosened, and the plug then turned until size desired is obtained. The Head Nut should then be tightened. Reamers 1 inch diameter will adjust .02 inch; 1 1/16 to 1 1/2 inches adjust 3/32 inch; 1 9/16 to 3 inches adjust 3/64 inch; 3 1/8 to 4 inches adjust .055 inch.

Adjustable



Morse No. 120 1/2E, with Taper Shanks

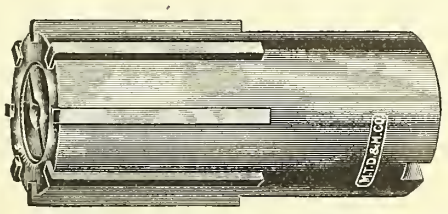
For illustration and sizes of Wrench furnished with each Reamer see page 80

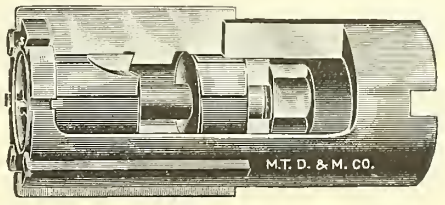
Diameter Inches	Carbon Each	Whole Length Inches	Morse Taper Shank
1	$7.00	10 1/4	No. 3
1 1/16	7.40	10 1/4	No. 3
1 1/8	7.80	10 5/8	No. 3
1 3/16	8.20	10 5/8	No. 3
1 1/4	8.60	11 1/8	No. 4
1 5/16	9.00	11 1/4	No. 4
1 3/8	9.40	11 5/8	No. 4
1 7/16	9.70	11 5/8	No. 4
1 1/2	$10.00	12 1/8	No. 4
1 9/16	10.30	12 1/8	No. 4
1 5/8	10.60	12 5/8	No. 4
1 11/16	10.90	12 5/8	No. 4
1 3/4	11.20	13 1/2	No. 5
1 13/16	11.60	13 5/8	No. 5
1 7/8	12.00	14 1/8	No. 5
1 15/16	12.40	14 1/8	No. 5
2	12.80	14 1/8	No. 5

For a general description of these Reamers, see No. 120E

One-Lock Adjustable Reamers and Arbors

Carbon and High Speed Steel





Morse No. 500, One-Lock Adjustable Reamers

With Carbon Steel Blades
Blades furnished only in sets

Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set
3/4	$6.00	$2.80	1 9/16	$7.50	$3.05	2 3/8	$11.40	$4.20
13/16	6.00	2.80	1 5/8	7.80	3.10	2 7/16	11.70	4.30
7/8	6.00	2.80	1 11/16	8.10	3.15	2 1/2	12.00	4.40
15/16	6.00	2.80	1 3/4	8.40	3.20	2 9/16	12.30	4.50
1	6.00	2.80	1 13/16	8.70	3.30	2 5/8	12.60	4.60
1 1/16	6.00	2.80	1 7/8	9.00	3.40	2 11/16	12.90	4.70
1 1/8	6.00	2.80	1 15/16	9.30	3.50	2 3/4	13.20	4.80
1 3/16	6.00	2.80	2	9.60	3.60	2 13/16	13.70	4.90
1 1/4	6.00	2.80	2 1/16	9.90	3.70	2 7/8	14.20	5.00
1 5/16	6.30	2.85	2 1/8	10.20	3.80	2 15/16	14.70	5.10
1 3/8	6.60	2.90	2 3/16	10.50	3.90	3	15.20	5.20
1 7/16	6.90	2.95	2 1/4	10.80	4.00			
1 1/2	7.20	3.00	2 5/16	11.10	4.10			

With High Speed Steel Blades
Blades furnished only in sets

Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set	Diam. Inches	Each	Extra Blades Per Set
3/4	$7.00	$4.00	1 9/16	$9.35	$4.90	2 3/8	$13.95	$6.50
13/16	7.00	4.00	1 5/8	9.65	5.00	2 7/16	14.30	6.65
7/8	7.00	4.00	1 11/16	10.00	5.10	2 1/2	14.65	6.80
15/16	7.00	4.00	1 3/4	10.35	5.20	2 9/16	15.00	6.95
1	7.00	4.00	1 13/16	10.70	5.30	2 5/8	15.30	7.10
1 1/16	7.00	4.10	1 7/8	11.05	5.40	2 11/16	15.65	7.25
1 1/8	7.25	4.20	1 15/16	11.40	5.50	2 3/4	16.00	7.40
1 3/16	7.50	4.30	2	11.75	5.60	2 13/16	16.55	7.55
1 1/4	7.60	4.40	2 1/16	12.05	5.75	2 7/8	17.10	7.70
1 5/16	7.95	4.50	2 1/8	12.40	5.90	2 15/16	17.65	7.85
1 3/8	8.30	4.60	2 3/16	12.75	6.05	3	18.20	8.00
1 7/16	8.65	4.70	2 1/4	13.25	6.20			
1 1/2	9.00	4.80	2 5/16	13.60	6.35			

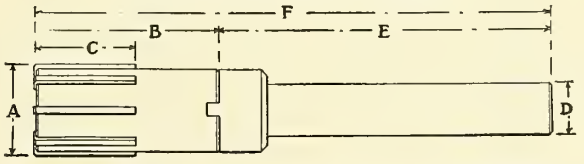
An adjustment Socket Wrench and a Key are furnished with each Reamer.

Turning the Cam Bolt in the Shell by slotted head moves all blades at once and all exactly alike, outward from the center. When the desired diameter is reached be sure all blades are firmly seated on Cam Bolt before the Lock Nut is tightened.

Nothing to get out of order. Only three parts besides blades. One movement operates all blades at once. One nut locks them.

Exact adjustment is quickly made to any size within range without regrinding blades.

Arbors for One-Lock Reamers



Morse No. 125P

Dimensions of One-Lock Reamer Parts

Number	Straight Shank Each	Number	Morse Taper Shank Each	Fitting Sizes Inches	Diameter of Straight Shank Inches	Morse Taper Shank Number
1	$1.00	21	$2.50	3/4 to 15/16	5/8	2
2	1.25	22	3.00	1 to 1 3/16	3/4	3
3	1.50	23	3.50	1 1/4 to 1 11/16	7/8	3
4	2.00	24	4.50	1 3/4 to 2 3/16	1 1/8	4
5	3.00	25	5.00	2 1/4 to 2 11/16	1 3/8	4
6	4.00	26	7.00	2 3/4 to 3	1 3/4	5

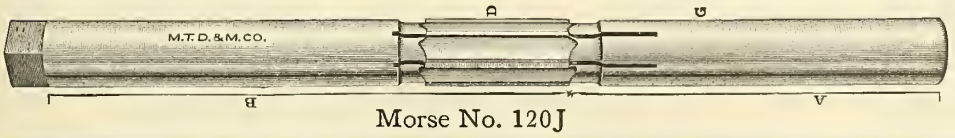
A Diameter of Reamer Inches	B Length of Reamer Inches	C Length of Blade Inches	D Diameter of Arbor Inches	E Length Straight or Morse Taper Arbor, Inches	F Whole Length Reamer and Arbor, Inches
3/4 to 15/16	2 13/16	1 15/32	5/8	6 5/8	9 7/16
1 to 1 3/16	3 1/16	1 17/32	3/4	7 1/2	10 9/16
1 1/4 to 1 11/16	3 11/16	1 15/16	7/8	7 7/8	11 9/16
1 3/4 to 2 3/16	4 5/16	2 3/16	1 1/8	8 1/4	12 9/16
2 1/4 to 2 11/16	4 13/16	2 5/8	1 3/8	8 3/4	13 9/16
2 3/4 to 3	5 3/16	3	1 3/4	9 1/4	14 7/16

One-Lock Reamers 3/4 to 15/16 inch diameter will adjust 1/64 inch; 1 to 1 3/16 inches adjust .025 inch; 1 1/4 to 1 7/16 inches adjust 1/32 inch; 1 1/2 to 1 15/16 inches adjust 3/64 inch; 2 to 2 11/16 inches adjust 1/16 inch; 2 3/4 to 3 inches adjust 5/64 inch.

The One-Lock Reamer can be adjusted larger or smaller with equal facility. The blades have no endwise movement in the shell, and can always ream to the bottom of a blind hole.

In ordering blades, state size of Reamer and also length of shell.

Expanding Reamers



Morse No. 120J

These Reamers are made to order only, and are not furnished smaller than 3/4 inch diameter.

In ordering state diameter at letters D and G, and the lengths as by letters A and B, also size and length of square. Wedge-shaped pins are adjusted to the blades of the Reamer and driving the pins increases its diameter.

Reamers

Carbon Steel

Adjustable Shell



Morse No. 120N

The cut shows the construction of our Patent Adjustable Shell Reamer. The wedge-shaped blades are held rigidly in slots by means of taper keys.

The bottom of the slots is inclined to the axis of the reamer, and the size may be adjusted by first driving back the keys, and turning the nut in the required direction. The keys should then be driven home to lock the blades.

This style of Adjustable Shell Reamer is not made smaller than 1⅜ inches, but can be made solid as small as ¾ inch.

A Wrench furnished with each Reamer.

Diameter Inches	Each	Whole Length Inches	Morse Taper Hole
1⅜	$10.60	4⅞	No. 2
1 7/16	11.05	4⅞	
1½	11.50	4⅞	
1 9/16	12.05	4⅞	
1⅝	12.65	4⅞	
1 11/16	13.20	5¼	No. 3
1¾	13.80	5¼	
1 13/16	14.65	5¼	
1⅞	15.50	5¼	
1 15/16	16.40	5¼	
2	17.25	5½	
2 1/16	17.55	5½	
2⅛	17.85	5½	
2 3/16	18.15	5½	
2¼	18.40	5½	
2 5/16	18.70	5¾	No. 4
2⅜	19.00	5¾	
2 7/16	19.25	5¾	
2½	19.55	5¾	
2 9/16	19.85	5¾	
2⅝	20.10	6	
2 11/16	$20.40	6	No. 4
2¾	20.70	6	
2 13/16	20.95	6	
2⅞	21.25	6	
2 15/16	21.55	6	
3	21.85	6	
3 1/16	22.40	6	
3⅛	23.00	6	
3 3/16	23.55	6	
3¼	24.15	6	
3 5/16	24.70	6	
3⅜	25.30	6½	No. 5
3 7/16	25.85	6½	
3½	26.45	6½	
3 9/16	27.00	6½	
3⅝	27.60	6½	
3 11/16	28.15	6½	
3¾	28.75	6½	
3 13/16	29.60	6½	
3⅞	30.45	6½	
3 15/16	31.30	6½	
4	32.20	6½	

These Reamers sizes 1⅜ inches to 2 5/16 inches have an expansion of .009 inch, sizes 2⅝ inches to 4 inches, an expansion of .012 inch.

For Arbors fitting these Reamers see page 86.

Wrenches for Adjustable Reamers



Nos. 120E, 120E-B, 120½, and 120N

A Wrench furnished with Reamers

No. of Wrench	Fitting Reamers Inches	No. of Wrench	Fitting Reamers Inches	No. of Wrench	Fitting Reamers Inches	No. of Wrench	Fitting Reamers Inches
3	1	9	1 1/16 & 1¾	15	2½ & 2 9/16	21	3¼ & 3 5/16
4	1 1/16 & 1⅛	10	1 13/16 & 1⅞	16	2⅝ & 2 11/16	22	3⅜ & 3 7/16
5	1 3/16 & 1¼	11	1 15/16, 2, 2 1/16	17	2¾ & 2 13/16	23	3½ & 3 9/16
6	1 5/16 & 1⅜	12	2⅛ & 2 3/16	18	2⅞ & 2 15/16	24	3⅝ & 3 11/16
7	1 7/16 & 1½	13	2¼ & 2 5/16	19	3 & 3 1/16	25	3¾ & 3 13/16
8	1 9/16 & 1⅝	14	2⅜ & 2 7/16	20	3⅛ & 3 3/16	26	3⅞ & 3 15/16
						27	4

Prices quoted on application for additional wrenches

Expansion Shell



Morse No. 120M-A, with Straight Holes

Diameter Inches	Each	Whole Length Inches	Size Hole Inch
1 1/16	$6.00	2⅝	½
1⅛	6.00	2⅝	½
1 3/16	6.00	2⅝	½
1¼	6.00	2⅝	½
1 5/16	6.30	2⅝	½
1⅜	6.60	2¾	⅝
1 7/16	6.90	2¾	⅝
1½	7.20	2¾	⅝
1 9/16	7.50	2¾	⅝
1⅝	7.80	2¾	⅝
1 11/16	8.10	2¾	⅝
1¾	8.40	2¾	⅝
1 13/16	8.70	2¾	⅝
1⅞	9.00	2¾	¾
1 15/16	9.30	2¾	¾
2	9.60	2¾	¾
2 1/16	9.90	2¾	¾
2⅛	10.20	2¾	¾
2 3/16	10.50	2¾	¾
2¼	10.80	2¾	¾
2 5/16	11.10	2¾	¾
2⅜	11.40	2¾	¾
2 7/16	11.70	2¾	¾
2½	12.00	3	1
2 9/16	12.30	3	1
2⅝	12.60	3	1
2 11/16	12.90	3	1
2¾	13.20	3	1
2 13/16	13.70	3	1
2⅞	14.20	3	1
2 15/16	14.70	3	1
3	15.20	3	1
3 1/16	$15.70	3	1
3⅛	16.20	3	1
3 3/16	16.70	3	1
3¼	17.20	3¼	1¼
3 5/16	17.70	3¼	1¼
3⅜	18.20	3¼	1¼
3 7/16	18.70	3¼	1¼
3½	19.20	3¼	1¼
3 9/16	19.95	3¼	1¼
3⅝	20.70	3¼	1¼
3 11/16	21.45	3¼	1¼
3¾	22.20	3⅝	1½
3 13/16	22.95	3⅝	1½
3⅞	23.70	3⅝	1½
3 15/16	24.45	3⅝	1½
4	25.20	3⅝	1½
4 1/16	25.95	3⅝	1½
4⅛	26.70	3⅝	1½
4 3/16	27.45	3⅝	1½
4¼	28.20	4	2
4 5/16	28.95	4	2
4⅜	29.70	4	2
4 7/16	30.45	4	2
4½	31.20	4	2
4 9/16	31.95	4	2
4⅝	32.70	4	2
4 11/16	33.45	4	2
4¾	34.20	4	2
4 13/16	34.95	4	2
4⅞	35.70	4	2
4 15/16	36.45	4	2
5	37.20	4	2

For Arbors fitting these Reamers see page 85.

For other Tools to be used in connection with these Reamers see pages 47 and 66.

Suggestions for Ordering Reamers

Regular Reamers—Always order by catalogue number.

Special Reamers—Refer to the catalogue number for general style of tool required, giving also the following information:

Special Solid Reamers—Give total length and length of flutes.

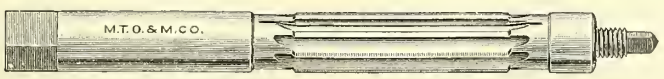
Special Taper Reamers—Give whole length, length of flutes, size at large and small ends of flutes; or size at one end and taper per foot. State whether straight or taper shank is required. If taper, give length of shank and diameter at each end and if Morse Taper is required state number.

Special Shell Reamers—Give whole length and length of flutes. When these reamers are longer than catalogue lengths they are made with Straight Hole and diameter of hole should be given.

Expansion and Expanding Reamers

Carbon Steel

Expansion



Morse No. 120G, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Length of Flutes Inches
1/4	$3.00	4	1 1/2
9/32	3.05	4	1 1/2
5/16	3.10	4	1 1/2
11/32	3 15	4	1 1/2
3/8	3.20	5	2
13/32	3.25	5	2
7/16	3.30	5	2
15/32	3.35	5	2
1/2	3.40	6	2 1/2
17/32	3.50	6	2 1/2
9/16	3.65	6	2 1/2
19/32	3.80	6	2 1/2
5/8	4.00	7	3
21/32	4.20	7	3
11/16	4.40	7	3
23/32	4.60	7	3
3/4	4.80	8	3 1/2
25/32	5.00	8	3 1/2
13/16	5.25	8	3 1/2
27/32	5.50	8	3 1/2
7/8	5.75	9	4
29/32	6.00	9	4
15/16	6.25	9	4
31/32	6.50	9	4
1	6.75	10	4 1/2
1 1/32	7.00	10	4 1/2
1 1/16	7.25	10	4 1/2
1 3/32	7.50	10	4 1/2
1 1/8	7.75	10 1/2	4 3/4
1 5/32	8.00	10 1/2	4 3/4
1 3/16	8.30	10 1/2	4 3/4
1 7/32	8.60	10 1/2	4 3/4
1 1/4	8.90	11	5
1 9/32	$9.20	11	5
1 5/16	9.50	11	5
1 11/32	10.00	11	5
1 3/8	10.50	11 1/2	5 1/4
1 13/32	11.00	11 1/2	5 1/4
1 7/16	11.50	11 1/2	5 1/4
1 15/32	12.00	11 1/2	5 1/4
1 1/2	12.50	12	5 1/2
1 9/16	13.00	12	5 1/2
1 5/8	13.50	12 1/2	5 3/4
1 11/16	14.00	12 1/2	5 3/4
1 3/4	14.50	13	6
1 13/16	15.00	13	6
1 7/8	15.50	13 1/2	6 1/4
1 15/16	16.00	13 1/2	6 1/4
2	16.50	14	6 1/2
2 1/16	17.00	14	6 1/2
2 1/8	17.50	14 1/2	6 3/4
2 3/16	18.00	14 1/2	6 3/4
2 1/4	18.50	15	7
2 5/16	19.00	15	7
2 3/8	19.50	15 1/2	7 1/4
2 7/16	20.00	15 1/2	7 1/4
2 1/2	20.50	16	7 1/2
2 9/16	22.00	16	7 1/2
2 5/8	23.50	16 1/2	7 3/4
2 11/16	25.00	16 1/2	7 3/4
2 3/4	26.50	17	8
2 13/16	28.00	17	8
2 7/8	30.00	17 1/2	8 1/4
2 15/16	32.00	17 1/2	8 1/4
3	34.00	17 1/2	8 1/4

Limits of expansion recommended for these Reamers are as follows: Sizes 1/4 to 15/32 .005 inch; 1/2 to 31/32 .008 inch; 1 to 1 23/32 .010 inch; 1 3/4 to 2 15/32 .012; 2 21/64 to 3 inches .015 inch.

The guides to these Reamers are ground .005 inch under size.

Expanding



Morse No. 120K, with Straight Shanks

Diameter Inches	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches
3/4	$4.00	7 13/16	1 7/16	$7.40	12 3/16
13/16	4.40	8 3/16	1 1/2	7.80	12 9/16
7/8	4.70	8 9/16	1 9/16	8.20	12 15/16
15/16	5.00	8 15/16	1 5/8	8.50	13 5/16
1	5.30	9 7/16	1 11/16	8.80	13 11/16
1 1/16	5.60	9 13/16	1 3/4	9.10	14 3/16
1 1/8	5.90	10 3/16	1 13/16	9.40	14 9/16
1 3/16	6.20	10 9/16	1 7/8	9.60	14 15/16
1 1/4	6.50	10 15/16	1 15/16	9.80	15 5/16
1 5/16	6.80	11 7/16	2	10.00	15 11/16
1 3/8	7.10	11 13/16			

These Reamers have an expansion of .009 inch

Expanding

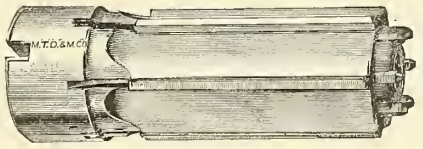


Morse No. 120 1/2K, with Taper Shanks

Diameter Inches	Each	Whole Length Inches	Morse Taper Shank Number	Diameter Inches	Each	Whole Length Inches	Morse Taper Shank Number
3/4	$4.00	9 1/2	2	1 7/16	$7.40	12	4
13/16	4.40	9 1/2	2	1 1/2	7.80	12 1/2	4
7/8	4.70	10	2	1 9/16	8.20	12 1/2	4
15/16	5.00	10	3	1 5/8	8.50	13	4
1	5.30	10 1/2	3	1 11/16	8.80	13	4
1 1/16	5.60	10 1/2	3	1 3/4	9.10	13 1/2	5
1 1/8	5.90	11	3	1 13/16	9.40	13 1/2	5
1 3/16	6.20	11	3	1 7/8	9.60	14	5
1 1/4	6.50	11 1/2	4	1 15/16	9.80	14	5
1 5/16	6.80	11 1/2	4	2	10.00	14	5
1 3/8	7.10	12	4				

Wedge-shaped pins are adjusted to the blades and driving the pins increases the diameter of the Reamers. When new blades or pins are required, the Reamer should accompany the order. Expanding Reamers are not furnished smaller than 3/4 inch diameter. These Reamers have an expansion of .009 inch.

Expanding Shell



Morse No. 120M

The cut shows the construction of the Expanding Shell Reamer. Wedge-shaped pins are adjusted to the blades and driving the pins increases the diameter of the Reamer. When new blades or pins are required, the Reamer should accompany the order. The Reamers can be increased but not reduced in size. Special sizes of larger diameter than 4 inches furnished to order at special prices.

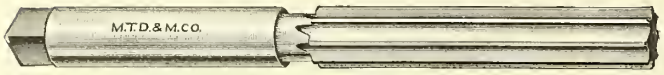
Diameter Inches	Each	Whole Length Inches	Morse Taper Hole	
1 3/8	$9.20	4 11/16		
1 7/16	9.60	4 11/16		
1 1/2	10.00	4 11/16		
1 9/16	10.50	4 11/16		
1 5/8	11.00	4 11/16		
1 11/16	11.50	5 3/16		
1 3/4	12.00	5 3/16		
1 13/16	12.75	5 3/16		
1 7/8	13.50	5 3/16		
1 15/16	14.25	5 3/16		
2	15.00	5 3/16		
2 1/16	15.25	5 3/16		
2 1/8	15.50	5 3/16		
2 3/16	15.75	5 3/16		
2 1/4	16.00	5 3/16		
2 5/16	$16.25	5 7/16		
2 3/8	16.50	5 7/16		
2 7/16	16.75	5 7/16		
2 1/2	17.00	5 7/16		
2 9/16	17.25	5 7/16		
2 5/8	17.50	5 7/16		
2 11/16	17.75	5 7/16		
2 3/4	18.00	5 7/16		
2 13/16	18.25	5 7/16		
2 7/8	18.50	5 7/16		
2 15/16	18.75	5 7/16		
3	19.00	5 7/16		
3 1/16	19.50	5 7/16		
3 1/8	20.00	5 7/16		
3 3/16	20.50	5 7/16		
3 1/4	$21.00	5 7/16		
3 5/16	21.50	5 7/16		
3 3/8	22.00	6		
3 7/16	22.50	6		
3 1/2	23.00	6		
3 9/16	23.50	6		
3 5/8	24.00	6		
3 11/16	24.50	6		
3 3/4	25.00	6		
3 13/16	25.75	6		
3 7/8	26.50	6		
3 15/16	27.25	6		
4	28.00	6		

No. 2 · No. 3 · No. 4 · No. 4 · No. 4 · No. 5

These Reamers have an expansion of .009 inch. For Arbors fitting these Reamers see page 86. For Expanding Shell Reamers with straight holes see No. 120M-A

Jobbers Reamers

Carbon Steel—Metric Sizes



Morse No. 115 E, with Straight Shanks and Flutes



Morse No. 115 F, with Straight Shanks and Flutes
Threaded Ends

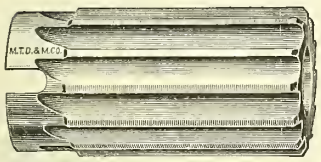
Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.
3	$1.00	76	38
3½	1.10	83	41
4	1.10	83	41
4½	1.20	89	44
5	1.25	95	48
5½	1.30	95	48
6	1.40	102	51
6½	1.40	102	51
7	1.45	108	54
7½	1.50	114	57
8	1.50	114	57
8½	1.55	121	60
9	1.60	127	63
9½	1.60	127	63
10	1.70	133	67
10½	1.70	133	67
11	1.75	140	70
11½	1.85	146	73
12	1.85	146	73
12½	1.90	152	76
13	1.95	159	79
13½	1.95	159	79
14	2.00	165	83
14½	2.10	171	86
15	2.10	171	86
15½	2.20	178	89
16	2.20	178	89
16½	2.30	187	94
17	2.40	197	98
17½	2.40	197	98
18	2.50	206	103
18½	2.60	213	106
19	2.60	213	106
19½	2.70	222	111
20	2.75	222	111
20½	2.80	232	116
21	2.90	238	119
21½	3.00	238	119
22	3.10	248	124
22½	3.20	254	127
23	3.25	254	127
23½	3.35	260	130
24	3.40	270	135
24½	3.55	270	135
25	3.60	276	138
26	3.80	283	141
27	4.00	286	143
28	4.25	295	148
29	$4.45	302	151
30	4.60	305	152
31	4.75	308	154
32	4.90	311	156
33	5.15	317	159
34	5.40	317	159
35	5.60	321	160
36	5.90	327	164
37	6.15	327	164
38	6.40	330	165
39	6.60	330	165
40	6.90	330	165
41	7.20	330	165
42	7.40	330	165
43	7.60	343	171
44	7.90	343	171
45	8.10	343	171
46	8.40	343	171
47	8.60	356	178
48	8.90	356	178
49	9.20	356	178
50	9.40	356	178
51	9.70	368	184
52	10.00	368	184
53	10.20	368	184
54	10.40	368	184
55	10.70	368	184
56	11.00	368	184
57	11.30	368	184
58	11.60	381	190
59	12.00	381	190
60	12.30	381	190
61	12.55	381	190
62	12.90	381	190
63	13.30	381	190
64	13.70	394	197
65	14.00	394	197
66	14.30	394	197
67	14.80	394	197
68	15.40	394	197
69	15.80	394	197
70	16.40	394	197
71	17.00	406	203
72	17.40	406	203
73	17.80	406	203
74	18.40	406	203
75	19.00	406	203
76	19.40	406	203

Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.
5	$1.25	95	48
5½	1.30	95	48
6	1.40	102	51
6½	1.40	102	51
7	1.45	108	54
7½	1.50	114	57
8	1.50	114	57
8½	1.55	121	60
9	1.60	127	63
9½	1.60	127	63
10	1.70	133	67
10½	1.70	133	67
11	1.75	140	70
11½	1.85	146	73
12	1.85	146	73
12½	1.90	152	76
13	1.95	159	79
13½	1.95	159	79
14	2.00	165	83
14½	2.10	171	86
15	2.10	171	86
15½	2.20	178	89
16	2.20	178	89
16½	2.30	187	94
17	2.40	197	98
17½	2.40	197	98
18	2.50	206	103
18½	2.60	213	106
19	2.60	213	106
19½	2.70	222	111
20	2.75	222	111
20½	2.80	232	116
21	2.90	238	119
21½	3.00	238	119
22	3.10	248	124
22½	3.20	254	127
23	3.25	254	127
23½	3.35	260	130
24	3.40	270	135
24½	3.55	270	135
25	3.60	276	138
26	3.80	283	141
27	4.00	286	143
28	4.25	295	148
29	4.45	302	151
30	4.60	305	152
31	$4.75	308	154
32	4.90	311	156
33	5.15	317	159
34	5.40	317	159
35	5.60	321	160
36	5.90	327	164
37	6.15	327	164
38	6.40	330	165
39	6.60	330	165
40	6.90	330	165
41	7.20	330	165
42	7.40	330	165
43	7.60	343	171
44	7.90	343	171
45	8.10	343	171
46	8.40	343	171
47	8.60	356	178
48	8.90	356	178
49	9.20	356	178
50	9.40	356	178
51	9.70	368	184
52	10.00	368	184
53	10.20	368	184
54	10.40	368	184
55	10.70	368	184
56	11.00	368	184
57	11.30	368	184
58	11.60	381	190
59	12.00	381	190
60	12.30	381	190
61	12.55	381	190
62	12.90	381	190
63	13.30	381	190
64	13.70	394	197
65	14.00	394	197
66	14.30	394	197
67	14.80	394	197
68	15.40	394	197
69	15.80	394	197
70	16.40	394	197
71	17.00	406	203
72	17.40	406	203
73	17.80	406	203
74	18.40	406	203
75	19.00	406	203
76	19.40	406	203

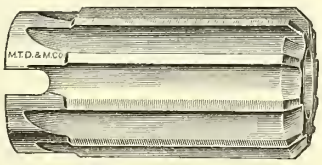
Reamers

Carbon Steel—Metric Sizes

Shell



Morse No. 117B



Morse No. 117½B, Rose

With Straight Flutes

These Shell Reamers have taper holes

Diameter MM.	Each	Whole Length MM.	Fitting Arbor No.	Diameter MM.	Each	Whole Length MM.	Fitting Arbor No.
13	$1.45	51	3	71	$8.35	102	10
14	1.50	51	3	72	8.60	102	10
15	1.55	51	3	73	8.80	102	10
16	1.60	57	4	74	9.10	102	10
17	1.60	57	4	75	9.40	102	10
18	1.60	57	4	76	9.60	102	10
19	1.60	57	4	77	9.75	102	10
20	1.60	63	5	78	10.05	114	11
21	1.65	63	5	79	10.20	114	11
22	1.70	63	5	80	10.40	114	11
23	1.70	63	5	81	10.60	114	11
24	1.70	63	5	82	11.00	114	11
25	1.80	63	5	83	11.25	114	11
26	1.80	70	6	84	11.50	114	11
27	1.80	70	6	85	12.00	114	11
28	1.90	70	6	86	12.25	114	11
29	1.95	70	6	87	12.50	114	11
30	2.00	70	6	88	12.75	114	11
31	2.15	70	6	89	13.25	114	11
32	2.30	70	6	90	13.50	114	11
33	2.40	70	6	91	13.75	127	12
34	2.50	76	7	92	14.00	127	12
35	2.60	76	7	93	14.50	127	12
36	2.75	76	7	94	14.75	127	12
37	2.90	76	7	95	15.00	127	12
38	3.00	76	7	96	15.25	127	12
39	3.10	76	7	97	15.75	127	12
40	3.30	76	7	98	16.00	127	12
41	3.50	76	7	99	16.50	127	12
42	3.65	76	7	100	17.00	127	12
43	3.85	89	8	101	18.00	127	12
44	4.05	89	8	102	18.15	127	12
45	4.25	89	8	103	18.30	127	12
46	4.40	89	8	104	18.60	140	13
47	4.60	89	8	105	18.80	140	13
48	4.80	89	8	106	19.00	140	13
49	5.00	89	8	107	19.20	140	13
50	5.10	89	8	108	19.60	140	13
51	5.25	89	8	109	19.80	140	13
52	5.40	89	8	110	20.00	140	13
53	5.50	95	9	111	20.20	140	13
54	5.65	95	9	112	20.60	140	13
55	5.80	95	9	113	20.80	140	13
56	5.90	95	9	114	21.00	140	13
57	6.00	95	9	115	21.30	140	13
58	6.15	95	9	116	21.90	152	14
59	6.30	95	9	117	22.20	152	14
60	6.40	95	9	118	22.50	152	14
61	6.50	95	9	119	22.80	152	14
62	6.65	95	9	120	23.40	152	14
63	6.80	95	9	121	23.70	152	14
64	6.90	95	9	122	24.00	152	14
65	7.00	95	9	123	24.30	152	14
66	7.20	102	10	124	24.90	152	14
67	7.40	102	10	125	25.20	152	14
68	7.60	102	10	126	25.60	152	14
69	7.80	102	10	127	26.00	152	14
70	8.05	102	10	128	27.00	152	14

For Arbors fitting these Reamers see pages 85 and 86.

Reamers Style 117½ B have no radial clearance but are ground with a longitudinal clearance. Keep cutting points sharp.

Adjustable



Morse No. 120 E-B

With Straight Shank

For illustration and sizes of Wrench furnished with each Reamer see page 80

Diameter MM.	Each	Whole Length MM.	Diameter MM.	Each	Whole Length MM.
25	$5.90	229	51	$11.30	330
26	6.05	229	52	11.80	343
27	6.35	254	53	12.30	343
28	6.50	254	54	14.20	343
29	6.65	254	55	15.60	343
30	6.80	254	56	16.80	343
31	7.10	254	57	18.00	343
32	7.25	254	58	19.50	343
33	7.40	254	59	20.25	356
34	7.60	279	60	21.00	356
35	8.00	279	61	21.75	356
36	8.20	279	62	23.25	356
37	8.40	279	63	24.00	356
38	8.60	279	64	24.50	356
39	9.00	279	65	25.00	368
40	9.15	305	66	26.00	368
41	9.30	305	67	26.50	368
42	9.45	305	68	27.00	368
43	9.60	305	69	27.50	368
44	9.90	305	70	28.40	368
45	10.05	305	71	28.75	381
46	10.20	330	72	29.15	381
47	10.40	330	73	29.50	381
48	10.50	330	74	30.75	381
49	10.60	330	75	31.40	381
50	10.70	330	76	32.00	381

For a general description of these Reamers see No. 120E, page 78

Expansion



Morse No. 120½G, with Straight Shank

Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.	Diameter MM.	Each	Whole Length MM.	Length of Flutes MM.
6	$3.00	102	38	29	$8.00	267	121
7	3.05	102	38	30	8.30	267	121
8	3.15	102	38	31	8.90	267	121
9	3.20	127	51	32	9.20	279	127
10	3.25	127	51	33	9.50	279	127
11	3.30	127	51	34	10.00	279	127
12	3.40	127	51	35	11.00	292	133
13	3.50	152	63	36	11.50	292	133
14	3.65	152	63	37	12.00	292	133
15	3.80	152	63	38	12.50	305	140
16	4.20	178	76	39	13.00	305	140
17	4.40	178	76	40	13.25	305	140
18	4.60	178	76	41	13.50	317	146
19	4.80	203	89	42	13.75	317	146
20	5.2	203	89	43	14.25	317	146
21	5.50	203	89	44	14.50	330	152
22	5.75	229	102	45	14.75	330	152
23	6.00	229	102	46	15.00	330	152
24	6.50	229	102	47	15.50	343	159
25	6.75	254	114	48	15.75	343	159
26	7.00	254	114	49	16.00	343	159
27	7.25	254	114	50	16.25	343	159
28	7.75	267	121				

Limits of expansion recommended for these Reamers are as follows: Sizes 6 to 12 mm. .005 inch; 13 to 25 mm. .008 inch; 26 to 44 mm. .010 inch; 45 to 50 mm. .012 inch.

The Guides to these Reamers are ground .005 inch under size.

Reamers

Center



Style No. 1



Style No. 2

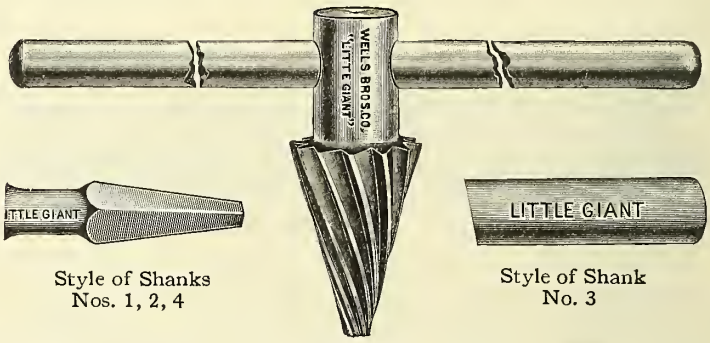
Morse No. 120H, with Included Angle 60 Degrees

These Reamers with included angle of 72 and 82 degrees furnished at regular prices

Size Cut Inch	Style No. 1 Each	Style No. 1 Per Dozen	Style No. 2 Each	Style No. 2 Per Dozen	Whole Length Inches	Diameter Shank Inch	Length Shank Inch
1/4	$ .22	$2.50	$ .25	$2.90	1 1/2	3/16	3/4
3/8	.25	2.90	.30	3.25	1 13/16	1/4	7/8
1/2	.30	3.25	.35	3.75	2	3/8	7/8
5/8	.50	6.00	.60	7.00	2 1/8	3/8	7/8
3/4	.70	8.00	.75	8.50	2 3/8	1/2	1

Other angles made to order at special prices

Burring



Style of Shanks Nos. 1, 2, 4

Style of Shank No. 3

Order by this No.	Total Length Inches	Length of Flute Inches	Length of Shank Inches	Size at Point Inch	Size at Large End Inches	Style of Shank	Capacity Pipe Inches	Each
1	2 3/4	1	1 3/4	7/32	3/4	Bit Brace	1/8 to 1/2	$1.00
2	4 1/2	2 1/4	2 1/4	5/16	1 1/2	Bit Brace	1/4 to 1 1/4	1.25
3	4 1/2	2 1/4	2 1/4	5/16	1 1/2	1/2-in. Round	1/4 to 1 1/4	1.52
4	4 5/8	2	2 5/8	1	2 3/16	Bit Brace	1 to 2	3.00
5	4 1/32	2 9/32	1 3/4	15/16	2 5/32	T Handle*	1 to 2	3.50
6	5 3/8	3 3/16	2 3/16	7/16	2 5/32	T Handle*	1/2 to 2	4.00

*20 inches long

Genuine English Broaches



We are direct importers of these Reamers, and aim to carry always a large stock of all sizes

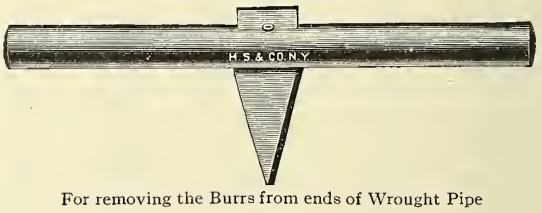
Diameters given are taken at largest end of Reamer

Length, inches	4	4 1/2	5	5 1/2
Diameter, inch	3/16	7/32	5/16	21/64
Per Dozen	$2.85	3.40	4.20	6.00

*Drill Gauge No.	15	20	25	30	35	40	45	50	55	60	65
Per Dozen	$2.35	2.10	2.10	1.85	1.55	1.30	1.05	.80	.80	.65	.65

*Stubs' Drill Gauge

Hall's Patent Pipe



For removing the Burrs from ends of Wrought Pipe

Number	1	2	3
Reams Pipe, inches	1/8 to 1	3/4 to 2	1 1/2 to 3
Each	$ .80	.90	2.50

Cast Steel

For Wood or Soft Metal



4 inches long; tapers from 1/2 to 1/8 inch

No. 40. Square, ground concave.....Per dozen $4.50



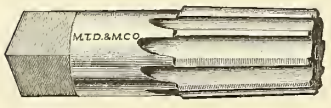
4 inches long; tapers from 1/2 to 1/8 inch

No. 50 Octagon, ground concave.....Per dozen $5.50



4 1/2 inches long; tapers from 1/2 to 1/8 inch

No. 55. Half round, flat side, ground concave.....Per dozen $5.00



Taper Pipe

For use with Briggs Standard Pipe Taps

Inches	Morse No. 137 Each	Walworth Each	Inches	Morse No. 137 Each	Walworth Each
1/8	$1.12		1 1/2	$ 4.62	$ 4.62
1/4	1.25	$1.25	2	6.25	6.25
3/8	1.50	1.50	2 1/2	10.50	10.50
1/2	1.87	1.87	3	15.00	15.00
3/4	2.50	2.50	3 1/2	22.00	
1	3.12	3.12	4	33.00	
1 1/4	3.75	3.75			

Pipe with Inserted Lands

For illustration of style, see index for Little Giant Pipe Taps with inserted lands.

The lands are made of the very best high grade of steel, higly tempered, and they can easily be replaced, when worn, at very little cost

Inches	2 1/2	3	3 1/2	4	4 1/2	5
Each	$6.00	8.00	10.00	14.00	25.00	35.00
Extra Lands.....Per set	2.00	2.00	2.50	2.50	3.00	3.00

Inches	6	7	8	9	10
Each	$50.00	70.00	85.00	100.00	120.00
Extra Lands.....Per set	5.00	5.00	7.00	7.00	7.00

Arbors

For Shell Reamers and Shell Drills

Floating



Morse No. 125 K

Number	Each	Fitting Sizes Inches	Whole Length Inches	Diameter Bushing Inches	Length of Shank Inches
1	$9.00	1 1/16 to 1 5/16	13 1/2	1 1/2	3 1/4
2	9.00	1 1/16 to 1 5/16	13 1/2	1 3/4	3 1/4
3	9.00	1 1/16 to 1 5/16	13 1/2	2	3 1/4
4	9.35	1 3/8 to 1 13/16	13 1/2	1 1/2	3 1/4
5	9.35	1 3/8 to 1 13/16	13 1/2	1 3/4	3 1/4
6	9.35	1 3/8 to 1 13/16	13 1/2	2	3 1/4
7	9.75	1 7/8 to 2 7/16	13 1/2	1 3/4	3 1/4
8	9.75	1 7/8 to 2 7/16	13 1/2	2	3 1/4
9	10.10	2 1/2 to 3 3/16	13 1/2	2	3 1/4
10	10.50	3 1/4 to 3 11/16	13 1/2	2	3 1/4
11	10.85	3 3/4 to 4 3/16	13 1/2	2	3 1/4
12	11.25	4 1/4 to 5	13 1/2	2	3 1/4

Above Arbors fit Shell Reamers and Shell Drills with straight holes; Shell Reamer No. 117C; Expanding Shell Reamer No. 120M-A; Shell Drill No. 102 1/2H.

Solid



Morse No. 125 M

Number	Each	Fitting Sizes Inches	Whole Length Inches	Diameter Shank Inches
1	$7.50	1 1/16 to 1 5/16	11	1 1/4
2	7.50	1 1/16 to 1 5/16	11	1 1/2
3	7.50	1 1/16 to 1 5/16	13 1/2	1 3/4
4	7.50	1 1/16 to 1 5/16	13 1/2	2
5	7.90	1 3/8 to 1 13/16	11	1 1/4
6	7.90	1 3/8 to 1 13/16	11	1 1/2
7	7.90	1 3/8 to 1 13/16	13 1/2	1 3/4
8	7.90	1 3/8 to 1 13/16	13 1/2	2
9	8.25	1 7/8 to 2 7/16	11	1 1/4
10	8.25	1 7/8 to 2 7/16	11	1 1/2
11	8.25	1 7/8 to 2 7/16	13 1/2	1 3/4
12	8.25	1 7/8 to 2 7/16	13 1/2	2
13	8.65	2 1/2 to 3 3/16	11	1 1/4
14	8.65	2 1/2 to 3 3/16	11	1 1/2
15	8.65	2 1/2 to 3 3/16	13 1/2	1 3/4
16	8.65	2 1/2 to 3 3/16	13 1/2	2
17	9.00	3 1/4 to 3 11/16	11	1 1/4
18	9.00	3 1/4 to 3 11/16	11	1 1/2
19	9.00	3 1/4 to 3 11/16	13 1/2	1 3/4
20	9.00	3 1/4 to 3 11/16	13 1/2	2
21	9.35	3 3/4 to 4 3/16	11	1 1/2
22	9.35	3 3/4 to 4 3/16	13 1/2	1 3/4
23	9.35	3 3/4 to 4 3/16	13 1/2	2
24	9.75	4 1/4 to 5	11	1 1/2
25	9.75	4 1/4 to 5	13 1/2	1 3/4
26	9.75	4 1/4 to 5	13 1/2	2

Shanks on all sizes 3 1/4 inches long.

Above Arbors fit Shell Reamers and Shell Drills with straight holes; Shell Reamer No. 117C; Expanding Shell Reamer No. 120M-A; Shell Drill No. 102 1/2H.

Solid

Morse No. 125 N, with Taper Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper Shank Number
1	$6.75	1 1/16 to 1 5/16	11 7/8	3
2	7.10	1 3/8 to 1 13/16	11 7/8	3
3	7.50	1 7/8 to 2 7/16	11 7/8	3
4	7.90	2 1/2 to 3 3/16	11 13/16	4
5	8.25	3 1/4 to 3 11/16	11 13/16	4
6	9.00	3 3/4 to 4 3/16	11 13/16	4
7	10.00	4 1/4 to 5	13 1/2	5

Above Arbors fit Shell Reamers and Shell Drills with straight holes; Shell Reamer No.117C; Expanding Shell Reamer No. 120M-A; Shell Drill No. 102 1/2H.



Morse No. 125 A, with Straight Shanks

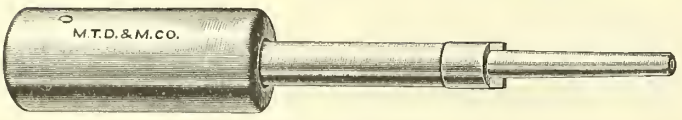
Number	Each	Fitting Sizes Inches	Whole Length Inches	Length of Shank Inches	Diameter of Shank Inches
3	$1.60	1/2 to 9/16	8	5 1/2	7/16
4	1.80	5/8 to 11/16	9	6 5/32	1/2
5	2.00	3/4 to 15/16	9 1/2	6 11/32	5/8
6	2.20	1 to 1 1/4	10	6 15/32	3/4
7	2.40	1 5/16 to 1 5/8	11	7 5/32	7/8
8	2.70	1 11/16 to 2	12	7 17/32	1 1/8
9	3.00	2 1/16 to 2 1/2	13	8 7/32	1 3/8
10	3.40	2 9/16 to 3	14	8 27/32	1 5/8
11	5.00	3 1/16 to 3 1/2	15	9 5/32	2
12	7.00	3 9/16 to 4	16	9 15/32	2 1/8
13	9.00	4 1/16 to 4 1/2	17	9 23/32	2 3/8
14	12.00	4 9/16 to 5 1/2	18	10 1/16	2 5/8
15	14.75	5 9/16 to 6 1/2	19	10 9/16	3
16	17.50	6 9/16 to 7	20	11 1/16	3 1/4

Shanks are ground standard to sizes listed.

Above Arbors fit Shell Reamers and Shell Drills with taper holes; Shell Reamers Nos. 117, 117 B and 117 1/2; Rose Shell Reamer Nos. 117A and 117 1/2 B; Shell Drill No. 102 H.

Arbors

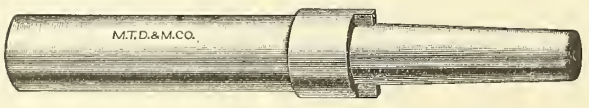
For Shell Reamers and Shell Drills



No. 125 L, Floating

Number	Each	Fitting Sizes Inches	Whole Length Inches	Diameter Bushing Inches	Length Bushing Inches
3	$7.50	½ to 9/16	7½	1	3¼
4	7.50	½ to 9/16	7½	1¼	3¼
5	7.50	½ to 9/16	7½	1½	3¼
6	7.70	5/8 to 11/16	8½	1	3¼
7	7.70	5/8 to 11/16	8½	1¼	3¼
8	7.70	5/8 to 11/16	8½	1½	3¼
9	8.00	3/4 to 15/16	9	1¼	3¼
10	8.00	3/4 to 15/16	9	1½	3¼
11	9.00	1 to 1¼	11	1½	3¼
12	9.00	1 to 1¼	11	1¾	3¼
13	9.00	1 to 1¼	11	2	3¼
14	9.35	1 5/16 to 1 5/8	13½	1½	3¼
15	9.35	1 5/16 to 1 5/8	13½	1¾	3¼
16	9.35	1 5/16 to 1 5/8	13½	2	3¼
17	9.75	1 11/16 to 2	13½	1¾	3¼
18	9.75	1 11/16 to 2	13½	2	3¼
19	10.10	2 1/16 to 2½	13½	1¾	3¼
20	10.10	2 1/16 to 2½	13½	2	3¼
21	10.50	2 9/16 to 3	13½	2	3¼
22	10.85	3 1/16 to 3½	13½	2	3¼
23	10.85	3 9/16 to 4	13½	2	3¼

Above Arbors fit Shell Reamers and Shell Drills with taper holes; Shell Reamers Nos. 117, 117 B and 117½; Rose Shell Reamer Nos. 117 A and 117½ B; Shell Drill No. 102H.

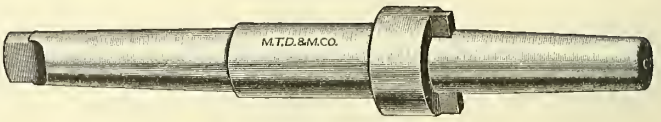


Morse No. 125 E, with Straight Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper End Number	Length of Shank Inches	Diameter of Shank Inches
3	$3.25	1 3/8 to 1 5/8	8 15/16	2	5½	7/8
4	4.00	1 11/16 to 2¼	10 1/16	3	5 29/32	1⅛
5	6.00	2 5/16 to 3 5/16	11⅞	4	6 21/32	1⅜
6	12.50	3⅜ to 4⅜	14⅜	5	7 21/32	2
7	17.50	4½ to 6	17½	6	9 13/32	2⅝

Shanks are ground standard to sizes listed.

Above Arbors fit Expanding and Adjustable Shell Reamers with taper holes; Expanding Shell Reamers No. 120M; Adjustable Shell Reamer No. 120N.

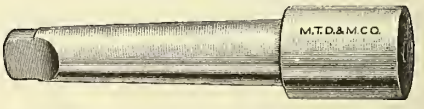


Morse No. 125½ A, with Taper Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper Shank Number
3	$2.60	½ to 9/16	8	1
4	2.80	5/8 to 11/16	9	1
5	3.00	3/4 to 15/16	9½	2
6	3.20	1 to 1¼	10	2
7	3.40	1 5/16 to 1 5/8	11	3
8	3.70	1 11/16 to 2	12	3
9	4.50	2 1/16 to 2 1/2	13	4
10	4.90	2 9/16 to 3	14	4
11	6.75	3 1/16 to 3½	15	5
12	8.75	3 9/16 to 4	16	5
13	10.75	4 1/16 to 4½	17	5
14	14.00	4 9/16 to 5½	18	6
15	16.75	5 9/16 to 6½	19	6
16	19.50	6 9/16 to 7	20	6

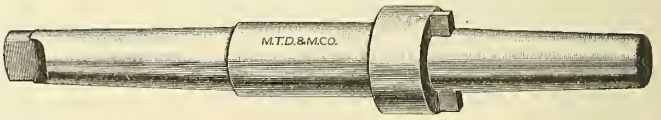
Above Arbors fit Shell and Rose Shell Reamers and Shell Drills with taper holes Shell Reamers Nos. 117, 117B and 117½; Rose Shell Reamer Nos. 117 A and 117½ B; Shell Drill No. 102H.

With Blank Ends



Morse No. 125 C, with Taper Shanks

Morse Taper Shank Number	Each	Whole Length Inches	Length of Blank End Inches	Diameter of Blank End Inches
1	$1.50	3 11/16	1⅛	11/16
2	1.50	4⅜	1¼	1
3	1.75	5⅜	1½	1
4	1.75	6⅝	1¾	1⅜
5	2.00	8⅜	2¼	1⅝



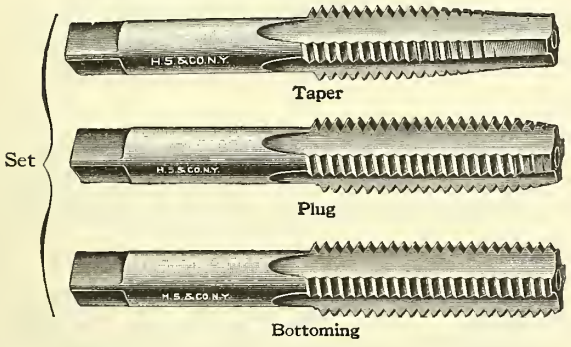
Morse No. 125 F, with Taper Shanks

Number	Each	Fitting Sizes Inches	Whole Length Inches	Morse Taper End Number	Morse Taper Shank Number
3	$4.75	1⅜ to 1⅝	8 15/16	2	3
4	5.50	1 11/16 to 2¼	10 1/16	3	3
5	7.75	2 5/16 to 3 5/16	11⅞	4	4
6	14.50	3⅜ to 4⅜	14⅜	5	5
7	19.50	4½ to 6	17½	6	6

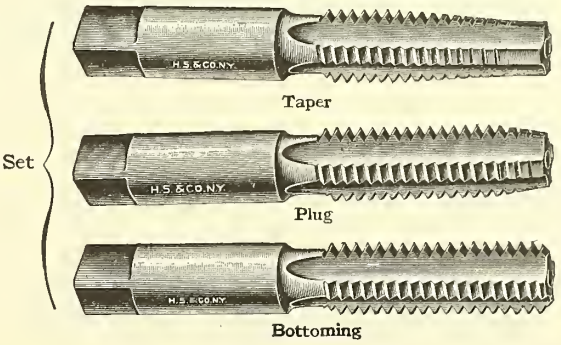
Above Arbors fit Expanding and Adjustable Shell Reamers with taper holes; Expanding Shell Reamer No. 120M; Adjustable Shell Reamer No. 120N.

Machinists Hand Taps

Shanks size of bottom of thread



Shanks full size of thread



Card No. 101, $\frac{1}{16}$ to $\frac{15}{64}$ inch inclusive, Card No. 103, $\frac{1}{4}$ to $4\frac{1}{32}$ inches inclusive. Morse No. 138, $\frac{1}{16}$ to 4 inches inclusive

A set consists of each taper, plug and bottoming. United States Standard thread always furnished unless otherwise specified except in cases where V Form only is listed regularly

Diameter Inches	Each	Per Set	Total Length Inches	Number of Threads to Inch: U. S. Standard	V Form	Whitworth Standard	Other Threads also Furnished: U. S. Standard	V Form
$\frac{1}{16}$	$ .35	$1.05	$1\frac{3}{4}$	64	72	60	60, 72	60, 64
$\frac{5}{64}$	.35	1.05	$1\frac{3}{4}$	..	72	..	56, 60, 64, 72	56, 60, 64
$\frac{3}{32}$	.35	1.05	$1\frac{3}{4}$	50	56	48	48, 54, 56, 60	48, 50, 54, 60
$\frac{7}{64}$	.35	1.05	$1\frac{3}{4}$	..	56	..	48, 56	48
$\frac{1}{8}$	.35	1.05	$1\frac{3}{4}$	40	40	40	32, 36, 48, 50	32, 36, 48, 50
$\frac{9}{64}$	.35	1.05	$1\frac{3}{4}$	..	40	..	32, 36, 40	32, 36
$\frac{5}{32}$	.35	1.05	$1\frac{3}{4}$	36	32	32	30, 32, 40	30, 36, 40
$\frac{11}{64}$	.35	1.05	$2\frac{1}{4}$	..	32	..	32, 36	36
$\frac{3}{16}$	.35	1.05	$2\frac{3}{8}$	24	24	*24	24, 27, 32, 36	27, 30, 32, 36
$\frac{13}{64}$	.35	1.05	$2\frac{3}{8}$	..	24	..	24, 32	32
$\frac{7}{32}$	.35	1.05	$2\frac{3}{8}$	28	24	24	24, 32	32
$\frac{15}{64}$	.35	1.05	$2\frac{1}{2}$	..	24	..	24, 28, 32	32
$\frac{1}{4}$	.45	1.35	$2\frac{1}{2}$	20	20	20	24, 27, 28, 32	24, 27, 32
$\frac{17}{64}$	.45	1.35	$2\frac{1}{2}$	20	20		32	
$\frac{9}{32}$	.45	1.35	$2\frac{1}{2}$	20	20			
$\frac{5}{16}$	.50	1.50	$2\frac{23}{32}$	18	18	18	20, 24, 27, 32	20, 24, 27, 32
$\frac{21}{64}$	.50	1.50	$2\frac{23}{32}$	18	18			
$\frac{11}{32}$	.50	1.50	$2\frac{23}{32}$	18	18			
$\frac{3}{8}$	.55	1.65	$2\frac{15}{16}$	16	16	16	18, 20, 24, 27	14, 18, 20, 24, 27
$\frac{25}{64}$	.55	1.65	$2\frac{15}{16}$	16	16			
$\frac{13}{32}$	.55	1.65	$2\frac{15}{16}$	16	16			
$\frac{7}{16}$	.60	1.80	$3\frac{5}{32}$	14	14	14	20, 24, 27	12,16, 20, 24, 27
$\frac{29}{64}$	.60	1.80	$3\frac{5}{32}$	14	14			
$\frac{15}{32}$	.60	1.80	$3\frac{5}{32}$	14	14			
$\frac{1}{2}$	.70	2.10	$3\frac{3}{8}$	13	12	12	12, 20, 24, 27	13, 14, 16, 20, 24, 27
$\frac{33}{64}$	.70	2.10	$3\frac{3}{8}$	13	12	..	12	13
$\frac{17}{32}$	.70	2.10	$3\frac{3}{8}$	13	12	..	12	13
$\frac{9}{16}$	.80	2.40	$3\frac{19}{32}$	12	12	12	18, 27	14, 27
$\frac{37}{64}$	.80	2.40	$3\frac{19}{32}$	12	12			
$\frac{19}{32}$	.80	2.40	$3\frac{19}{32}$	12	12			
$\frac{5}{8}$	.90	2.70	$3\frac{13}{16}$	11	11	11	12, 18, 27	10, 12, 20, 24, 27
$\frac{41}{64}$	.90	2.70	$3\frac{13}{16}$	11	11			
$\frac{21}{32}$	.90	2.70	$3\frac{13}{16}$	11	11			
$\frac{11}{16}$	1.05	3.15	$4\frac{1}{32}$	11	11	11	12, 16	10, 12
$\frac{23}{32}$	1.05	3.15	$4\frac{1}{32}$	11	11			
$\frac{3}{4}$	1.20	3.60	$4\frac{1}{4}$	10	10	10	12, 16, 27	12, 20, 27
$\frac{25}{32}$	1.20	3.60	$4\frac{1}{4}$	10	10			
$\frac{13}{16}$	1.40	4.20	$4\frac{15}{32}$	10	10	10	12	12
$\frac{27}{32}$	1.40	4.20	$4\frac{15}{32}$	10	10			
$\frac{7}{8}$	1.60	4.80	$4\frac{11}{16}$	9	9	9	12, 14, 18, 27	10, 12, 27
$\frac{29}{32}$	1.60	4.80	$4\frac{11}{16}$	9	9			
$\frac{15}{16}$	1.80	5.40	$4\frac{29}{32}$	9	9	9	12	12
$\frac{31}{32}$	1.80	5.40	$4\frac{29}{32}$	9	9			
1	2.00	6.00	$5\frac{1}{8}$	8	8	8	12, 14, 27	12, 27
$1\frac{1}{32}$	2.00	6.00	$5\frac{1}{8}$	8	8			
$1\frac{1}{16}$	2.15	6.45	$5\frac{1}{8}$	8	8		..	12
$1\frac{1}{8}$	2.25	6.75	$5\frac{7}{16}$	7	7	7	12	8, 12
$1\frac{5}{32}$	2.25	6.75	$5\frac{7}{16}$	7	7			
$1\frac{3}{16}$	2.45	7.35	$5\frac{7}{16}$	7	7			
$1\frac{1}{4}$	2.60	7.80	$5\frac{3}{4}$	7	7	7	12	12

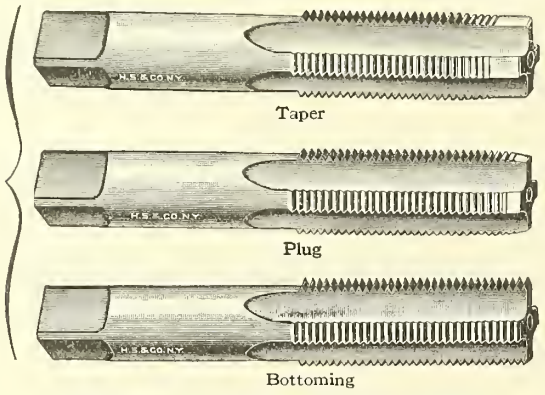
Diameter Inches	Each	Per Set	Total Length Inches	Number of Threads to Inch: U. S. Standard	V Form	Whitworth Standard
$1\frac{9}{32}$	$2.60	$7.80	$5\frac{3}{4}$	7	7	
$1\frac{5}{16}$	2.80	8.40	$5\frac{3}{4}$	7	7	
$1\frac{3}{8}$	3.00	9.00	$6\frac{1}{16}$	6	6	6
$1\frac{13}{32}$	3.00	9.00	$6\frac{1}{16}$	6	6	
$1\frac{7}{16}$	3.25	9.75	$6\frac{1}{16}$	6	6	
$1\frac{1}{2}$	3.50	10.50	$6\frac{3}{8}$	6	6	6
$1\frac{17}{32}$	3.50	10.50	$6\frac{3}{8}$	6	6	
$1\frac{5}{8}$	4.20	12.60	$6\frac{11}{16}$	$5\frac{1}{2}$	5	5
$1\frac{21}{32}$	4.20	12.60	$6\frac{11}{16}$	$5\frac{1}{2}$	5	
$1\frac{3}{4}$	5.00	15.00	7	5	5	5
$1\frac{25}{32}$	5.00	15.00	7	5	5	
$1\frac{7}{8}$	5.80	17.40	$7\frac{5}{16}$	5	$4\frac{1}{2}$	$4\frac{1}{2}$
$1\frac{29}{32}$	5.80	17.40	$7\frac{5}{16}$	5	$4\frac{1}{2}$	
2	6.70	20.10	$7\frac{5}{8}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$
$2\frac{1}{32}$	6.70	20.10	$7\frac{5}{8}$	$4\frac{1}{2}$	$4\frac{1}{2}$	
$2\frac{1}{8}$	8.00	24.00	8	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$
$2\frac{5}{32}$	8.00	24.00	8	$4\frac{1}{2}$	$4\frac{1}{2}$	
$2\frac{1}{4}$	9.20	27.60	$8\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{1}{2}$	4
$2\frac{9}{32}$	9.20	27.60	$8\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{1}{2}$	
$2\frac{3}{8}$	10.50	31.50	$8\frac{1}{2}$	4	$4\frac{1}{2}$	4
$2\frac{13}{32}$	10.50	31.50	$8\frac{1}{2}$	4	$4\frac{1}{2}$	
$2\frac{1}{2}$	11.50	34.50	$8\frac{3}{4}$	4	4	4
$2\frac{17}{32}$	11.50	34.50	$8\frac{3}{4}$	4	4	
$2\frac{5}{8}$	13.00	39.00	9	4	4	4
$2\frac{21}{32}$	13.00	39.00	9	4	4	
$2\frac{3}{4}$	14.00	42.00	$9\frac{1}{4}$	4	4	$3\frac{1}{2}$
$2\frac{25}{32}$	14.00	42.00	$9\frac{1}{4}$	4	4	
$2\frac{7}{8}$	15.50	46.50	$9\frac{1}{2}$	$3\frac{1}{2}$	4	$3\frac{1}{2}$
$2\frac{29}{32}$	15.50	46.50	$9\frac{1}{2}$	$3\frac{1}{2}$	4	
3	17.00	51.00	$9\frac{3}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{1}{32}$	17.00	51.00	$9\frac{3}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	
$3\frac{1}{8}$	18.75	56.25	$9\frac{3}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{5}{32}$	18.75	56.25	$9\frac{3}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	
$3\frac{1}{4}$	20.50	61.50	10	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{4}$
$3\frac{9}{32}$	20.50	61.50	10	$3\frac{1}{2}$	$3\frac{1}{2}$	
$3\frac{3}{8}$	22.00	66.00	10	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$
$3\frac{13}{32}$	22.00	66.00	10	$3\frac{1}{4}$	$3\frac{1}{4}$	
$3\frac{1}{2}$	24.00	72.00	$10\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$
$3\frac{17}{32}$	24.00	72.00	$10\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	
$3\frac{5}{8}$	26.00	78.00	$10\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$
$3\frac{21}{32}$	26.00	78.00	$10\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	
$3\frac{3}{4}$	28.50	85.50	$10\frac{1}{2}$	3	3	3
$3\frac{25}{32}$	28.50	85.50	$10\frac{1}{2}$	3	3	
$3\frac{7}{8}$	30.00	90.00	$10\frac{1}{2}$	3	3	3
$3\frac{29}{32}$	30.00	90.00	$10\frac{1}{2}$	3	3	
4	32.50	97.50	$10\frac{3}{4}$	3	3	3
$4\frac{1}{32}$	32.50	97.50	$10\frac{3}{4}$	3	3	

*We also furnish $\frac{1}{16}$ Hand Taps with 32 threads to inch, Whitworth Standard form, at regular list and discount. In ordering state whether taps with shanks the full size of thread, or shanks size of bottom of thread are desired. Unless otherwise specified taps to and including $\frac{3}{8}$ inch will be furnished with shanks full size of thread. Larger than $\frac{3}{8}$ inch with shanks size of bottom of thread. If desired will be furnished with shanks the full size of thread to and including $\frac{1}{2}$ inch at regular list and discount. Sizes larger than $\frac{1}{2}$ inch are special. All sizes, lengths and threads not listed will be considered special and subject to special prices. Left-hand taps are special.

Hand Taps

Machinists

S. A. E. Standard (Society Automobile Engineers) or A. L. A. M. Standard



Card No. 103A, Morse No. 138½

A set consists of one each taper, plug and bottoming

Diameter of Tap Inches	Each	Per Set	Number of Threads to Inch	Whole Length Inches
1/4	$ .45	$1.35	28	2 1/2
5/16	.50	1.50	24	2 23/32
3/8	.55	1.65	24	2 15/16
7/16	.60	1.80	20	3 5/32
1/2	.70	2.10	20	3 3/8
9/16	.80	2.40	18	3 19/32
5/8	.90	2.70	18	3 13/16
11/16	1.05	3.15	16	4 1/32
3/4	1.20	3.60	16	4 1/4
7/8	1.60	4.80	14 & 18	4 11/16
1	2.00	6.00	12 & 14	5 1/8
1 1/8	2.25	6.75	12	5 7/16
1 1/4	2.60	7.80	12	5 3/4
1 3/8	3.00	9.00	12	6 1/16
1 1/2	3.50	10.50	12	6 3/8

These Taps are made to conform to the standard adopted by the Society of Automobile Engineers. The form of thread is the same as the U. S. Standard, but the pitch is made finer, to meet the requirements of automobile builders.

Unless otherwise specified Taps to and including 3/8 inch will be furnished with shanks full size of thread. Larger than 3/8 inch with shanks size of bottom of thread. In ordering state which is desired, Taps with shanks the full size of thread, or shanks size of bottom of thread.

If desired will be furnished with shanks the full size of thread to and including 1/2 inch at regular list and discount.

Sizes larger than 1/2 inch are special.

Stove Bolt



Card No. 110, Morse No. 148

Diameter Inch	Threads Per Inch	Each	Per Dozen	Diameter Inch	Threads Per Inch	Each	Per Dozen
5/32	28	$ .35	$4.00	1/4	18	$ .38	$4.40
3/16	24	.35	4.00	5/16	18	.38	4.40
7/32	22	.35	4.00	3/8	16	.45	5.30

Bit Brace

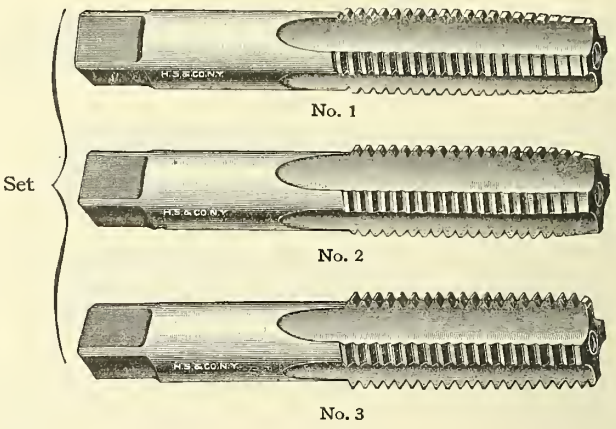


Card No. 111, Morse No. 141B

Diameter Inch	Each	Threads per Inch: U. S. Standard	Threads per Inch: "V" Form	Whole Length Inches
3/16	$ .50	32	24	3 7/8
1/4	.50	20	20	4
5/16	.55	18	18	4 1/4
3/8	.60	16	16	4 1/2
7/16	.70	14	14	4 1/2
1/2	.80	13	12	4 3/4

Machinists

For Hard Service



Card No. 103B

Sets of Hand Taps 1/4 to 1 1/2 inches diameter of United States Standard thread as listed below are designed especially to meet the demand of locomotive builders and others who wish to tap holes in locomotive wheels, frames, bed-plates, or any other tough materials.

These Taps are used in sets, with full size shanks consisting of No. 1, No. 2, and No. 3. The No. 1 Tap is first used to rough out the thread, No. 2 Tap being larger in pitch diameter and outside diameter cuts the thread a little fuller, and No. 3 Tap finishes the cut to size. The work is distributed among the three Taps and they work very easily, with less liability of breaking, and produce perfect threads.

Diameter Inches	Each	Per Set	Total Length in Inches	Number of Threads to Inch U. S. Standard
1/4	$ .45	$1.35	2 1/2	20
5/16	.50	1.50	2 11/16	18
3/8	.55	1.65	2 7/8	16
7/16	.60	1.80	3 3/16	14
1/2	.70	2.10	3 3/4	13
9/16	.80	2.40	4 1/4	12
5/8	.90	2.70	5	11
11/16	1.05	3.15	5	11
3/4	1.20	3.60	6	10
13/16	1.40	4.20	6	10
7/8	1.60	4.80	6 1/2	9
15/16	1.80	5.40	6 1/2	9
1	2.00	6.00	7	8
1 1/16	2.15	6.45	7	8
1 1/8	2.25	6.75	7 1/2	7
1 3/16	2.45	7.35	7 1/2	7
1 1/4	2.60	7.80	8	7
1 5/16	2.80	8.40	8	7
1 3/8	3.00	9.00	8 1/2	6
1 7/16	3.25	9.75	8 1/2	6
1 1/2	3.50	10.50	9	6

The United States Standard Thread

We advise and strongly recommend the adoption and use of the United States Standard Thread for bolts and nuts, and for all screw threads where this is possible, using the U. S. form, with a greater number of threads per inch if desired for special work, as in the case of the S. A. E. or A. L. A. M. Standard, thus entirely superseding the use of the sharp "V" and over size makeshifts.

The United States Standard thread is peculiarly adapted for interchangeable work, which is impossible with the sharp "V" and impracticable with any other known. It is simple in every element of its construction, reduces detail in shop practice, and tends to economy in cost of manufacture, as it does in cheapening cost of repairs. It brings order out of confusion, reduces the number of sizes and pitches, and consequently saves time, patience and money.

The United States Government, the railroads and many of the manufacturing interests of the country have adopted this Standard, and its use is rapidly extending to lines which have heretofore used the "V" form.

Why We Urge the Discontinuance of "V" Form

It is not a Standard.

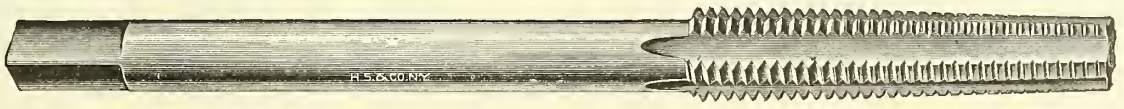
Of the twelve or more manufacturers of "V" Thread Taps in this country no two work to the same size gauges.

Of all the manufacturers of "V" Thread Screws in this country, no two work to the same size gauges.

The continued use of the "V" Thread means extra expense, delays, non-interchangeable parts, confusion, waste.

United States Standard thread always furnished unless otherwise ordered. All sizes, lengths and threads not listed will be considered special and subject to special prices. Left-hand taps are special.

Machine or Nut Taps



Card No. 104—Morse No. 139

Diameter Inches	Each	Length of Thread Inches	Total Length Inches	Number of Threads to Inch: United States Standard	V Form	Whitworth Standard	Other Threads also Furnished: U. S. Standard	V Form
3/16	$ .60	1 9/16	4 1/2	24	24	*24	30, 32	32
13/64	.60	1 9/16	4 1/2	..	24	..	24, 32	32
7/32	.60	1 9/16	4 1/2	28	24	24	24, 32	32
1/4	.60	1 5/8	5	20	20	20	24, 28	24
17/64	.60	1 5/8	5	20	20			
9/32	.60	1 5/8	5	20	20			
5/16	.70	1 27/32	5 1/2	18	18	18	20, 24	16,20,24
21/64	.70	1 27/32	5 1/2	18	18			
11/32	.70	1 27/32	5 1/2	18	18			
3/8	.80	2 1/16	6	16	16	16	20, 24	14, 18
25/64	.80	2 1/16	6	16	16			
13/32	.80	2 1/16	6	16	16			
7/16	.90	2 11/32	6 1/2	14	14	14	20	12, 16
29/64	.90	2 11/32	6 1/2	14	14			
15/32	.90	2 11/32	6 1/2	14	14			
1/2	1.00	2 23/32	7	13	12	12	12, 20	13
33/64	1.00	2 23/32	7	13	12	..	12	13
17/32	1.00	2 23/32	7	13	12	..	12	13
9/16	1.15	2 23/32	7 1/2	12	12	12	18	14
37/64	1.15	2 23/32	7 1/2	12	12			
19/32	1.15	2 23/32	7 1/2	12	12			
5/8	1.30	2 31/32	8	11	11	11	18	10, 12
41/64	1.30	2 31/32	8	11	11			
21/32	1.30	2 31/32	8	11	11			
11/16	1.45	2 31/32	8 1/2	11	11	11	16	12
23/32	1.45	2 31/32	8 1/2	11	11			
3/4	1.60	3 1/4	9	10	10	10	16	12
25/32	1.60	3 1/4	9	10	10			
13/16	1.80	3 1/4	9 1/2	10	10	10		12
27/32	1.80	3 1/4	9 1/2	10	10			
7/8	2.10	3 21/32	10	9	9	9	14, 18	10, 12
29/32	2.10	3 21/32	10	9	9			
15/16	2.40	3 21/32	10 1/2	9	9	9		12
31/32	2.40	3 21/32	10 1/2	9	9			
1	3.15	4 1/16	11	8	8	8	12, 14	12
1 1/32	3.15	4 1/16	11	8	8			
1 1/16	3.40	4 1/16	11	8	8			
1 1/8	3.60	4 23/32	11 1/2	7	7	7	12	8
1 5/32	3.60	4 23/32	11 1/2	7	7			
1 3/16	3.90	4 23/32	11 1/2	7	7			
1 1/4	4.25	4 23/32	12	7	7	7	12	
1 9/32	4.25	4 23/32	12	7	7			
1 5/16	4.50	4 23/32	12	7	7			
1 3/8	4.80	5 13/32	12 1/2	6	6	6	12	
1 13/32	4.80	5 13/32	12 1/2	6	6			

Diameter Inches	Each	Length of Thread Inches	Total Length Inches	Number of Threads to Inch: U. S. Standard	V Form	Whitworth Standard
1 7/16	$5.00	5 13/32	12 1/2	6	6	
1 1/2	5.65	5 13/32	13	6, 12	6	6
1 17/32	5.65	5 13/32	13	6	6	
1 5/8	6.50	5 1/2	13 1/2	5 1/2	5	5
1 21/32	6.50	5 1/2	13 1/2	5 1/2	5	
1 3/4	7.20	5 1/2	14	5	5	5
1 25/32	7.20	5 1/2	14	5	5	
1 7/8	8.25	6 1/8	14 1/2	5	4 1/2	4 1/2
1 29/32	8.25	6 1/8	14 1/2	5	4 1/2	
2	9.25	6 1/8	15	4 1/2	4 1/2	4 1/2
2 1/32	9.25	6 1/8	15	4 1/2	4 1/2	
2 1/8	10.80	6 1/8	15 1/2	4 1/2	4 1/2	4 1/2
2 5/32	10.80	6 1/8	15 1/2	4 1/2	4 1/2	
2 1/4	12.25	6 1/8	16	4 1/2	4 1/2	4
2 9/32	12.25	6 1/8	16	4 1/2	4 1/2	
2 3/8	13.80	6 1/8	16 1/2	4	4 1/2	4
2 13/32	13.80	6 1/8	16 1/2	4	4 1/2	
2 1/2	15.00	6 7/8	17	4	4	4
2 17/32	15.00	6 7/8	17	4	4	
2 5/8	16.80	6 7/8	17 1/2	4	4	4
2 21/32	16.80	6 7/8	17 1/2	4	4	
2 3/4	18.00	6 7/8	18	4	4	3 1/2
2 25/32	18.00	6 7/8	18	4	4	
2 7/8	19.80	6 7/8	18 1/2	3 1/2	4	3 1/2
2 29/32	19.80	6 7/8	18 1/2	3 1/2	4	
3	21.60	7 29/32	19	3 1/2	3 1/2	3 1/2
3 1/32	21.60	7 29/32	19	3 1/2	3 1/2	
3 1/8	24.70	7 29/32	19 1/2	3 1/2	3 1/2	3 1/2
3 5/32	24.70	7 29/32	19 1/2	3 1/2	3 1/2	
3 1/4	26.88	7 29/32	19 1/2	3 1/2	3 1/2	3 1/4
3 9/32	26.88	7 29/32	19 1/2	3 1/2	3 1/2	
3 3/8	28.75	8 13/32	20	3 1/4	3 1/4	3 1/4
3 13/32	28.75	8 13/32	20	3 1/4	3 1/4	
3 1/2	31.25	8 13/32	20	3 1/4	3 1/4	3 1/4
3 17/32	31.25	8 13/32	20	3 1/4	3 1/4	
3 5/8	33.75	8 13/32	20 1/2	3 1/4	3 1/4	3 1/4
3 21/32	33.75	8 13/32	20 1/2	3 1/4	3 1/4	
3 3/4	36.88	9 1/16	20 1/2	3	3	3
3 25/32	36.88	9 1/16	20 1/2	3	3	
3 7/8	38.75	9 1/16	21	3	3	3
3 29/32	38.75	9 1/16	21	3	3	
4	41.88	9 1/16	21	3	3	3
4 1/32	41.88	9 1/16	21	3	3	

*Machine or Nut Taps 3/16 inch, with 32 threads per inch, Whitworth Standard Form, will be furnished at regular list and discount.
Sizes and threads not listed will be considered special and subject to special prices. Left Hand Taps are special.
U. S. Standard Thread always furnished unless otherwise specified.

For Tap Drill List, see pages 96 and 97

Taps

Machine Screw



Card No. 112, Morse No. 140

Size of Screw Gauge Number	Standard Number of Threads	Each	Per Dozen	Whole Length Inches	Length of Threads Inches	Other Threads also Furnished
1	..	$ .35	$4.00	1¾	½	56, 60, 64, 72
1½	56	.35	4.00	1¾	½	
2	56	.35	4.00	1¾	½	48, 64
3	48	.35	4.00	1¾	½	40, 56
4	36	.35	4.00	1¾	9/16	32, 40, 42, 48
5	36	.35	4.00	1¾	9/16	32, 40
6	32	.35	4.00	1¾	⅝	30, 36, 38, 40, 48
7	32	.35	4.00	1¾	⅝	30, 40
8	32	.35	4.00	2¼	⅝	30, 36, 40
9	30	.35	4.00	2⅜	11/16	28, 32
10	24	.35	4.00	2⅜	11/16	28, 30, 32, 36
11	24	.35	4.00	2⅜	11/16	28, 30
12	24	.35	4.00	2⅜	11/16	20, 32
13	22	.38	4.40	2½	1	20, 24, 32
14	20	.38	4.40	2½	1	18, 24
15	20	.38	4.40	2½	1	18, 24
16	18	.38	4.40	2½	1	16, 20
18	18	.38	4.40	2½	1	16, 20
20	16	.45	5.30	2 23/32	1⅛	18
22	16	.45	5.30	2 23/32	1⅛	18
24	16	.45	5.30	2 15/16	1¼	14, 18
26	16	.53	6.30	2 15/16	1¼	14
28	14	.53	6.30	3 5/32	1 7/16	16
30	14	.53	6.30	3 5/32	1 7/16	16

Note: We carry a stock of these Taps and will furnish them whenever called for but we strongly recommend the adoption of the A. S. M. E.
Less than six Taps of a size and thread at single prices.

A. S. M. E. Standard

Card No. 112A, Morse No. 140A

Size of Screw Gauge Number	Approximate Diameter of Tap Inch	Standard Number of Threads	Each	Per Dozen	Whole Length Inches	Threads as follows furnished at Regular List and Discount
0	.060	80	$ .35	$4.00	1¾	
1	.073	72	.35	4.00	1¾	64
2	.086	64	.35	4.00	1¾	56
3	.099	56	.35	4.00	1¾	48
4	.112	48	.35	4.00	1¾	36, 40
5	.125	44	.35	4.00	1¾	36, 40
6	.138	40	.35	4.00	1¾	32, 36
7	.151	36	.35	4.00	1¾	30, 32
8	.164	36	.35	4.00	2¼	30, 32
9	.177	32	.35	4.00	2⅜	24, 30
10	.190	30	.35	4.00	2⅜	24, 32
12	.216	28	.35	4.00	2⅜	24
14	.242	24	.38	4.40	2½	20
16	.268	22	.38	4.40	2½	20
18	.294	20	.38	4.40	2½	18
20	.320	20	.45	5.30	2 23/32	18
22	.346	18	.45	5.30	2 23/32	16
24	.372	16	.45	5.30	2 15/16	18
26	.398	16	.53	6.30	2 15/16	14
28	.424	14	.53	6.30	3 5/32	16
30	.450	14	.53	6.30	3 5/32	16

As recommended by the American Society of Mechanical Engineers at the Indianapolis meeting May, 1907.
We recommend the use of this standard wherever possible.
It replaces the makeshift sizes heretofore used and makes possible interchangeability of Taps and Screws produced by the different manufacturers.
Less than six Taps of a size and thread at single prices.
Sizes and threads not listed subject to special prices.
Left Hand Taps are special.

Hob or Master, Long



Card No. 105, Morse No. 142

Diameter Inches	Each	Threads per Inch: United States Standard	Threads per Inch: V Form	Threads per Inch: Whitworth Standard	Morse Whole Length Inches	Card Whole Length Inches
¼	$ .75	20	20	20	5½	3½
5/16	.87	18	18	18	5⅞	4
⅜	1.00	16	16	16	6⅛	4½
7/16	1.12	14	14	14	6½	5
½	1.25	*13	12	12	6¾	5½
9/16	1.44	12	12	12	7⅛	6
⅝	1.62	11	11	11	7⅜	6½
11/16	1.81	11	11	11	7¾	7
¾	2.00	10	10	10	8	7½
13/16	2.25	10	10	10	8¼	8
⅞	2.62	9	9	9	8½	8½
15/16	3.00	9	9	9	8¾	8¾
1	3.50	8	8	8	9	9
1⅛	4.00	7	7	7	9½	9¼
1¼	4.62	7	7	7	10	9½
1⅜	5.25	6	6	6	10½	9¾
1½	5.87	6	6	6	11	10
1⅝	6.62	5½	5	5	11⅜	10¼
1¾	7.50	5	5	5	11¾	10½
1⅞	8.50	5	4½	4½	12⅛	10¾
2	9.62	4½	4½	4½	12⅜	11

*We also furnish ½ inch size with 12 threads to the inch U. S. Form at regular list and discount.

Hob, Short



Card No. 106, Morse No. 144

Diameter Inches	Threads per Inch: United States Standard	Threads per Inch: V Form	Threads per Inch: Whitworth Standard	Each	Whole Length Inches
¼	20	20	20	$ .60	3
5/16	18	18	18	.70	3¼
⅜	16	16	16	.80	3½
7/16	14	14	14	.90	3¾
½	*13	12	12	1.00	4
9/16	12	12	12	1.15	4¼
⅝	11	11	11	1.30	4½
11/16	11	11	11	1.45	4¾
¾	10	10	10	1.60	5
13/16	10	10	10	1.80	5⅛
⅞	9	9	9	2.10	5⅜
15/16	9	9	9	2.40	5⅝
1	8	8	8	2.80	5⅞
1⅛	7	7	7	3.20	6¼
1¼	7	7	7	3.70	6⅝
1⅜	6	6	6	4.20	7
1½	6	6	6	4.70	7⅜
1⅝	5½	5	5	5.30	7¾
1¾	5	5	5	6.00	8
1⅞	5	4½	4½	6.80	8¼
2	4½	4½	4½	7.70	8½

*We also furnish ½ inch size with 12 threads to the inch U. S. Form at regular list and discount.

In ordering, always state whether they are required for hobbing chasers in Bolt Cutters, Solid Dies, or Screw Plate Dies.

Special designs made from description or drawings submitted with orders, giving details of lengths and diameter required.

Left hand thread or other pitches than those listed will be furnished to order at special prices.

U. S. Standard thread always furnished unless otherwise ordered.

Rough Iron Sizes of Standard Pitches, in United States Standard and V threads, furnished at regular prices.

S. A. E. or A. L. A. M. Standard sizes furnished at regular prices.

For Tap Drill List, see pages 96 and 97

Tapper Taps



Card No. 108, Morse No. 147

From ¼ to 1½ inches only

U. S. Standard Thread always furnished unless otherwise ordered. Sizes, lengths and threads not listed are subject to special prices. Furnished with shank ends to fit all prominent Nut Tapping Machines. Left hand threads are special. Specify form of thread required

Diameter Inch	Length of Thread Inches	Number of Threads to Inch: United States Standard	United States Standard Form	V Form	Whitworth Standard	Whole Length, Each: 11 Inch	12 Inch	14 Inch	15 Inch
1/4	1 3/4	20	28	20	20	$ .70	$ .75	$ .80	$ .90
17/64	1 3/4	20	.....	20	..	.70	.75	.80	.90
9/32	1 3/4	20	.....	20	..	.70	.75	.80	.90
5/16	2	18	24	18	18	.80	.85	.90	1.00
21/64	2	18	.....	18	..	.80	.85	.90	1.00
11/32	2	18	.....	18	..	.80	.85	.90	1.00
3/8	2	16	24	16	16	.90	.95	1.00	1.10
25/64	2	16	.....	16	..	.90	.95	1.00	1.10
13/32	2	16	.....	16	..	.90	.95	1.00	1.10
7/16	2 1/4	14	20	14	14	1.00	1.05	1.15	1.25
29/64	2 1/4	14	.....	14	..	1.00	1.05	1.15	1.25
15/32	2 1/4	14	.....	14	..	1.00	1.05	1.15	1.25
1/2	2 1/4	13	12, 20	*12	12	1.12	1.15	1.25	1.35
33/64	2 1/4	13	12	*12	..	1.12	1.15	1.25	1.35
17/32	2 1/4	13	12	*12	..	1.12	1.15	1.25	1.35
9/16	2 1/2	12	18	12	12	1.30	1.35	1.45	1.55
37/64	2 1/2	12	.....	12	..	1.30	1.35	1.45	1.55
19/32	2 1/2	12	.....	12	..	1.30	1.35	1.45	1.55
5/8	2 1/2	11	18	11	11	1.45	1.50	1.65	1.75
41/64	2 1/2	11	.....	11	..	1.45	1.50	1.65	1.75
21/32	2 1/2	11	.....	11	..	1.45	1.50	1.65	1.75
11/16	2 1/2	11	16	11	11	1.62	1.70	1.80	1.95
23/32	2 1/2	11	.....	11	..	1.62	1.70	1.80	1.95
3/4	2 3/4	10	16	10	10	1.80	1.85	2.00	2.10
25/32	2 3/4	10	.....	10	..	1.80	1.85	2.00	2.10

Diameter Inch	Length of Thread Inches	Number of Threads to Inch: United States Standard	United States Standard Form	V Form	Whitworth Standard	Whole Length, Each: 11 Inch	12 Inch	14 Inch	15 Inch
13/16	2 3/4	10	.....	10	10	$2.05	$2.10	$2.25	$2.35
27/32	2 3/4	10	.....	10	..	2.05	2.10	2.25	2.35
7/8	3	9	14, 18	9	9	2.35	2.45	2.60	2.75
29/32	3	9	.....	9	..	2.35	2.45	2.60	2.75
15/16	3	9	.....	9	9	2.70	2.75	3.00	3.15
31/32	3	9	.....	9	..	2.70	2.75	3.00	3.15
1	3 1/2	8	12, 14	8	8	3.15	3.20	3.50	3.65
1 1/32	3 1/2	8	.....	8	..	3.15	3.20	3.50	3.65
1 1/8	3 1/2	7	12	7	7	3.60	3.70	3.95	4.10
1 5/32	3 1/2	7	.....	7	..	3.60	3.70	3.95	4.10
1 1/4	3 1/2	7	12	7	7	4.15	4.25	4.50	4.65
1 9/32	3 1/2	7	.....	7	..	4.15	4.25	4.50	4.65
1 3/8	4	6	12	6	6	4.70	4.80	5.05	5.20
1 13/32	4	6	.....	6	..	4.70	4.80	5.05	5.20
1 1/2	4	6	12	6	6	5.30	5.40	5.65	5.80
1 17/32	4	6	.....	6	..	5.30	5.40	5.65	5.80
1 5/8	4 1/2	5 1/2	.....	5	5	6.10	6.30	6.50	6.65
1 21/32	4 1/2	5 1/2	.....	5	..	6.10	6.30	6.50	6.65
1 3/4	4 3/4	5	.....	5	5	6.70	7.00	7.20	7.40
1 25/32	4 3/4	5	.....	5	..	6.70	7.00	7.20	7.40
1 7/8	5	5	.....	4 1/2	4 1/2	7.80	8.00	8.25	8.35
1 29/32	5	5	.....	4 1/2	..	7.80	8.00	8.25	8.35
2	5	4 1/2	.....	4 1/2	4 1/2	8.70	8.90	9.05	9.25
2 1/32	5	4 1/2	.....	4 1/2	..	8.70	8.90	9.05	9.25

*We also furnish in both Even and Rough Iron sizes, ½ inch size with 13 threads to the inch, V Form, at regular list and discount.

Pulley Taps



Card No. 107, Morse No. 141

U. S. Standard Thread always furnished unless otherwise ordered. Sizes, lengths and threads not listed are subject to special prices. Pulley Taps with left hand threads are special

Diameter Inch	Number of Threads to Inch: United States Standard	V Form	Whitworth Standard	Whole Length, Each: 6 Inch	8 Inch	10 Inch	12 Inch	14 Inch	16 Inch	18 Inch	20 Inch	22 Inch	24 Inch
1/4	20	20	20	$ .65	$ .70	$ .80	$ .90						
5/16	18	18	18	.75	.80	1.00	1.20						
3/8	16	16	16	.80	.90	1.10	1.30	$1.40	$1.55	$1.70			
7/16	14	14	14	.90	1.00	1.20	1.40	1.50	1.65	1.80			
1/2	*13	*12	12	1.00	1.15	1.30	1.45	1.60	1.75	1.90	$2.05		
9/16	12	12	12	1.10	1.30	1.45	1.55	1.70	1.85	2.05	2.20	$2.35	
5/8	11	11	11	1.20	1.35	1.50	1.60	1.75	1.90	2.10	2.25	2.40	$2.55
11/16	11	11	11	1.30	1.45	1.55	1.70	1.90	2.05	2.20	2.35	2.50	2.65
3/4	10	10	10	1.40	1.50	1.60	1.80	2.00	2.15	2.30	2.45	2.60	2.75
13/16	10	10	10	1.60	1.70	1.80	2.00	2.15	2.30	2.45	2.60	2.75	2.90
7/8	9	9	9	1.80	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50
15/16	9	9	9	2.00	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.70
1	8	8	8	2.25	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.70	3.90

*We also furnish ½ inch Pulley Taps with 12 threads to the inch, United States Standard form, and 13 threads to the inch, V form, at regular list and discount. When ordering any taps on this page specify length desired.

For Tap Drill List, see pages 96 and 97

Taps

Spindle Stay-Bolt



Card No. 113 A, Morse No. 149½

Spindle Stay-Bolt Taps with 12 threads to the inch, United States Standard and Whitworth Standard form, furnished at regular prices.

Other sizes and lengths than those named below will be furnished to order at special prices.

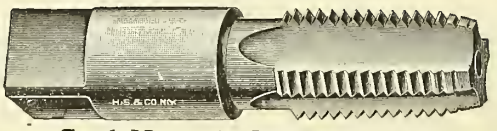
These Taps will be furnished with V form of thread, 12 to the inch, unless otherwise specified.

Used for retapping Stay-bolt holes from the inside of firebox of locomotives.

Diameter Inches	Each	Length of Fluted Thread Inches	Length of Unfluted Thread Inches	Total Length Inches	Diameter of Spindle Inches	Length of Spindle Inches
¾	$8.00	3¼	2¾	7⅝	⅜	11
13/16	8.50	3¼	2¾	7⅝	⅜	11
⅞	9.00	3¼	2¾	7⅝	⅜	11
15/16	9.50	3¼	2¾	7⅝	⅜	11
1	10.00	3¼	2¾	7⅝	⅜	11
1 1/16	10.50	3¼	2¾	7⅝	⅜	11
1⅛	11.00	3¼	2¾	7⅝	⅜	11
1 3/16	11.50	3¼	2¾	7⅝	⅜	11
1¼	12.00	3¼	2¾	7⅝	⅜	11
1 5/16	12.25	3¼	2¾	7⅝	⅜	11
1⅜	12.50	3¼	2¾	7⅝	⅜	11
1 7/16	12.75	3¼	2¾	7⅝	⅜	11
1½	13.00	3¼	2¾	7⅝	⅜	11

If these Taps are desired with threaded holes and a threaded spindle they can be so furnished at special prices. Send full specifications with order or request for prices.

Patch-Bolt



Card No. 117, Morse No. 146

These Taps are made especially for boiler makers. They are slightly tapered for the purpose of making the bolt a steam-tight fit.

Patch-Bolt Taps are furnished in either V, United States Standard or Whitworth Standard form of thread.

V thread furnished unless otherwise specified.

Patch-Bolt Taps 1/32 inch over size furnished at regular prices.

Diameter Inch	Number of V Threads to Inch	Each	Diameter Inches	Number of V Threads to Inch	Each
½	12	$ .70	15/16	12	$1.80
9/16	12	.80	1	12	2.00
⅝	12	.90	1 1/16	12	2.15
11/16	12	1.05	1⅛	12	2.25
¾	12	1.20	1 3/16	12	2.45
13/16	12	1.40	1¼	12	2.60
⅞	12	1.60			

Blacksmiths Taper



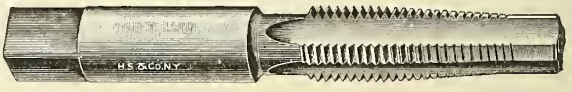
Card No. 118, Morse No. 150

These Taps are furnished with the V form of thread and are tapered ¾ of an inch to the foot.

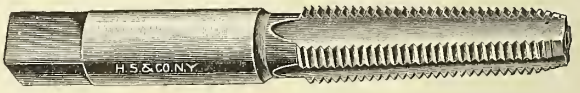
Diameter Inches	Number of Threads to Inch	Each
¼	18, 20, 24	$ .30
5/16	16, 18, 20	.30
⅜	14, 16, 18	.35
7/16	14, 16, 18	.40
½	12, 13, 14, 16	.40
9/16	12, 14	.50
⅝	10, 11, 12	.50
¾	10, 12	.65
⅞	9, 10	.90
1	8	1.25
1⅛	7, 8	1.50
1¼	7, 8	1.75
1½	6	3.00

Sizes and threads not listed are subject to special prices

Straight and Taper Boiler



Straight



Taper

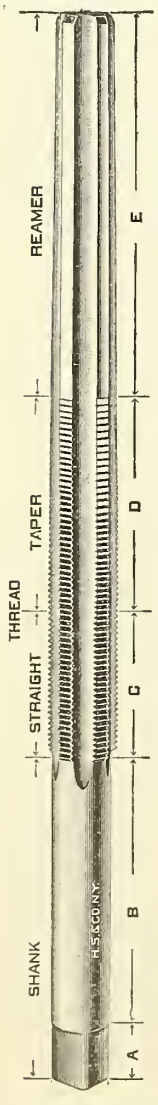
Card No. 117 A, Morse No. 146 A

Straight and Taper Boiler Taps are furnished in either V, United States Standard or Whitworth Standard forms of thread.

V thread furnished unless otherwise specified.

Boiler Taps 1/32 inch over size to 1¼ inches at regular prices.

Diameter Inches	Number of V Threads to Inch	Each	Diameter Inches	Number of V Threads to Inch	Each
½	12	$1.00	1 5/16	12	$4.00
9/16	12	1.15	1⅜	12	4.30
⅝	12	1.30	1 7/16	12	4.60
11/16	12	1.45	1½	12	4.90
¾	12	1.60	1⅝	12	5.10
13/16	12	1.80	1¾	12	5.40
⅞	12	2.10	1⅞	12	5.70
15/16	12	2.40	2	12	6.00
1	12	2.80	2⅛	12	6.50
1 1/16	12	3.00	2¼	12	7.00
1⅛	12	3.20	2⅜	12	7.50
1 3/16	12	3.40	2½	12	8.00
1¼	12	3.70			



Stay-Bolt

Card No. 113, Morse No. 149

In ordering, state diameter and number of threads to the inch; also length and dimensions of parts as indicated in cut by letters A, B, C, D, E.

Stay-Bolt Taps will be furnished with 12 V threads to the inch, unless a different thread is specified.

Stay-Bolt Taps, with 12 threads to the inch, United States Standard Form and Whitworth Standard Form, furnished at regular list and discount.

Diameter given is that of the thread at its straight part.

Prices are for each inch of length 16 inches and upwards.

Taps shorter than 16 inches will be charged as if 16 inches long.

Diameter, Inches	Per Inch
¾ to ⅞ inclusive	$ .40
15/16 to 1 inclusive	.45
1 1/16 to 1⅛ inclusive	.50
1 3/16 to 1¼ inclusive	.55
1 5/16 to 1⅜ inclusive	.60
1 7/16 to 1½ inclusive	.70

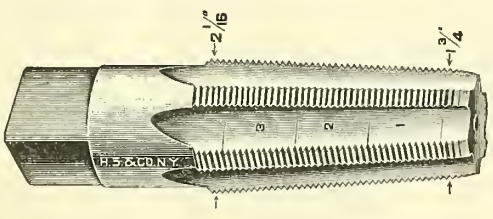
The Table of Lengths given below is one made up of average lengths taken from a large number of orders, and is listed merely as a suggestion or aid in making up specifications.

Average Lengths

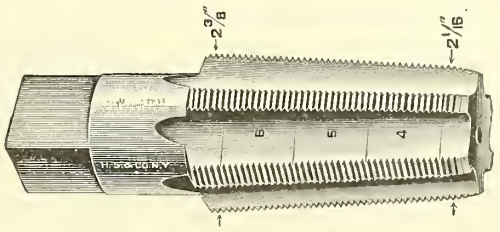
Whole Length of Tap Inches	Length, Inches A	B	C	D	E
12	1	3	3	2½	2½
14	1	4	3	3	3
16	1	4½	3	3½	4
18	1	5	3½	4	4½
21	1	6	4	4½	5½
24	1	8	4	5	6
27	1	9	4	6	7
30	1	10	5	6	8
33	1	11	5	6	10
36	1	12	5	6	12
39	1	13	6	7	12
42	1	14	6	8	13
48	1	16	8	9	14
54	1	18	8	10	17

For Tap Drill List, see pages 96 and 97

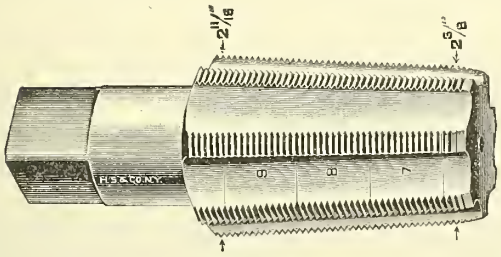
Mud Plug or Washout Taps



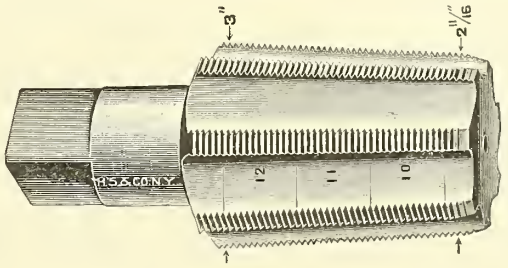
No. 1



No. 2



No. 3



No. 4

Card No. 117 B, Morse No. 146 B

Used for tapping washout holes in locomotives.

A set consists of four Taps having 1¼-inch taper in 12 inches.

Tap No. 1 is 1¾ inches in diameter at small end, and Tap No. 4 is 3 inches in diameter at large end.

The Taps are marked as shown in the illustrations and correspond with taper plugs bearing the same numbers as the twelve diameters shown in the four Taps.

The Taps are 6½ inches long and all have the same size square.

These Taps will be furnished with V form of thread, 12 to the inch, unless otherwise ordered. United States Standard and Whitworth Standard forms of thread furnished at regular prices

Number	Taper, Inches	Each
1	1¾ to 2 1/16	$6.00
2	2 1/16 to 2 3/8	7.50
3	2 3/8 to 2 11/16	9.00
4	2 11/16 to 3	10.50

Taps for Beaman & Smith Holders



Card No. 119, Morse No. 143

U. S. form of thread always furnished unless otherwise ordered

Diameter Inches	Threads per Inch: United States Standard	Threads per Inch: V Form	Each	Fitting Holders
¼	20	20	$ .45	No. 1
5/16	18	18	.50	
3/8	16	16	.55	
7/16	14	14	.60	
½	13	12	.70	
9/16	12	12	.80	
5/8	11	11	.90	
5/8	11	11	.90	No. 2
11/16	11	11	1.05	
¾	10	10	1.20	
13/16	10	10	1.40	
7/8	9	9	1.60	
15/16	9	9	1.80	
1	8	8	2.00	
1 1/8	7	7	2.25	
1 1/4	7	7	2.60	

These Taps are used in the Beaman & Smith Patent Safety Drill and Tap Holders.

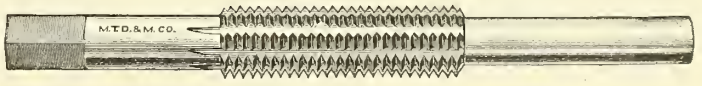
Sizes and threads not listed will be considered as special and subject to special prices.

Prices of Taps fitting Nos. 2½ and 3 Holders given on application.

These Taps will be furnished in the S. A. E. or A. L. A. M. Standard Thread at regular list and discount.

Left Hand Taps are special.

Sellers Hob Taps



Morse No. 145

U. S. Form of thread always furnished unless otherwise ordered

Diameter Inches	Threads per Inch: United States Standard	Threads per Inch: V Form	Each	Whole Length Inches
¼	20	20	$ .90	4 5/8
5/16	18	18	1.05	5
3/8	16	16	1.20	5 3/8
7/16	14	14	1.35	5 7/8
½	*13	12	1.50	6 1/8
9/16	12	12	1.75	6 1/2
5/8	11	11	1.95	7
11/16	11	11	2.20	7
¾	10	10	2.40	7 3/8
13/16	10	10	2.70	7 3/8
7/8	9	9	3.15	8 1/8
15/16	9	9	3.60	8 1/8
1	8	8	4.20	8 3/4
1 1/8	7	7	4.80	9 3/4
1 1/4	7	7	5.55	9 3/4
1 3/8	6	6	6.30	11
1 1/2	6	6	7.05	11
1 5/8	5½	5	7.95	11 3/4
1 3/4	5	5	9.00	12 3/4
1 7/8	5	4½	10.20	12 7/8
2	4½	4½	11.55	13 7/8

*We also furnish ½ inch size with 12 threads to the inch U. S. Form at regular list and discount.

We also furnish the above sizes in Whitworth Standard Threads.

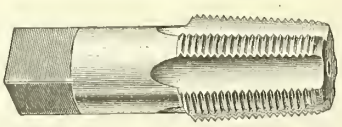
Sizes and threads not listed will be furnished to order at special prices.

Left Hand Taps are special.

For Tap Drill List, see pages 96 and 97

Pipe Taps

Taper (Briggs Standard)



Morse No. 136, Walworth No. 2983

Size Inch	Each	Threads per Inch	Size Inches	Each	Threads per Inch	Size Inches	Each	Threads per Inch
1/8	$1.12	27	1	$3.12	11½	2½	$10.50	8
1/4	1.25	18	1¼	3.75	11½	3	15.00	8
3/8	1.50	18	1½	4.62	11½	3½	22.00	8
1/2	1.87	14	2	6.25	11½	4	33.00	8
3/4	2.50	14						

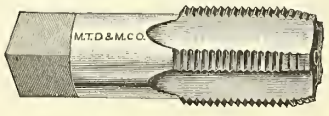
Standard Taper is ¾ inch to the foot. Pipe Taps larger than 3 inches, have inserted teeth.

Right Hand Threads always furnished unless Left Hand is specified on the order.

Walworth Fine Thread for Plumbers Brass Tubing

Inches	5/8	3/4	7/8	1	1¼	1½	1¾	2	2¼
Each	$1.75	2.00	2.25	2.75	3.75	4.75	5.50	6.25	8.00
Number of Threads	20	20	18	18	18	18	18	18	18

Straight Plug

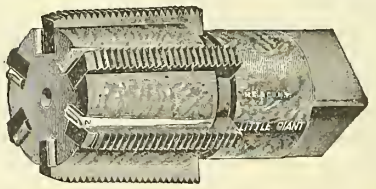


Morse No. 136 B

These Taps are furnished at same list as No. 136 and take same number threads, but special discount. They are plugged on entering end and are used for tapping out Lock Nuts or Straight Fittings. Outside diameters are 1/64 inch less than actual external diameter of wrought iron steam and gas pipe.

There is no recognized standard for outside diameter of these Taps; if other than the above are desired send sample nut or fitting.

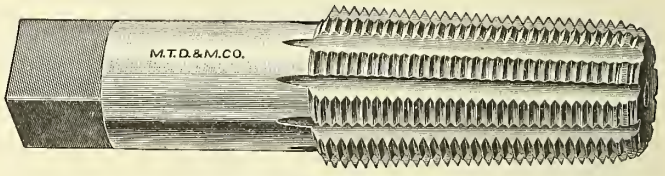
With Inserted Lands (Briggs Standard)



The lands are made of the very best grade of steel, highly tempered, and they can easily be replaced, when worn, at very little cost.

Inches	2½	3	3½	4	4½	5
Each	$6.00	8.00	10.00	14.00	25.00	35.00
Extra Lands.....Per set	2.00	2.00	2.50	2.50	3.00	3.00
Inches	6	7	8	9	10	
Each	$50.00	70.00	85.00	100.00	120.00	
Extra Lands.....Per set	5.00	5.00	7.00	7.00	7.00	

Hob (Briggs Standard)



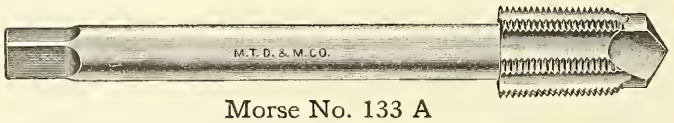
Morse No. 136 D

Size Inch	Each	Threads per Inch	Size Inches	Each	Threads per Inch	Size Inches	Each	Threads per Inch
1/8	$1.12	27	1	$3.12	11½	2½	$10.50	8
1/4	1.25	18	1¼	3.75	11½	3	15.00	8
3/8	1.50	18	1½	4.62	11½	3½	22.00	8
1/2	1.87	14	2	6.25	11½	4	33.00	8
3/4	2.50	14						

Left Hand Threads at regular prices. Right Hand Threads always furnished unless Left Hand is specified on the order.

For Tap Drill List, see pages 96 and 97

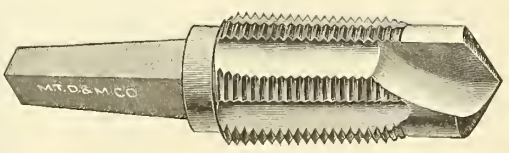
Combined Pipe Taps and Drills



Morse No. 133 A

For tapping gas and water pipes under pressure with Tapping Machines
Standard Taper ¾ inch to the foot

Size Inch	Each	Size Inch	Each	Size Inches	Each
1/4	$3.00	5/8	$4.50	1¼	$6.00
3/8	3.00	3/4	4.50	1½	7.00
1/2	4.00	1	5.00	2	8.00



Morse No. 133

For tapping gas and water pipes. Standard Taper ¾ inch to the foot

Prices apply for lengths given in following table

Style Number	Whole Length Inches	Diameter of Shank, Inch	Size of Square
1	9¾	.831	5/8
2	10¾	.831	5/8
3	10¾	.831	5/8
4	13	.831	5/8
1 E	13¾	.831	5/8
2 E	16	.935	11/16

For Corporation Cocks

Prices quoted on application

Style Number	Whole Length Inches	Diameter of Shank, Inch	Size of Square
1½ E	15¾	.831	5/8
2½ E	19¾	.935	11/16

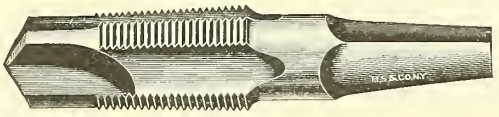
Numbers 1½E and 2½E are made of various tapers per foot. When writing for prices or in ordering, specify number, size and taper per foot.

Other sizes and styles furnished on receipt of order and sketch giving necessary data. Prices quoted on application.

Size, Inches	Whole Length, Inches	Each
1/8	3¾	$1.50
1/4	3 15/16	1.50
3/8	4⅛	1.75
1/2	4½	2.20
3/4	4 11/16	3.00
1	4 15/16	3.80
1¼	5 3/16	4.80
1½	5 7/16	5.80
2	6¼	7.60
2½	7	10.00
3	7⅝	15.00

Shanks for sizes ⅛ to 1½ inches are 11/16 inch by ½ inch, and 1⅞ inches long. Shanks for sizes 2 to 3 inches are 1 inch by ¾ inch, and 2 3/16 inches long.
The above Tools furnished with special shanks fitting Pipe Tapping Machines on receipt of order and sketch giving necessary data. Prices quoted on application.

Combined Drill, Reamer and Tap



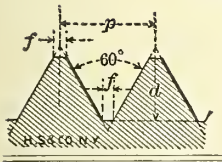
Walworth No. 2984

For tapping gas and water pipes Standard Taper ¾ inch to the foot

Inches	¼	⅜	½	¾	1	1¼	1½	2
Each	$2.50	2.50	3.00	4.50	6.00	7.25	8.50	10.75

Data on Screw Threads

United States Standard



Formula
p = pitch = $\frac{1}{\text{No. thds. per in.}}$
d = depth = $p \times .64952$
f = flat = $\frac{p}{8}$

Diam. of Screw Inches	Threads per Inch	Diameter at Root of Thread Inches	Width of Flat Inch	Diam. of Screw Inches	Threads per Inch	Diameter at Root of Thread Inches	Width of Flat Inch
¼	20	.185	.0062	1½	6	1 2835	.0208
5/16	18	.2403	.0069	1⅝	5½	1.3888	.0227
⅜	16	.2938	.0078	1¾	5	1.4902	.0250
7/16	14	.3447	.0089	1⅞	5	1.6152	.0250
½	13	.4001	.0096	2	4½	1.7113	.0278
9/16	12	.4542	.0104	2¼	4½	1.9613	.0278
⅝	11	.5069	.0114	2½	4	2.1752	.0313
¾	10	.6201	.0125	2¾	4	2.4252	.0313
⅞	9	.7307	.0139	3	3½	2.6283	.0357
1	8	.8376	.0156	3¼	3½	2.8788	.0357
1⅛	7	.9394	.0179	3½	3¼	3.1003	.0385
1¼	7	1.0644	.0179	3¾	3	3.3170	.0417
1⅜	6	1.1585	.0208	4	3	3.5670	.0417

S. A. E. Standard
(Society Automobile Engineers)
United States Standard Form

Diameter of Tap Inch	Number Threads per Inch	Diameter of Tap Inch	Number Threads per Inch	Diameter of Tap Inches	Number Threads per Inch
¼	28	9/16	18	1	12 & 14
5/16	24	⅝	18	1⅛	12
⅜	24	11/16	16	1¼	12
7/16	20	¾	16	1⅜	12
½	20	⅞	14 & 18	1½	12

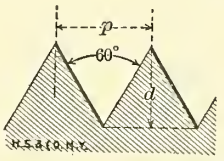
A. S. M. E. Standard (American Society of Mechanical Engineers). For Machine Screws. United States Standard Form. Standard Sizes

Note:—Maximum sizes given are the standard sizes

No.	Basic Size O. D.-T. P. I.	Outside Diameter Minimum	Outside Diameter Maximum	Pitch Diameter Minimum	Pitch Diameter Maximum	Root Diameter Minimum	Root Diameter Maximum
0	.060—80	.0572	.0600	.0505	.0519	.0410	.0438
1	.073—72	.0700	.0730	.0625	.0640	.0520	.0550
2	.086—64	.0828	.0860	.0742	.0759	.0624	.0657
3	.099—56	.0955	.0990	.0857	.0874	.0721	.0758
4	.112—48	.1082	.1120	.0966	.0985	.0808	.0849
5	.125—44	.1210	.1250	.1082	.1102	.0910	.0955
6	.138—40	.1338	.1380	.1197	.1218	.1007	.1055
7	.151—36	.1466	.1510	.1308	.1330	.1097	.1149
8	.164—36	.1596	.1640	.1438	.1460	.1227	.1279
9	.177—32	.1723	.1770	.1544	.1567	.1307	.1364
10	.190—30	.1852	.1900	.1660	.1684	.1407	.1467
12	.216—28	.2111	.2160	.1903	.1928	.1633	.1696
14	.242—24	.2368	.2420	.2123	.2149	.1807	.1879
16	.268—22	.2626	.2680	.2358	.2385	.2013	.2090
18	.294—20	.2884	.2940	.2587	.2615	.2208	.2290
20	.320—20	.3144	.3200	.2847	.2875	.2468	.2550
22	.346—18	.3402	.3460	.3070	.3099	.2649	.2738
24	.372—16	.3660	.3720	.3284	.3314	.2810	.2908
26	.398—16	.3920	.3980	.3544	.3574	.3070	.3168
28	.424—14	.4178	.4240	.3745	.3776	.3204	.3312
30	.450—14	.4438	.4500	.4005	.4036	.3464	.3572

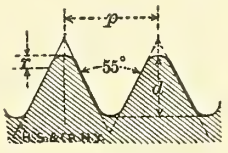
For International and French Standard, see next page

Sharp V Form (Theoretical)



Formula
p = pitch = $\frac{1}{\text{No. thds. per in.}}$
d = depth = $p \times .86603$

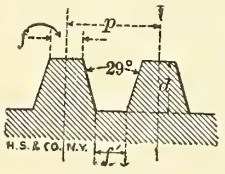
Whitworth Standard



Formula
p = pitch = $\frac{1}{\text{No. thds. per in.}}$
d = depth = $p \times .64033$
r = radius = $p \times .1373$

Diameter Inch	Number of Threads per Inch	Diameter Inches	Number of Threads per Inch	Diameter Inches	Number of Threads per Inch
¼	20	1	8	2½	4
5/16	18	1⅛	7	2⅝	4
⅜	16	1¼	7	2¾	4
7/16	14	1⅜	6	2⅞	4
½	12	1½	6	3	3½
9/16	12	1⅝	5	3⅛	3½
⅝	11	1¾	5	3¼	3½
11/16	11	1⅞	4½	3⅜	3¼
¾	10	2	4½	3½	3¼
13/16	10	2⅛	4½	3⅝	3¼
⅞	9	2¼	4½	3¾	3
15/16	9	2⅜	4½	3⅞	3
				4	3

Acme Standard



Formula
p = pitch = $\frac{1}{\text{No. thds. per in.}}$
d = depth = $\frac{1}{2}p + .010$
f = flat on top of thread = $p \times .3707$
f' = flat on bottom of thread = $p \times .3707 - .0052$

Number of Threads per Inch Linear	Depth of Thread	Width at Top of Thread	Width at Bottom of Thread	Space at Top of Thread	Thickness at Root of Thread
1	.5100	.3707	.3655	.6293	.6345
1⅓	.3850	.2780	.2728	.4720	.4772
2	.2600	.1853	.1801	.3147	.3199
3	.1767	.1235	.1183	.2098	.2150
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0529	.0478	.0899	.0951
8	.0725	.0463	.0411	.0787	.0839
9	.0655	.0413	.0361	.0699	.0751
10	.0600	.0371	.0319	.0629	.0681

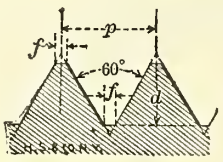
This thread has been devised to take the place of the Square Thread. It has the same depth, but is stronger, as the bottom of the thread is wider. The sides are at the same inclination as is now generally adopted in cutting worms.

Taps and Dies to this Standard are made only to order, and prices will be given on application.

Data on Screw Threads

International and French Standard

(Metric System)



Formula
- p = pitch
- d = depth = $p \times .64952$
- f = flat = $\frac{p}{8}$

International

Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.
6	1.0	20	2.5	48	5.0
7	1.0	22	2.5	52	5.0
8	1.25	24	3.0	56	5.5
9	1.25	27	3.0	60	5.5
10	1.5	30	3.5	64	6.0
11	1.5	33	3.5	68	6.0
12	1.75	36	4.0	72	6.5
14	2.0	39	4.0	76	6.5
16	2.0	42	4.5	80	7.0
18	2.5	45	4.5		

French

Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.	Diameter mm.	Pitch mm.
3	.5	16	2.0	36	4.0
4	.75	18	2.5	38	4.0
5	.75	20	2.5	40	4.0
6	1.0	22	2.5	42	4.5
7	1.0	24	3.0	44	4.5
8	1.0	26	3.0	46	4.5
9	1.0	28	3.0	48	5.0
10	1.5	30	3.5	50	5.0
12	1.5	32	3.5		
14	2.0	34	3.5		

We furnish, when desired, Taps, Dies and Screw Plates made to the above standards. Prices quoted on application

Tap Drill List

For Hand Taps

U. S. Standard Form

Size of Tap	Threads per Inch	Tap Drill Size
1/16	60, 64, 72	57, 56, 56
5/64	56, 60, 64, 72	53, 53, 53, 52
3/32	48, 50, 54, 56, 60	50, 50, 49, 49, 48
7/64	48, 56	44, 43
1/8	32, 36, 40, 48, 50	43, 42, 41, 38, 37
9/64	32, 36, 40	37, 35, 34
5/32	30, 32, 36, 40	31, 31, 1/8, 30
11/64	32, 36	29, 28
3/16	24, 27, 30, 32, 36	28, 27, 25, 24, 5/32
13/64	24, 32	23, 19
7/32	24, 28, 32	18, 16, 14
15/64	24, 32	13, 8
1/4	20, 24, 27, 28	11, 7, 5, 4
5/16	18, 20, 24, 27	D, F, 17/64, I
3/8	16, 20, 24, 27	N, O, 24/64, Q
7/16	14, 20, 27	23/64, V, 25/64
1/2	12, 13, 20, 27	13/32, 13/32, 7/16, 29/64
9/16	12, 18, 27	15/32, 1/2, 33/64
5/8	11, 12, 18, 27	33/64, 17/32, 9/16, 37/64
11/16	11, 12, 16	37/64, 19/32, 39/64
3/4	10, 12, 16, 27	41/64, 21/32, 43/64, 45/64
13/16	10, 12	45/64, 23/32
7/8	9, 12, 14, 27	3/4, 25/32, 51/64, 53/64
15/16	9, 12	13/16, 27/32
1	8, 12, 14, 27	55/64, 29/32, 59/64, 61/64
1 1/8	7, 12	61/64, 1 1/32
1 1/4	7, 12	1 5/64, 1 5/32
1 3/8	6	1 11/64
1 1/2	6	1 19/64
1 5/8	5 1/2	1 13/32
1 3/4	5	1 23/64
1 7/8	5	1 41/64
2	4 1/2	1 47/64

V Form

Size of Tap	Threads per Inch	Tap Drill Size
1/16	60, 64, 72	58, 57, 56
5/64	56, 60, 64, 72	54, 53, 53, 52
3/32	48, 50, 54, 56, 60	51, 50, 50, 49, 48
7/64	48, 56	44, 43
1/8	32, 36, 40, 48, 50	44, 43, 42, 40, 39
9/64	32, 36, 40	39, 37, 35
5/32	30, 32, 36, 40	33, 32, 31, 30
11/64	32, 36	29, 29
3/16	24, 27, 30, 32, 36	29, 28, 27, 26, 24
13/64	24, 32	26, 19
7/32	24, 28, 32	18, 17, 15
15/64	24, 32	15, 10
1/4	20, 24, 27, 32	12, 9, 7, 4
9/32	20	2
5/16	18, 20, 24, 27, 32	D, 1/4, F, 17/64, I
11/32	18	J
3/8	14, 16, 18, 20, 24, 27	9/32, N, N, 5/16, P, 21/64
13/32	16	Q
7/16	12, 14, 16, 20, 24, 27	P. T, T, U, W, 25/64
15/32	14	W
1/2	12, 13, 14, 16, 20, 24, 27	Y, Y, 13/32, Z, 7/16, 7/16, 29/64
17/32	12, 13	27/64, 27/64
9/16	12, 14, 27	15/32, 15/32, 33/64
19/32	12	31/64
5/8	10, 11, 12, 20, 24, 27	31/64, 33/64, 33/64, 9/16, 9/16, 37/64
21/32	11	35/64
11/16	10, 11, 12	9/16, 37/64, 37/64
23/32	11	39/64
3/4	10, 12, 20, 27	5/8, 41/64, 11/16, 45/64
25/32	10	21/32
13/16	10, 12	11/16, 45/64
27/32	10	23/32
7/8	9, 10, 12, 27	47/64, 47/64, 3/4, 53/64
29/32	9	49/64
15/16	9, 12	51/64, 53/64
31/32	9	53/64
1	8, 12, 27	27/32, 57/64, 61/64
1 1/32	8	7/8
1 1/8	7, 8, 12	61/64, 61/64, 1 1/64
1 1/4	7, 12	1 1/16, 1 1/8
1 3/8	6	1 11/64
1 1/2	6	1 19/64
1 5/8	5	1 3/8
1 3/4	5	1 31/64
1 7/8	4 1/2	1 37/64
2	4 1/2	1 23/32

S. A. E. Standard (Society Automobile Engineers) or A. L. A. M.

Size of Tap	Threads per Inch	Size of Drill	Size of Tap	Threads per Inch	Size of Drill
1/4	28	4	5/8	18	9/16
5/16	24	17/64	11/16	16	39/64
3/8	24	21/64	3/4	16	43/64
7/16	20	V	7/8	14	51/64
1/2	20	7/16	1	14	59/64
9/16	18	1/2			

For Drill List for Machine Screw and Pipe Taps, see next page

Tap Drill List

For Machine Screw Taps

A. S. M. E. Standard
(American Society of Mechanical Engineers)

Size of Tap	Number of Threads	Size of Drill
0	80	.0465
1	64	.055
1	72	.0595
2	56	.0670
2	64	.070
3	48	.076
3	56	.0785
4	36	.080
4	40	.082
4	48	.089
5	36	.0935
5	40	.098
5	44	.0995
6	32	.1015
6	36	.1065
6	40	.110
7	30	.113
7	32	.116
7	36	.120
8	30	.1285
8	32	.1285
8	36	.136
9	24	.1285
9	30	.136
9	32	.1405
10	24	.140
10	30	.152
10	32	.154
12	24	.166
12	28	.173
14	20	.182
14	24	.1935
16	20	.209
16	22	.213
18	18	.228
18	20	.234
20	18	.257
20	20	.261
22	16	.272
22	18	.281
24	16	.295
24	18	.302
26	14	.316
26	16	.323
28	14	.339
28	16	.348
30	14	.368
30	16	.377

The diameter given for each hole to be tapped allows for a practical clearance at root of the thread of the screw and will not impose undue strain upon the tap in service.

V Form

Size of Tap	Threads per Inch	Tap Drill Size
1	56, 60, 64, 72	55, 54, 53, 52
1½	56	52
2	48, 56, 64	50, 49, 48
3	40, 48, 56	48, 47, 45
4	32, 36, 40, 42, 48	45, 44, 43, 42, 41
5	32, 36, 40	40, 38, 37
6	30, 32, 36, 38, 40, 48	36, 35, 34, 33, 32, 31
7	30, 32, 40	31, 31, 30
8	30, 32, 36, 40	30, 29, 29, 28
9	28, 30, 32	28, 27, 26
10	24, 28, 30, 32, 36	26, 24, 23, 21, 19
11	24, 28, 30	22, 20, 19
12	20, 24, 32	20, 18, 14
13	20, 22, 24, 32	16, 16, 15, 10
14	18, 20, 24	16, 13, 10
15	18, 20, 24	12, 10, 6
16	16, 18, 20	10, 6, 5
17	16, 18, 20	6, 3, 2
18	16, 18, 20	2, 1, B
19	16, 18	A, C
20	16, 18	D, F
22	16, 18	I, K
24	14, 16, 18	L, N, O
26	14, 16	O, P
28	14, 16	R, S
30	14, 16	U, V

Books

The Mechanics Tool-Book
By W. B. Harrison

With practical rules and suggestions for use of machinists, iron-workers and others. 44 illustrations, 5 x 7½, 286 pages.....$1.50

Contents: Contains a veritable mine of valuable information for the mechanic about the use of his various tools to their best advantage and shows how to make small tools and how to use these as auxiliaries or by themselves.

Practical Metal Turning
By J. G. Horner

A handbook for machinists, technical students and amateurs. 488 illustrations, 5¼ x 8½, 405 pages.....$4.50

Contents: The Lathe, Its Work and the Tools; Turning Between Centers; Work Supported at One End; Internal Work; Screw Cutting and Turret Work; Special Work; Tool Holders; Speeds and Feeds; Tool Steel.

For Pipe Taps

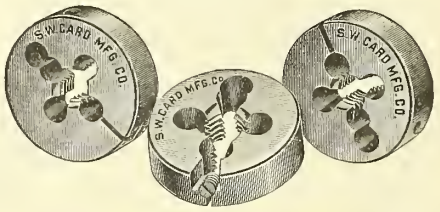
Briggs Standard

Size of Taps	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Size of Drill, inches	11/32	7/16	37/64	45/64	29/32	1 9/64	1½	1 23/32	2 3/16	2 5/8	3¼

Reamers should be used for the larger sizes

For Drill list of hand taps, see preceding page

Round Adjustable Dies



Machine Screw Sizes

V Standard

Size of Screw Gauge Number	Card No. 804 ⅝ Inch Diameter ¼ Inch Thick Each	Card No. 805 13/16 Inch Diameter ¼ Inch Thick Each	Card No. 805 1 Inch Diameter ⅜ Inch Thick Each	Number of Threads to Inch V Form	Number of Threads to Inch V Threads also Furnished
1	$ .40	$ .40	....	..	56, 60, 64, 72
1½	.40	.40	....	..	56
2	.40	.40	....	56	48, 64
3	.40	.40	....	48	40, 56
4	.40	.40	$ .75	36	32, 40, 42, 48
5	.40	.40	.75	36	32, 40
6	.40	.40	.75	32	30, 36, 38, 40, 48
7	.40	.40	.75	32	30, 40
8	.40	.40	.75	32	30, 36, 40
9	.40	.40	.75	30	28, 32
10	.40	.40	.75	24	28, 30, 32, 36
11	.40	.40	.75	..	24, 28, 30
12	.40	.40	.75	24	20, 32
13	.40	.40	.75	..	20, 22, 24, 32
14	.40	.40	.75	20	18, 24
15	....	.40	.75	..	18, 20, 24
16	....	.40	.75	18	16, 20
18	....	.40	.75	18	16, 20
20	....	.40	.75	16	18
22	....	....	.75	16	18
24	....	....	.75	16	14, 18
26	....	....	.75	16	14
28	....	....	.75	14	16
30	....	....	.75	14	16

A. S. M. E. Standard
(American Society of Mechanical Engineers)

Size of Screw Gauge Number	Card No. 804A ⅝ Inch Diameter ¼ Inch Thick Each	Card No. 805A 13/16 Inch Diameter ¼ Inch Thick Each	Card No. 805A 1 Inch Diameter ⅜ Inch Thick Each	Standard Number of Threads	Threads also Furnished
0	$ .40	$ .40	....	80	
1	.40	.40	....	72	64
2	.40	.40	....	64	56
3	.40	.40	....	56	48
4	.40	.40	$ .75	48	36, 40
5	.40	.40	.75	44	36, 40
6	.40	.40	.75	40	32, 36
7	.40	.40	.75	36	30, 32
8	.40	.40	.75	36	30, 32
9	.40	.40	.75	32	24, 30
10	.40	.40	.75	30	24, 32
12	.40	.40	.75	28	24
14	.40	.40	.75	24	20
16	....	.40	.75	22	20
18	....	.40	.75	20	18
20	....	.40	.75	20	18
22	....	....	.75	18	16
24	....	....	.75	16	18
26	....	....	.75	16	14
28	....	....	.75	14	16
30	....	....	.75	14	16

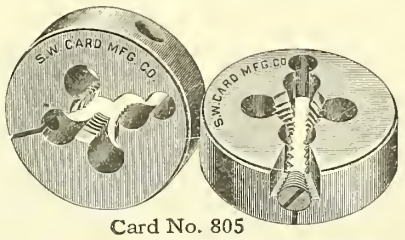
Fractional Sizes

U. S. Standard Thread always furnished unless otherwise specified

Cutting Size	Card No. 804 ⅝ Inch Outside Diameter ¼ Inch Thick Each	Card No. 805 13/16 Inch Outside Diameter ¼ Inch Thick Each	Card No. 805 1 Inch Outside Diameter ⅜ Inch Thick Each	Number of Threads to Inch United States Standard	Number of Threads to Inch V Form	Number of Threads to Inch Whitworth Standard	Other Threads also Furnished U. S. Standard Form	Other Threads also Furnished V Form
1/16	$ .40	$ .40	.....	64	72	60	60, 72	60, 64
5/64	.40	.40	.....	..	72	..	56, 60, 64, 72	56, 60, 64
3/32	.40	.40	.....	50	56	48	48, 54, 56, 60	48, 50, 54, 60
7/64	'40	.40	.....	..	56	..	48, 56	48
1/8	.40	.40	$ .75	40	40	40	32, 36, 48, 50	32, 36, 48, 50
9/64	.40	.40	.75	..	40	..	32, 36, 40	32, 36
5/32	.40	.40	.75	36	32	32	30, 32, 40	30, 36, 40
11/64	.40	.40	.75	..	32	..	32, 36	36
3/16	.40	.40	.75	24	24	*24	27, 30, 32, 36	27, 30, 32, 36
13/64	.40	.40	.75	..	24	..	24, 32	32
7/32	.40	.40	.75	28	24	24	24, 32	32
15/64	.40	.40	.75	..	24	..	24, 32	32
1/4	.40	.40	.75	20	20	20	24, 27, 28	24, 27, 32
17/64	.40	.40	.75	20	20			
9/32	.....	.40	.75	20	20			
5/16	.....	.40	.75	18	18	18	20, 24, 27	20, 24, 27, 32
21/64	.....	.....	.75	18	18			
11/32	....	.....	.75	18	18			
3/8	.....	.....	.75	16	16	16	20, 24, 27	14, 18, 20, 24, 27
25/64	.....	.....	.75	16	16			
13/32	.....	.....	.75	16	16			
7/16	.....	.....	.75	14	14	14	20, 27	12, 16, 20, 24, 27
1/2	.....	.....	.75	13	12	12	12, 20, 27	13, 14, 16, 20, 24, 27

Sizes and threads not listed are subject to special prices. Left hand dies are special.
*We also furnish 3/16 Round Dies at regular list and discount, with 32 threads to the inch, Whitworth Standard form.

Round Adjustable Dies



Card No. 805

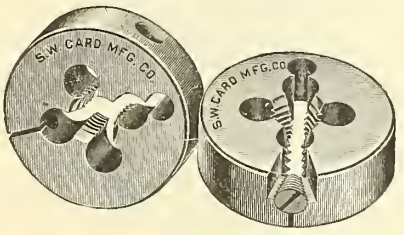
Cutting Size	1 5/16 Inch Outside Diameter 7/16 Inch Thick Each	1½ Inch Outside Diameter ½ Inch Thick Each	1 5/16 Inch Outside Diameter 9/16 Inch Thick Each	Number of Threads to Inch: United States Standard	Number of Threads to Inch: V Standard	Number of Threads to Inch: Whitworth Standard	Other Threads also Furnished: United States Standard Form	Other Threads also Furnished: V Form
3/16	$1.00	$1.00	.....	24	24	*24	27, 30, 32, 36	27, 30, 32, 36
13/64	1.00	1.00	.....	..	24	..	24, 32	32
7/32	1.00	1.00	.....	28	24	24	24, 32	32
15/64	1.00	1.00	.....	..	24	..	24, 32	32
1/4	1.00	1.00	$1.25	20	20	20	24, 27, 28	24, 27, 32
17/64	1.00	1.00	1.25	20	20			
9/32	1.00	1.00	1.25	20	20			
5/16	1.00	1.00	1.25	18	18	18	20, 24, 27	20, 24, 27, 32
21/64	1.00	1.00	1.25	18	18			
11/32	1.00	1.00	1.25	18	18			
3/8	1.00	1.00	1.25	16	16	16	20, 24, 27	14, 18, 20, 24, 27
25/64	1.00	1.00	1.25	16	16			
13/32	1.00	1.00	1.25	16	16			
7/16	1.00	1.00	1.25	14	14	14	20, 27	12, 16, 20, 24, 27
29/64	1.00	1.00	1.25	14	14			
15/32	1.00	1.00	1.25	14	14			
1/2	1.00	1.00	1.25	13	12	12	12, 20, 27	13, 14, 16, 20, 24, 27
33/64	1.00	1.00	1.25	13	12	..	12	13
17/32	1.00	1.00	1.25	13	12	..	12	13
9/16	....	....	1.25	12	12	12	18, 27	14, 27
37/64	....	....	1.25	12	12			
19/32	....	....	1.25	12	12			
5/8	....	....	1.25	11	11	11	12, 18, 27	10, 12, 20, 24, 27
41/64	....	....	1.25	11	11			
21/32	....	...	1.25	11	11			

U. S. Standard Threads always furnished unless otherwise specified. *We also furnish 3/16 Dies, with 32 threads to the inch, Whitworth Standard form, at regular price

Card No. 805

Cutting Size	1¾ Inch Diam. 9/16 Inch Thick Each	2¼ Inch Diam. ¾ Inch Thick Each	Number of Threads to Inch: U. S. Standard	V Standard	Whitworth Standard	Other Threads also Furnished: United States Standard Form	V Form
1/4	$1.25	$1.50	20	20	20	24, 27, 28	24, 27, 32
17/64	1.25	1.50	20	20			
9/32	1.25	1.50	20	20			
5/16	1.25	1.50	18	18	18	20, 24, 27	20, 24, 27, 32
21/64	1.25	1.50	18	18			
11/32	1.25	1.50	18	18			
3/8	1.25	1.50	16	16	16	20, 24, 27	14, 18, 20, 24, 27
25/64	1.25	1.50	16	16			
13/32	1.25	1.50	16	16			
7/16	1.25	1.50	14	14	14	20, 27	12, 16, 20, 24, 27
29/64	1.25	1.50	14	14			
15/32	1.25	1.50	14	14			
1/2	1.25	1.50	13	12	12	12, 20, 27	13, 14, 16, 20, 24, 27
33/64	1.25	1.50	13	12	..	12	13
17/32	1.25	1.50	13	12	..	12	13
9/16	1.50	1.75	12	12	12	18, 27	14, 27
37/64	1.50	1.75	12	12			
19/32	1.50	1.75	12	12			
5/8	1.50	1.75	11	11	11	12, 18, 27	10, 12, 20, 24, 27
41/64	1.50	1.75	11	11			
21/32	1.50	1.75	11	11			
11/16	1.75	2.00	11	11	11	12, 16	10, 12
23/32	1.75	2.00	11	11			
3/4	1.75	2.00	10	10	10	12, 16, 27	12, 20, 27
25/32	1.75	2.00	10	10			
13/16	....	2.25	10	10	10	12	12
27/32	....	2.25	10	10			
7/8	....	2.25	9	9	9	12, 14, 18, 27	10, 12, 27
29/32	....	2.25	9	9			
15/16	....	2.50	9	9	9	12	12
31/32	....	2.50	9	9			
1	....	2.50	8	8	8	12, 14, 27	12, 27
1 1/32	....	2.50	8	8			

S. A. E. Standard (Society Automobile Engineers) or A. L. A. M.



Card No. 805B

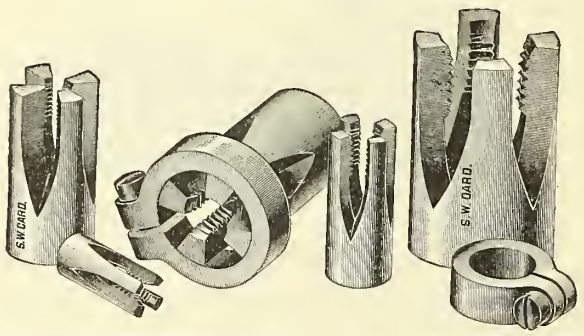
These Dies are supplied in the outside diameters given in the table below. We also furnish S. A. E. Standard sizes in any other outside diameter dies that we list at regular prices

Diameter Inch	Number Threads to Inch U.S. Standard Form	1 Inch Diameter	1 5/16 Inch Diameter	1½ Inch Diameter	1 9/16 Inch Diameter	2¼ Inch Diameter
1/4	28	$ .75	$1.00	$1.00	$1.25	$1.50
5/16	24	.75	1.00	1.00	1.25	1.50
3/8	24	.75	1.00	1.00	1.25	1.50
7/16	20	.75	1.00	1.00	1.25	1.50
1/2	20	.75	1.00	1.00	1.25	1.50
9/16	18	....	....	1.00	1.25	1.75
5/8	18	....	....	1.00	1.25	1.75
11/16	16	....	....	....	....	2.00
3/4	16	....	....	....	....	2.00
7/8	14	....	....	....	....	2.25
1	14	....	....	....	....	2.50

Sizes and threads not listed are subject to special prices. Left Hand Dies are special

Spring Screw Threading Dies and Clamp Collars

Card No. 803
Dies



Card No. 803A
Clamp Collars

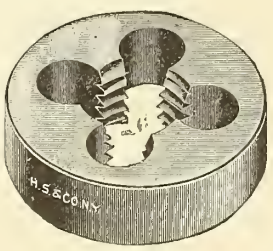
Size of Die Diam. Inches	Size of Die Length Inches	Cutting Size	United States Standard	V Standard	Whitworth Standard	V Thread also Furnished	Die Each	Clamp Collar Each
1/2	1 1/4	1/8	40	40	40	32, 36	$1.50	$ .50
1/2	1 1/4	3/16	24	24	*24	32, 36	1.50	.50
1/2	1 1/4	1/4	20	20	20	.....	1.50	.50
3/4	1 3/4	1/4	20	20	20	.....	1.75	.60
3/4	1 3/4	5/16	18	18	18	20	1.75	.60
3/4	1 3/4	3/8	16	16	16	14, 18	1.75	.60
1	2	3/8	16	16	16	14, 18	2.00	.70
1	2	7/16	14	14	14	16	2.00	.70
1	2	1/2	†13	12	12	13, 14	2.00	.70
1 3/16	2 1/4	5/8	11	11	11	10, 12	2.00	.80
1 3/16	2 1/4	11/16	11	11	11	12	2.00	.80
1 3/16	2 1/4	3/4	10	10	10	12	2.00	.80
1 1/4	2 1/2	3/8	16	16	16	14, 18	2.00	.80
1 1/4	2 1/2	7/16	14	14	14	16	2.00	.80
1 1/4	2 1/2	1/2	†13	12	12	13, 14	2.00	.80
1 1/4	2 1/2	9/16	12	12	12	14	2.00	.80
1 1/4	2 1/2	5/8	11	11	11	10, 12	2.00	.80
1 1/4	2 1/2	3/4	10	10	10	12	2.00	.80
1 3/8	2 1/2	1/2	†13	12	12	13, 14	2.40	1.00
1 3/8	2 1/2	9/16	12	12	12	14	2.40	1.00
1 3/8	2 1/2	5/8	11	11	11	10, 12	2.40	1.00
1 3/8	2 1/2	3/4	10	10	10	12	2.40	1.00
1 5/8	2 1/2	5/8	11	11	11	10, 12	2.75	1.00
1 5/8	2 1/2	3/4	10	10	10	12	2.75	1.00
1 5/8	2 1/2	13/16	10	10	10	.....	2.75	1.00
1 5/8	2 1/2	7/8	9	9	9	10	2.75	1.00
1 5/8	2 1/2	1	8	8	8	.....	2.75	1.00
2	3	3/4	10	10	10	12	3.50	1.25
2	3	7/8	9	9	9	10	3.50	1.25
2	3	15/16	9	9	9	.....	3.50	1.25
2	3	1	8	8	8	.....	3.50	1.25
2	3	1 1/8	7	7	7	8	3.50	1.25
2	3	1 1/4	7	7	7	.....	3.50	1.25
2 1/2	3 1/2	1	8	8	8	.....	8.00	2.00
2 1/2	3 1/2	1 1/8	7	7	7	.....	8.00	2.00
2 1/2	3 1/2	1 1/4	7	7	7	.....	8.00	2.00
2 1/2	3 1/2	1 3/8	6	6	6	.....	8.00	2.00
2 1/2	3 1/2	1 1/2	6	6	6	.....	8.00	2.00
3 1/4	4	1 5/8	5 1/2	5	5	.....	12.00	3.00
3 1/4	4	1 3/4	5	5	5	.....	12.00	3.00
3 1/4	4	1 7/8	5	4 1/2	4 1/2	.....	12.00	3.00
3 1/4	4	2	4 1/2	4 1/2	4 1/2	.....	12.00	3.00

*We also furnish 3/16 Spring Dies at regular list and discount, with 32 threads to the inch, United States Standard form, and 32 threads to the inch, Whitworth Standard form.
†Spring Dies, cutting 1/2 inch with 12 threads to the inch, United States Standard form, furnished at regular list and discount.

Machine Screw Sizes

Size of Die Diameter Inch	Size of Die Length Inches	Size of Screw Gauge	Standard Number of Threads Per Inch	Die, Each	Clamp Collar Each
1/2	1 1/4	2	56	$1.50	$ .50
1/2	1 1/4	3	48	1.50	.50
1/2	1 1/4	4	36	1.50	.50
1/2	1 1/4	5	36	1.50	.50
1/2	1 1/4	6	32	1.50	.50
1/2	1 1/4	8	32	1.50	.50
3/4	1 3/4	8	32	1.75	.60
3/4	1 3/4	10	24	1.75	.60
3/4	1 3/4	12	24	1.75	.60
3/4	1 3/4	14	20	1.75	.60

Round Solid Dies



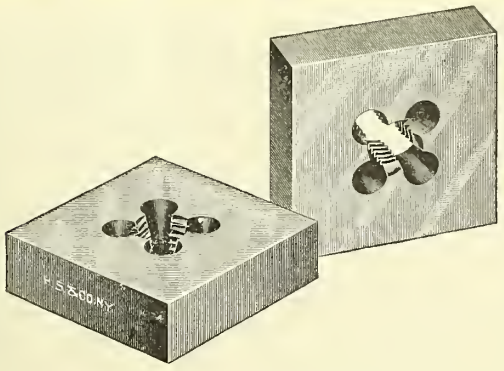
Card No. 806

Size of Die Diameter Inches	Size of Die Thickness Inch	Cutting Size	Each
5/8	1/4	4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20	$ .40
5/8	1/4	1/16; 3/32; 7/64; 1/8; 3/16; 1/4	.40
1	3/8	3/16; 1/4; 5/16; 3/8; 7/16	.75
1 5/16	7/16	3/16; 1/4; 5/16; 3/8; 7/16; 1/2	1.00
1 9/16	9/16	1/4; 5/16; 3/8; 7/16; 1/2; 9/16; 5/8	1.25
2 1/4	3/4	1/4; 5/16; 3/8; 7/16; 1/2	1.50
2 1/4	3/4	9/16	1.75
2 1/4	3/4	5/8	1.75
2 1/4	3/4	3/4	2.00
2 1/4	3/4	7/8	2.25
2 1/4	3/4	1	2.50

U. S. Standard Thread furnished unless otherwise specified. V Standard and Whitworth Standard furnished if desired

Machine or Solid Bolt Dies

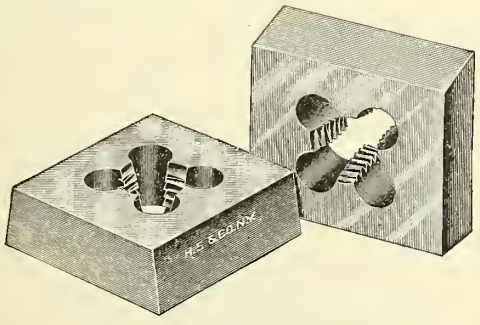
United States Standard Thread always furnished unless otherwise specified



Card No. 901, Morse No. 161

¼ to 2 inches

These Dies are furnished for rough iron $\frac{1}{64}$, over size from ¼ to ⅝ inch inclusive; $\frac{1}{32}$ over size from ¼ to 2 inches inclusive.



Card No. 902, Morse No. 160

¼ to 1½ inches only

These Dies are made with bevelled edges and fit the Bolt Cutters made by Boynton & Plummer of Worcester, Mass.

Dies 2¼ inches square fit the No. 2 Machine.

Dies 3 inches square fit the No. 3 Machine.

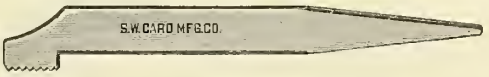
They are furnished for rough iron $\frac{1}{64}$ over size from ¼ to $\frac{7}{16}$ inch inclusive; $\frac{1}{32}$ over size from ¼ to 1½ inches inclusive at regular prices.

Cutting Size Inches	Number of Threads to Inch United States Standard	Outside Dimensions Size of Square Inches Nos. 901 and 161	Outside Dimensions Size of Square Inches Nos. 902 and 160	Outside Dimensions Thickness Inches	Each
¼	20	2½	2¼	½	$1.80
5/16	18	2½	2¼	½	1.80
⅜	16	2½	2¼	½	1.80
7/16	14	2½	2¼	½	1.80
½	*13	2½	2¼	¾	1.80
9/16	12	2½	2¼	¾	1.90
⅝	11	2½	2¼	¾	2.00
11/16	11	2½	2¼	¾	2.15
¾	10	2½	2¼	¾	2.20
13/16	10	2½	2¼	¾	2.30
⅞	9	2½	2¼	¾	2.40
15/16	9	2½	2¼	¾	2.55
1	8	2½	2¼	1	2.70
1⅛	7	2½	3	1	3.00
1¼	7	2½	3	1	3.30
1⅜	6	2½	3	1	3.60
1½	6	3	3	1	3.90
1⅝	5½	3	...	1	4.20
1¾	5	3	...	1¼	5.40
1⅞	5	3½	...	1½	6.50
2	4½	3½	...	2	7.50

*We also furnish ½ inch Machine or Solid Bolt Dies in both even and rough iron sizes, at regular list and discount, with 12 threads to the inch, United States Standard form. Sizes and threads not listed are special and subject to special prices

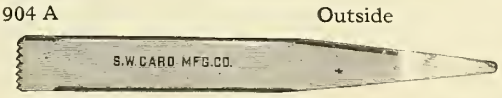
Inside

Card No. 904



Card No. 904 A

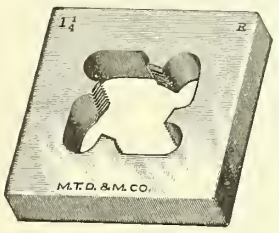
Outside



Pipe Dies

Solid. Morse No. 159

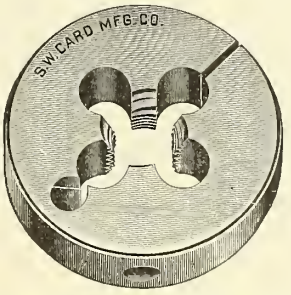
Standard Taper is ¾ inch to the foot



Cutting Size Pipe, Inches	Size of Square Inches	Thickness Inches	Each
*⅛, ¼, ⅜, ½	2	½	$1.50
*¼, *⅜	2	5/8	2.00
*½	2	¾	2.00
*¼, *⅜	2⅜	5/8	2.00
*¼, *⅜, *½, *¾, 1	2⅜	¾	2.00
*1	2⅜	1	2.00
*¼, *⅜	2½	5/8	2.00
*¼, *⅜, *½, ¾, *1	2½	¾	2.00
*1	2½	1	2.00
*¾, 1, 1¼	2⅞	¾	2.50
*1, *1¼	2⅞	1	2.50
*¾, 1 1¼	3	¾	2.50
*1, *1¼	3	1	2.50
1¼, 1½, 2	3⅞	⅞	3.50
*1¼, *1½, *2	3⅞	1	3.50
*2	3⅞	1⅛	3.50
1¼, 1½, 2	4	⅞	3.50
*1¼, *1½, *2	4	1	3.50
*2	4	1⅛	3.50
2½, 3	5	1¼	9.00
*2½, *3	5	1½	9.00

*These Dies are thick enough to cut to Briggs' Standard

Smith Patent Adjustable, Card No. 850



Cutting Size Inch	Thread	1Inch Diameter ⅜ Inch Thick	1 5/16 Inches Diameter 7/16 Inch Thick	1 9/16 Inches Diameter 9/16 Inch Thick	2¼ Inches Diameter ¾ Inch Thick
⅛	27	$ .75	$1.00	$1.50	$1.80
¼	18	....	1.00	1.50	1.80
⅜	18	....	1.00	1.50	1.80
½	14	....	....	1.50	1.80
¾	14	....	....	....	1.80
1	11½	....	....	....	2.00

Chasers for Screws

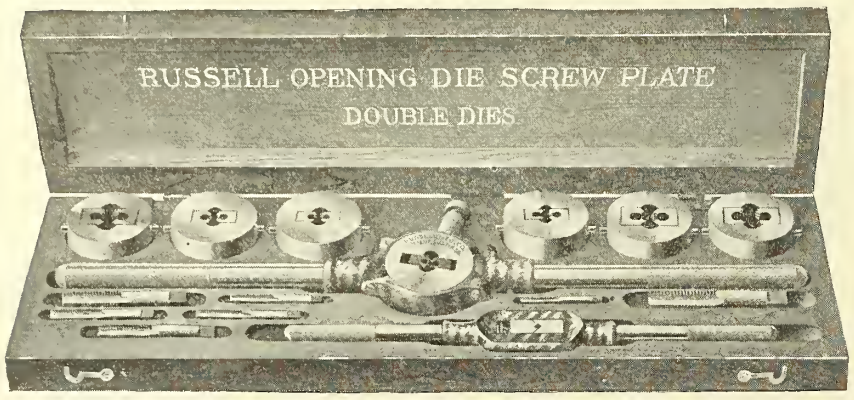
These Screw Chasers have V Threads only

	Each	Per Pair
Cutting 5, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15 and 16 threads to the inch.....	$ .30	$ .60
Cutting 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 56, 60 62, 64 and 70 threads to the inch.....	.25	.50

Screw Plates

Russell Opening Die

For Double Die feature, see page 104



Assortments

No. 11 ¼ to ½ inch, 5 sizes. In Handsome Wood Case. $12.00
Stock 26 inches long. Adjustable Tap Wrench No. 2. Taper Taps, Dies and Collets cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13.

No. 11-A Same as No. 11 but without Tap Wrench..... 11.00

No. 11-B Same as No. 11 but without Case..... 11.00

No. 11-C Same as No. 11 but without Tap Wrench or Case.. 10.10
Diameter of Collets in above sets 2¾ inches.

Supplied at same price, in V thread, over size V thread exact, U. S. Standard, S. A. E. or A. L. A. M. Standard, or Whitworth (English) Standard. U. S. Standard furnished unless otherwise specified. Left Hand Threads at special prices

No. 22 ¼ to ¾ inch, 5 sizes. In Handsome Wood Case..... $13.50
Stock 26 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting ¼-20, ⅜-16, ½-13, 5/8-11, ¾-10.

No. 22-A Same as No. 22 but without Tap Wrench..... 12.50

No. 22-B Same as No. 22 but without Case... 12.50

No. 22-C Same as No. 22 but without Tap Wrench or Case..... 11.60
Diameter of Collets in above sets 2¾ inches.

No. 55 ¼ to ¾ inch, 7 sizes. In Handsome Wood Case..... 16.00
Stock 26 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, 5/8-11, ¾-10.

No. 55-A Same as No. 55 but without Tap Wrench..... 15.00

No. 55-B Same as No. 55 but without Case.... 15.00

No. 55-C Same as No. 55 but without Tap Wrench or Case 14.10
Diameter of Collets in above sets 2¾ inches.

No. 77 ¼ to 1 inch, 9 sizes. In Handsome Wood Case.. 25.50
Stock 26 inches long. Adjustable Tap Wrench No. 4. Taper Taps, Dies and Collets cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, 5/8-11, ¾-10, ⅞-9, 1-8.

No. 77-A Same as No. 77 but without Tap Wrench..... 24.50

No. 77-B Same as No. 77 but without Case..... 24.00

No. 77-C Same as No. 77 but without Tap Wrench or Case. 23.10
Diameter of Collets in above sets 2¾ inches.

No. 10 Die



Left Hand Dies furnished at special prices

Diameter Inch	No. 10 Die	Number of Threads to Inch		
		V Standard	United States Standard	Whitworth Standard
¼	$1.00	20	20	20
5/16	1.00	18	18	18
⅜	1.25	16	16	16
7/16	1.25	14	14	14
½	1.50	12	13	12
9/16	1.50	12	12	12
5/8	1.75	11	11	11
11/16	1.75	11	11	11
¾	2.00	10	10	10
13/16	2.00	10	10	10
⅞	2.75	9	9	9
15/16	2.75	9	9	9
1	2.75	8	8	8

Adjustable Tap and Reamer Wrench



The handles are of the best steel tubing, capped and knurled, and both are firmly fixed, the motion to the jaw being given through an independent knurled nut. The jaws of ample size are made of fine tool steel, and held in perfect alignment on ways, true and strong. The stocks are drop-forged and gunlock finished. The whole is thoroughly made in every particular—complete, durable and handsome.

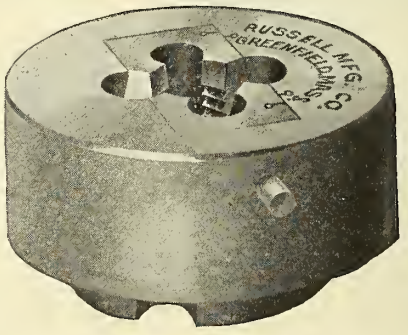
No. 28. Size No. 2. Length, 11 inches..... $2.00
Holds Hand Taps 3/16 inch to ⅝ inch.
Holds Machine Screw Taps No. 14 to No. 24.

No. 29 Size No. 3. Length, 16 inches..... 2.50
Holds Hand Taps ¼ inch to ¾ inch.
Holds Pipe Taps ⅛ inch to ⅜ inch.

No. 42 Size No. 4. Length, 21 inches..... 3.50
Holds Hand Taps ¼ inch to 1 inch.
Holds Pipe Taps ⅛ inch to ½ inch.

No. 31 Size No. 5. Length, 34 inches..... 8.00
Holds Hand Taps ⅝ inch to 1½ inches.
Holds Pipe Taps ½ inch to 1¼ inches.

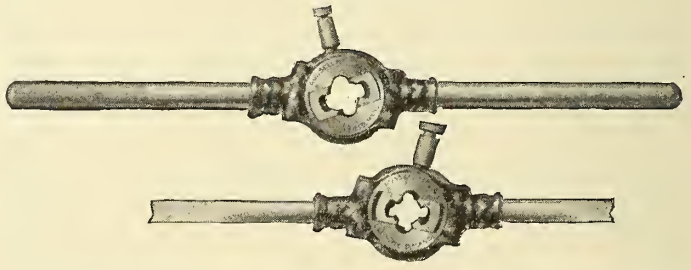
No. 38 Collet



¼ to 1 inch, 2¾ inch diameter, Guide, $ .20; Cap, $ .30; Complete, $ .50.

In ordering, give cutting size of Die for which Collet is wanted.

Stock



The Dies are opened or closed by a single movement of the lever on the side of the stock. When a thread has been cut to the required length, the operator pushes the lever, thus throwing the Dies open clear of the thread and the whole tool is quickly lifted off the finished work. When free of the work, the reversing of the lever closes the Dies exactly to size again ready to cut another thread. There are three marked advantages in the use of these Dies:

(1) The time usually wasted in running back over the finished thread is saved—about one-third of the total time.

(2) The marring, or stripping of the threads caused by chips crowding into the Die teeth in turning back is avoided.

(3) The life of the Die is almost doubled, as turning back over the thread in the old way causes much wear of the Dies.

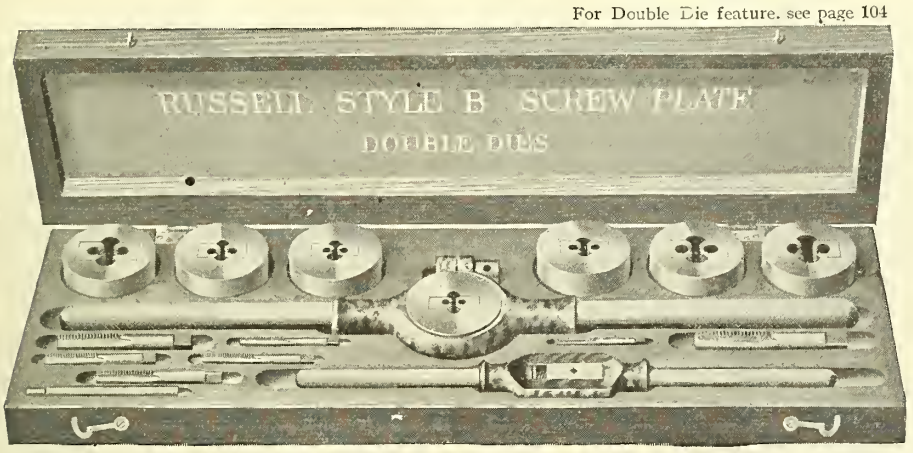
The Dies are interchangeable with those in Style "B" Screw Plates

No. 14 Stock, 26 inches long, for Collets 2¾ inches diameter. $2.00

Screw Plates

Russell Style B

For Double Die feature, see page 104



Assortments

No. 1	¼ to ½ inch, 5 sizes. In Handsome Wood Case	$12.00
No. 1-A	Same as No. 1 but without Tap Wrench	11.00
No. 1-B	Same as No. 1 but without Case	11.00
No. 1-C	Same as No. 1 but without Tap Wrench or Case. Diameter of Collets in above sets, 2¾ inches.	10.10
No. 2	¼ to ¾ inch, 5 sizes. In Handsome Wood Case. Stock 23 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting ¼-20, ⅜-16, ½-13, ⅝-11, ¾-10.	13.50
No. 2-A	Same as No. 2 but without Tap Wrench	12.50
No. 2-B	Same as No. 2 but without Case	12.50
No. 2-C	Same as No. 2 but without Tap Wrench or Case. Diameter of Collets in above sets, 2¾ inches.	11.60
No. 5	¼ to ¾ inch, 7 sizes. In Handsome Wood Case. Stock 23 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Collets cutting ¼-20, $\frac{5}{16}$-18, ⅜-16, $\frac{7}{16}$-14, ½-13, ⅝-11, ¾-10.	16.00
No. 5-A	Same as No. 5 but without Tap Wrench	$15.00
No. 5-B	Same as No. 5 but without Case	15.00
No. 5-C	Same as No. 5 but without Tap Wrench or Case. Diameter of Collets in above sets, 2¾ inches	14.10
No. 7	¼ to 1 inch, 9 sizes. In Handsome Wood Case. Stock 29 inches long. Adjustable Tap Wrench No. 4. Taper Taps, Dies and Collets cutting ¼-20, $\frac{5}{16}$-18, ⅜-16, $\frac{7}{16}$-14, ½-13, ⅝-11, ¾-10, ⅞-9, 1-8.	25.50
No. 7-A	Same as No. 7 but without Tap Wrench	24.50
No. 7-B	Same as No. 7 but without Case	24.00
No. 7-C	Same as No. 7 but without Tap Wrench or Case. Diameter of Collets in above sets, 2¾ inches	23.10
No. 25	⅞ to 1½ inches, 6 sizes. In Handsome Wood Case. Stock 52 inches long. Adjustable Tap Wrench No. 5. Taper Taps, Dies and Collets cutting ⅞-9, 1-8, 1⅛-7, 1¼-7, 1⅜-6, 1½-6.	45.00
No. 25-C	Same as No. 25 but without Tap Wrench or Case. Diameter of Collets in above sets 4½ inches	40.50
No. 50	¼ to 1½ inches, 13 sizes. In Handsome Wood Case. Two stocks, 29 and 52 inches long. Adjustable Tap Wrenches No. 3 and No. 5. Taper Taps, Dies and Collets cutting ¼-20, $\frac{5}{16}$-18, ⅜-16, $\frac{7}{16}$-14, ½-13, ⅝-11, ¾-10, ⅞-9, 1-8, 1⅛-7, 1¼-7, 1⅜-6, 1½-6.	60.00
No. 50-C	Same as No. 50 but without Tap Wrenches or Case. Diameter of Collets in above sets 1 inch and under 2¾ inches; 1⅛ and over 4½ inches	54.00

Supplied at same price, in V thread over size, V thread exact, U. S. Standard, S. A. E. or A. L. A. M. Standard or Whitworth (English) Standard. U. S. Standard furnished unless otherwise specified. Left Hand Thread at special prices

No. 37 Die

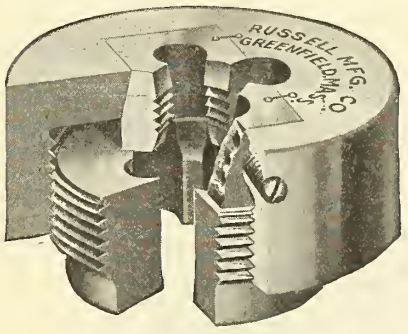


Left Hand Dies furnished at special prices

Diameter Inches	No. 37 Die	Number of Threads to Inch: V Standard	United States Standard	Whitworth Standard
¼	$1.00	20	20	20
$\frac{5}{16}$	1.00	18	18	18
⅜	1.25	16	16	16
$\frac{7}{16}$	1.25	14	14	14
½	1.50	12	13	12
$\frac{9}{16}$	1.50	12	12	12
⅝	1.75	11	11	11
$\frac{11}{16}$	1.75	11	11	11
¾	2.00	10	10	10
$\frac{13}{16}$	2.00	10	10	10
⅞	2.75	9	9	9
$\frac{15}{16}$	2.75	9	9	9
1	2.75	8	8	8
1⅛	4.00	7	7	7
1¼	4.00	7	7	7
1⅜	5.00	6	6	6
1½	5.00	6	6	6



Sectional View of Collet



The Screw Guide below forces the beveled edges of the Die snugly against the beveled surfaces of the Collet.

The surfaces being exactly alike, a combined screw and taper fit is effected, the most positive and rigid fit known in mechanics, and one which constantly corrects itself and compensates for wear. Adjustment of cutting size is accomplished by turning the screws back of the Die halves in or out for tight or loose fits of bolts and nuts.

The zero marks on the tops of the Die and Collet make it possible to adjust each half perfectly in relation to the center.

Number	Inches	Diameter, inches	Guide	Cap	Complete
15	¼ to 1	2¾	$ .20	$ .30	$ .50
16	⅞ to 1½	4½	.50	1.00	1.50

In ordering give cutting size of Die for which Collet is wanted.

The Screw Guide below forces the beveled edges of the Die snugly against the beveled surfaces of the Collet.



Stock

No. 17	Stock 23 inches long.	For Collets 2¾ inches diameter.	$2.00
No. 18	Stock 29 inches long.	For Collets 2¾ inches diameter.	2.00
No. 19	Stock 52 inches long.	For Collets 4½ inches diameter.	6.00

Attachment No. 13

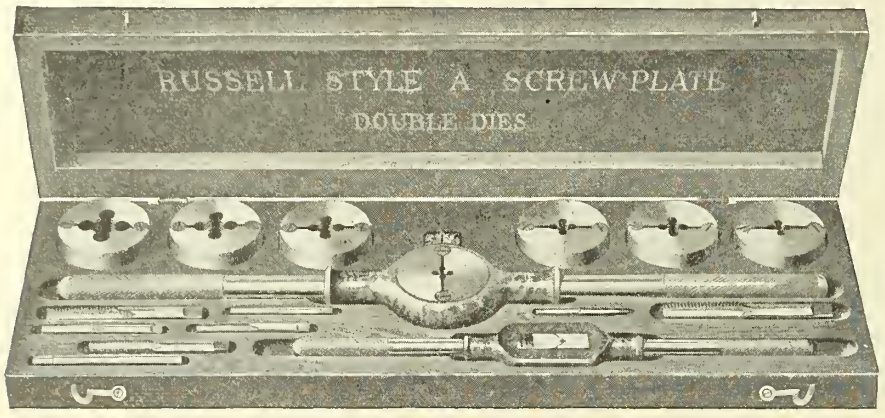
With this attachment the Style B Collets, 2¾ inches diameter, may be transformed into Bit Brace Holders at any time, by simply removing the Guide and screwing the attachment in its place. This attachment is supplied with all Russell Style B Screw Plate assortments, containing sizes $\frac{7}{16}$ inch and smaller. (A bit brace has not sufficient leverage to thread sizes larger than $\frac{7}{16}$ inch.)

If ordered separately.....Each $ .50

For Tap Wrenches, see page 102

Screw Plates

Russell Style A



Assortments

No. 1112 — ¼ to 1 inch, 9 sizes. In Handsome Wood Case — $25.20
Two Stocks 22 inches and 29 inches long. Adjustable Tap Wrench No. 4. Taper Taps, Dies and Guides cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, 5/8-11, ¾-10, ⅞-9, 1-8.

No. 1112-A — Same as No. 1112 but without Tap Wrench — 24.15
No. 1112-B — Same as No. 1112 but without Case — 23.65
No. 1112-C — Same as No. 1112 but without Tap Wrench or Case — 22.60
Diameter of Dies in above sets ¾ inch and under 2 3/16 inches, ⅞ inch and over 2¾ inches

No. 1124 — ¼ to ¾ inch, 5 sizes. In Handsome Wood Case — $11.80
Stock 22 inches long. Adjustable Tap Wrench No. 3, Taper Taps, Dies and Guides cutting ¼-20, ⅜-16, ½-13, 5/8-11, ¾-10.

No. 1124-A — Same as No. 1124 but without Tap Wrench — 10.75
No. 1124-B — Same as No. 1124 but without Case — 10.75
No. 1124-C — Same as No. 1124 but without Tap Wrench or Case — 9.70
Diameter of Dies in above sets 2 3/16 inches

No. 1104 — ¼ to ¾ inch, 7 sizes. In Handsome Wood Case — 14.70
Stock 22 inches long. Adjustable Tap Wrench No. 3. Taper Taps, Dies and Guides cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, 5/8-11, ¾-10.

No. 1104-A — Same as No. 1104 but without Tap Wrench — 13.65
No. 1104-B — Same as No. 1104 but without Case — 13.65
No. 1104-C — Same as No. 1104 but without Tap Wrench or Case — 12.60
Diameter of Dies in above sets 2 3/16 inches

No. 2029 — ¼ to ½ inch, 5 sizes. In Handsome Wood Case — 11.30
Stock 18 inches long. Adjustable Tap Wrench No. 2. Taper Taps, Dies and Guides cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13.

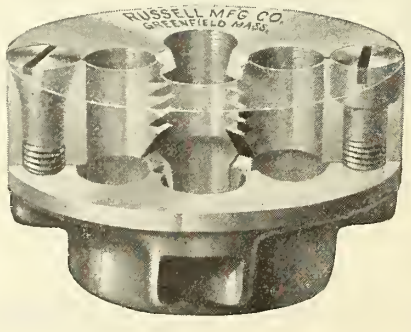
No. 2029-A — Same as No. 2029 but without Tap Wrench — 10.25
No. 2029-B — Same as No. 2029 but without Case — 10.25
No. 2029-C — Same as No. 2029 but without Tap Wrench or Case — 9.20
Diameter of Dies in above sets 2 3/16 inches

Supplied at same price in V thread, over size, V thread exact, U. S. Standard, S. A. E. or A. L. A. M. Standard or Whitworth (English) Standard. U. S. Standard furnished unless otherwise specified. Left Hand Threads at special prices

Dies and Guides, Fitting Above Assortments

(Adjustable with one screw)

The cup-headed screw on the right holds the halves firmly together, acting as a hinge while the size is regulated by the wedge-shape (taper-headed) screw in the left; the whole being clamped rigidly in an elastic stock.



Size Inches	Dies Diameter Outside 2 3/16 Inches No. 20	Guides Diameter Outside 2 3/16 Inches No. 39	Number of Threads to Inch: V Standard	United States Standard	Whitworth Standard
¼	$1.25	$ .25	20	20	20
5/16	1.25	.25	18	18	18
⅜	1.50	.25	16	16	16
7/16	1.50	.25	14	14	14
½	1.50	.25	12	13	12
9/16	1.60	.25	12	12	12
⅝	1.75	.25	11	11	11
11/16	1.90	.25	11	11	11
¾	2.00	.25	10	10	10
	Diameter Outside 2¾ Inches No. 21	Diameter Outside 2¾ Inches No. 23			
13/16	2.25	.25	10	10	10
⅞	2.50	.25	9	9	9
15/16	2.75	.25	9	9	9
1	3.00	.25	8	8	8
1 1/8	3.50	.25	7	7	7
1 ¼	4.00	.25	7	7	7

General Data

Double Die Feature

The Dies in all Russell Screw Plates are made to cut from both faces and will do certain work which it is impossible to accomplish with the old style Dies. When a thread is to be cut close up to a shoulder, or a very short piece is to be threaded, the cut is made from the front face of the Die. In this way the space, which the thickness of the guide prevents being utilized, when cutting from the guide side of the Die, can be threaded and the thread cut clear up to the shoulder or work holder. It is not necessary to start the thread with the guide side of the Die. If a little care is taken to hold the Die true in starting, a perfect thread can be cut without the guide. The guide is a convenience in starting a thread quickly but is not a necessity.

The life of these Dies is almost double that of the old style, because when one side is worn out the other face of the Die may be used, thus bringing into action a new set of cutting edges.

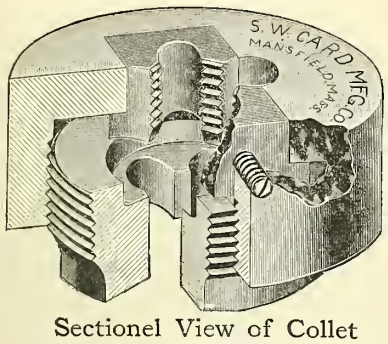
Interchangeable Dies

The Dies in each of the Russell three types of Screw Plates are interchangeable with those of similar types made by others.

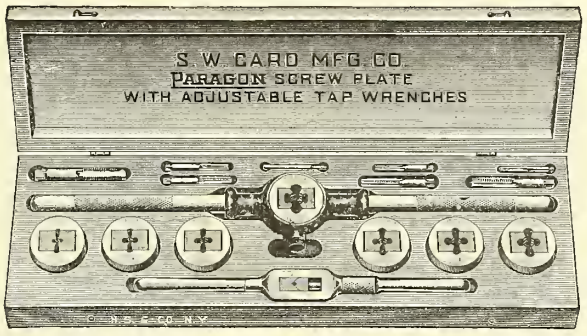
Guarantee

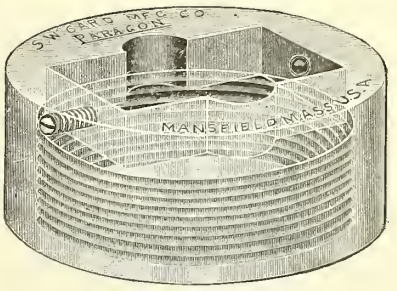
All Russell products are guaranteed to be of the highest quality of workmanship and material, and perfect in every detail. A rigid inspection after every operation renders it almost impossible for anything not up to the standard to leave the plant. Should any item be found defective in any way, we will replace it free of charge upon its return.

Paragon Screw Plates

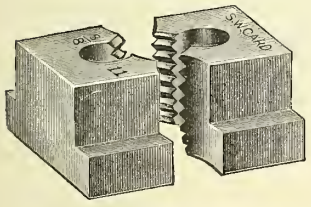


Sectionel View of Collet Die and Guide





Collet

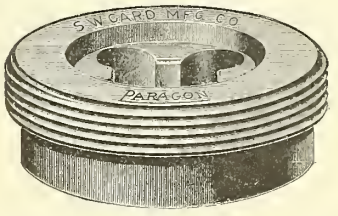


Adjustable Die



Horsfield Patent Adjustable Tap Wrench

All Paragon Screw Plates are supplied with this Tap Wrench



Guide

In the manufacture of Paragon Screw Plates, the greatest care has been exercised in turning out a finished product with the result that its user will find it a paragon of excellence in every way.

By referring to illustrations the construction of the Paragon Die and Guide is easily apparent.

The method of a square lock in fitting the die into the cap, gives an exceptionally good bearing surface to the die, and insures perfect alignment when the guide is screwed into place. There is no chance for wear and displacement of die in this style of fit, thus the alignment is sure to be maintained during the whole life of the die.

The parallel adjustment feature of this die is an improvement over the ordinary round die, and a strong point in its favor.

It is not possible to get practical adjustment in round dies except perhaps for tight and loose fits, and then the adjustment is only on one side of the die, and the cutting sections not parallel.

Paragon Dies, when dull, can be removed from the collet very easily and ground, which also is impossible with a round die, and a very conclusive argument in favor of their use.

When from continued use new dies are necessary they can be purchased at slight cost.

To cut close to a shoulder start the thread with the guide side of the die and finish with the face side.

We strongly recommend the Paragon Die in all screw plate assortments from ¼ inch to 1½ inches.

The Stocks are beautifully mottled and are supplied with hollow steel knurled handles, which make them very light, and they are also strong and serviceable.

Each screw plate assortment is supplied with one or more drop forged Horsfield Patent Tap and Reamer Wrenches necessary to cover the range of sizes in the assortment.

When ordering repairs give the Set Number and Collet Number.

Duplicate parts can be furnished for these plates without returning them to the factory, as they are all made interchangeable.

Paragon Screw Plates are fully warranted and we will replace, free of charge, any imperfect tools returned.

One-Stock Sets—Taper Taps

Set No.	Cutting	Each
501	¼–20, ⅜–16, ½–13	$9.50
502	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13	12.00
503	¼–20, ⅜–16, ½–13, ⅝–11, ¾–10	13.50
504	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, ⅝–11, ¾–10	16.00
504½	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, 9/16–12, ⅝–11, ¾–10	18.50
505	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, ⅝–11, ¾–10, ⅞–9, 1–8	25.50
505½	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, 9/16–12, ⅝–11, ¾–10, ⅞–9, 1–8	28.00
506	½–13, ⅝–11, ¾–10, ⅞–9, 1–8	17.50
507	⅝–11, ¾–10, ⅞–9, 1–8	15.00
508	⅞–9, 1–8, 1⅛–7, 1¼–7, 1⅜–6, 1½–6	45.00
509	1⅛–7, 1¼–7, 1⅜–6, 1½–6	37.50

Two-Stock Sets—Taper Taps

Set No.	Cutting	Each
510	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, ⅝–11, ¾–10	$18.00
511	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, ⅝–11, ¾–10, ⅞–9, 1–8	27.50
512	¾–10, ⅞–9, 1–8—1⅛–7, 1¼–7, 1⅜–6, 1½–6	52.50
513	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13—⅝–11, ¾–10, ⅞–9, 1–8, 1⅛–7, 1¼–7	40.00
514	⅝–11, ¾–10, ⅞–9,—1–8, 1⅛–7, 1¼–7	37.50
515	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13—⅝–11, ¾–10, ⅞–9, 1–8, 1⅛–7, 1¼–7, 1⅜–6, 1½–6	60.00

Three-Stock Sets—Taper Taps

Set No.	Cutting	Each
516	¼–20, 5/16–18, ⅜–16, 7/16–14,—½–13, ⅝–11, ¾–10, ⅞–9—1–8, 1⅛–7, 1¼–7	$42.00
517	¼–20, 5/16–18, ⅜–16, 7/16–14,—½–13, ⅝–11, ¾–10, ⅞–9, —1–8, 1⅛–7, 1¼–7, 1⅜–6, 1½–6	62.00

S. A. E. or A. L. A. M. Standard Sets—Plug Taps

For Autmobile Repair Work

Set No.	Cutting	Each
518	¼–28, 5/16–24, ⅜–24, 7/16–20, ½–20	$12.00
518½	¼–28, 5/16–24, ⅜–24, 7/16–20, ½–20, ⅝–18, ¾–16	16.00
519	9/16–18, ⅝–18, 11/16–16, ¾–16, ⅞–14, 1–14	22.00
519½	¼–28, 5/16–24, ⅜–24, 7/16–20, ½–20,—9/16–18, ⅝–18, 11/16–16 ¾–16, ⅞–14, 1–14	34.00

See next page for larger sizes and extra parts.

Screw Plates will be sent with United States Standard Threads unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough Iron sizes in V and United States Standard furnished if desired. Machinists Hand Taps furnished with these sets.

Paragon Screw Plates

(Continued from preceding page)

One-Stock Sets—Taper, Plug and Bottoming Taps

Set No.	Cutting	Each
551	¼–20, ⅜–16, ½–13	$12.50
552	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13	15.50
553	¼–20, ⅜–16, ½–13, ⅝–11, ¾–10	18.00
554	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, ⅝–11, ¾–10	22.00
554½	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, 9/16–12, ⅝–11, ¾–10	25.25
555	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, ⅝–11, ¾–10, ⅞–9, 1–8	36.00
555½	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13, 9/16–12, ⅝–11, ¾–10, ⅞–9, 1–8	39.25
556	½–13, ⅝–11, ¾–10, ⅞–9, 1–8	25.00
557	⅝–11, ¾–10, ⅞–9, 1–8	22.00
558	⅞–9, 1–8, 1⅛–7, 1¼–7, 1⅜–6, 1½–6	63.00
559	1⅛–7, 1¼–7, 1⅜–6, 1½–6	51.00

Two-Stock Sets—Taper, Plug and Bottoming Taps

Set No.	Cutting	Each
560	¼–20, 5/16–18, ⅜–16, 7/16–14,—½–13, ⅝–11, ¾–10	$24.00
561	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13,—⅝–11, ¾–10, ⅞–9, 1–8	38.00
562	¾–10, ⅞–9, 1–8,—1⅛–7, 1¼–7, 1⅜–6, 1½–6	70.00
563	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13,—⅝–11, ¾–10, ⅞–9, 1–8, 1⅛–7, 1¼–7	55.00
564	⅝–11, ¾–10, ⅞–9,—1–8, 1⅛–7, 1¼–7	50.00
565	¼–20, 5/16–18, ⅜–16, 7/16–14, ½–13,—⅝–11, ¾–10, ⅞–9, 1–8, 1⅛–7, 1¼–7, 1⅜–6, 1½–6	84.00

Three-Stock Sets—Taper, Plug and Bottoming Taps

Set No.	Cutting	Each
566	¼–20, 5/16–18, ⅜–16, 7/16–14,—½–13, ⅝–11, ¾–10, ⅞–9, —1–8, 1⅛–7, 1¼–7	$57.00
567	¼–20, 5/16–18, ⅜–16, 7/16–14,—½–13, ⅝–11, ¾–10, ⅞–9, —1–8, 1⅛–7, 1¼–7, 1⅜–6, 1½–6	86.00

Screw Plates will be sent with United States Standard Threads unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough Iron sizes in V and United States Standard furnished if desired. Machinists Hand Taps furnished with these sets.

Extra Parts

Stocks



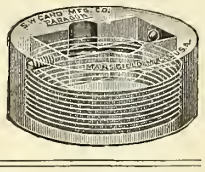
Dies



Number of Stock	Length of Stock Inches	Fitting Collets Number	Diameter Collets Inches	Each
13	16	13	2	$1.50
14	24	14	2½	2.00
15	31	15	3	2.00
16	38	16	3½	6.00
18	52	18	4½	8.00

Collets and Guides





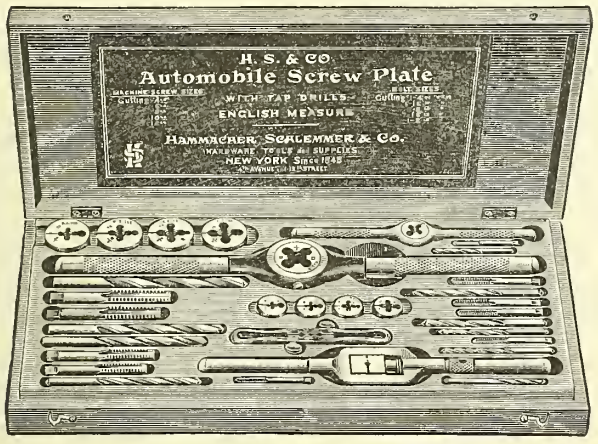
Size of Die Inches	Number of Collet	Diameter of Collet, Inches	Guide	Collet	Collet and Guide
¼ to ½	13	2	$ .20	$ .30	$ .50
¼ to ¾	14	2½	.20	.30	.50
¼ to 1	15	3	.20	.30	.50
⅝ to 1¼	16	3½	.50	1.00	1.50
⅝ to 1½	18	4½	.50	1.00	1.50

Cutting Sizes Inches	U.S. Standard Threads	V Form	Whitworth Standard	A. L. A. M. Standard	Each
¼	20	20	20	28	$1.00
5/16	18	18	18	24	1.00
⅜	16	16	16	24	1.25
7/16	14	14	14	20	1.25
½	13	12	12	20	1.50
9/16	12	12	12	18	1.50
⅝	11	11	11	18	1.75
11/16	11	11	11	16	1.75
¾	10	10	10	16	2.00
13/16	10	10	10	..	2.00
⅞	9	9	9	14	2.75
15/16	9	9	9	..	2.75
1	8	8	8	14	2.75
1⅛	7	7	7	12	4.00
1¼	7	7	7	12	4.00
1⅜	6	6	6	12	5.00
1½	6	6	6	12	5.00

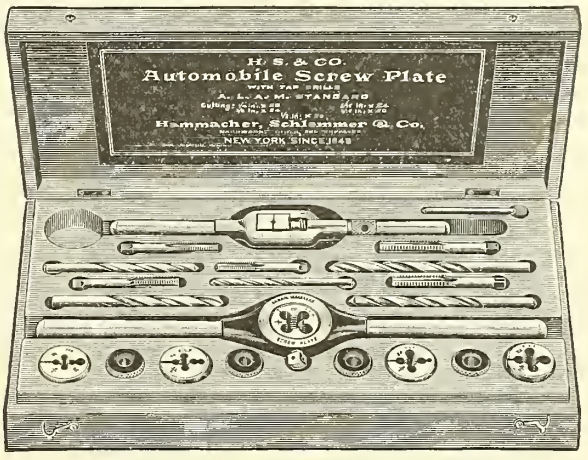
Rough Iron sizes in V and United States Standard Threads furnished at regular prices. For prices on extra Taps, see Index for Machinists Hand Tap list. For prices on Horsfield Patent Tap Wrench, see page 111. Left Hand Dies are special. U. S. Standard Threads furnished unless otherwise ordered. When ordering give number of Collet wanted, also cutting size of Die with which Collet is to be used.

Automobile Screw Plates

H. S. & Co.



With Diamond Stocks and Dies



With Improved Stocks and Dies

English, Metric, S. A. E., or A. L. A. M. Standards

As the name implies the Automobile Screw Plate was originally designed for the automobilist's use, but embodying as it does all of the principal screw and bolt sizes it is particularly handy for general use.

We have also included in it the necessary Morse Tap Drills of the correct size for each tap.

The English Measure Plate cuts 4-36, 6-32, 8-32, 10-24, and 12-24 machines screw threads, and ¼-20, $\frac{5}{16}$-18, $\frac{3}{8}$-16, $\frac{7}{16}$-14, and ½-13 U. S. Standard Threads. Has two tap wrenches and two stocks.

The Metric Measure Plate cuts 3-5, 4-75, 5-75, 6-1, 7-1, 8-1, 9-1, 10-1.5, 11-1.5 and 12-1.5 mm., and has two tap wrenches and two stocks.

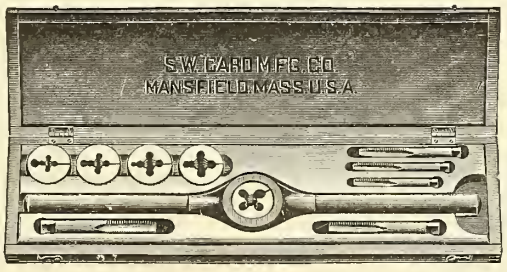
The S. A. E. or A. L. A. M. Plate cuts ¼-28, $\frac{5}{16}$-24, $\frac{3}{8}$-24, $\frac{7}{16}$-20, and ½-20 threads and has one tap wrench and one stock.

English Measure, with Diamond Stocks and Dies	set	$20.00
English Measure, with Improved Stocks and Dies	set	25.00
Metric Measure with Diamond Stocks and Dies	set	20.00
S. A. E. or A. L. A. M. Measure, with Improved Stock and Dies	set	17.50

Diamond

S. A. E. or A. L. A. M. Standard and French Standard (Metric System)

For Automobile Repair Work



Set No. 1. S. A. E. or A. L. A. M. Standard. Each
Stock, 14 inches long, with 5 Dies $1\frac{5}{16}$ inches diameter, and 5 Taps; cutting ¼–28, $\frac{5}{16}$–24, $\frac{3}{8}$–24, $\frac{7}{16}$–20, ½–20..... $8.40

Set No. 2. S. A. E. or A. L. A. M. Standard.
One Stock, 14 inches long, with 5 Dies $1\frac{5}{16}$ inches diameter, and 5 Taps; cutting ¼–28, $\frac{5}{16}$–24, $\frac{3}{8}$–24, $\frac{7}{16}$–20, ½–20.
One Stock, 29 inches long with 6 Dies 2¼ inches diameter, and 6 Taps; cutting $\frac{9}{16}$–18, $\frac{5}{8}$–18, $\frac{11}{16}$–16, ¾–16, $\frac{7}{8}$–14, 1, 14 ..... 27.00

Set No. 3. French Standard. (Metric System)
One Stock, 7 inches long, with 5 Dies $\frac{13}{16}$ inches diameter, and 5 Taps; cutting 3 mm., 0.5; 4 mm., 0.75; 5 mm., 0.75; 6 mm., 1.0; 7 mm., 1.0.
One Stock, 18 inches long, with 5 Dies $1\frac{9}{16}$ inches diameter, and 5 Taps; cutting 8 mm., 1.0; 9 mm., 1.0; 10 mm., 1.5; 12 mm., 1.5; 14 mm., 2.0..... 12.00

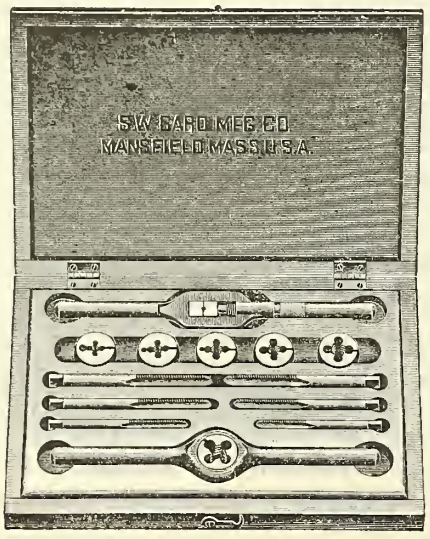
Set No. 4. French Standard. (Metric System)
One Stock, 14 inches long, with 6 Dies $1\frac{5}{16}$ inches diameter, and 6 Taps; cutting 6 mm., 1.0; 7 mm., 1.0; 8 mm., 1.0; 9 mm., 1.0; 10 mm., 1.5; 12 mm., 1.5.
One Stock, 29 inches long, with 6 Dies 2¼ inches diameter, and 6 Taps; cutting 14 mm., 2.0; 16 mm., 2.0; 18 mm., 2.5; 20 mm., 2.5; 22 mm., 2.5; 24 mm., 3.0..... 28.50

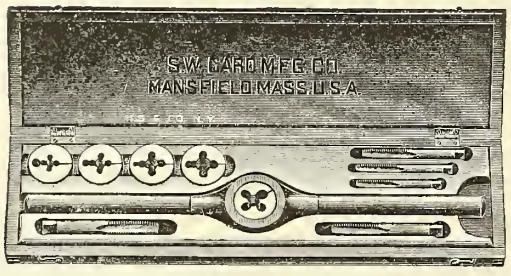
Extra Taps and Dies (Metric System)

Diameter mm.	Pitch mm.	Taps Taper, Plug or Bottoming Each	Round Adjustable Dies $\frac{13}{16}$ Inch Diameter	$1\frac{5}{16}$ Inch Diameter	$1\frac{9}{16}$ Inch Diameter	$2\frac{1}{4}$ Inch Diameter
3	.5	$ .35	$ .40			
4	.75	.35	.40			
5	.75	.35	.40			
6	1.0	.45	.40	$1.00	$1.25	
7	1.0	.45	.40	1.00	1.25	
8	1.0	.50	.....	1.00	1.25	
9	1.0	.55	.....	1.00	1.25	
10	1.5	.55	.....	1.00	1.25	
12	1.5	.70	.....	1.00	1.25	
14	2.0	.80	.....	.....	1.25	$1.75
16	2.0	.90	.....	.....	.....	1.75
18	2.5	1.05	.....	.....	.....	2.00
20	2.5	1.40	.....	.....	.....	2.25
22	2.5	1.60	.....	.....	.....	2.25
24	3.0	1.80	.....	.....	.....	2.50

Machinists Screw Plates

Diamond





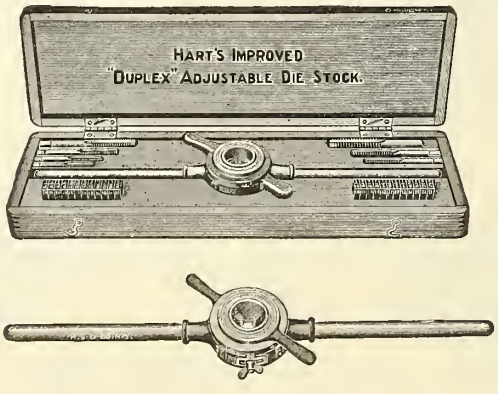
Screw Plates of fractional sizes furnished U.S. Standard unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough iron sizes in V and U. S. Standard furnished if desired.

	Set	Diameter of Dies Inches	Cutting	Each
With Tap Wrench	A	5/8	4–36, 6–32, 8–32, 10–24, 12–24, 14–20	$4.90
	B	5/8	4–36, 6–32, 8–32, 10–24, 12–24	4.40
	C	5/8	6–32, 8–32, 10–24, 12–24	3.90
	D	5/8	2–56, 3–48, 4–36, 6–32, 8–32, 10–24, 12–24, 14–20	6.20
	E	5/8	2–56, 3–48, 4–36, 5–32, 6–32, 8–32, 10–32, 10–24, 12–24, 14–20	7.25
	N	13/16	4–36, 6–32, 8–32, 10–24, 12–24	5.65
	NN	13/16	4–36, 6–32, 8–32, 10–24, 12–24, 14–20	6.25
	O	13/16	4–36, 6–32, 8–32, 10–24, 12–24, 14–20, 16–18	6.75
	P	13/16	4–36, 6–32, 8–32, 10–24, 12–24, 14–20, 16–18, 18–18	7.30
	P-1	13/16	2–56, 3–48, 4–36, 6–32, 8–32, 10–24, 12–24, 14–20	7.30
	P-2	13/16	2–56, 3–48, 4–36, 6–32, 8–32, 10–24, 12–24, 14–20, 16–18, 18–18	8.00
	Q	13/16	1/8–40, 5/32–32, 3/16–24, 7/32–24, 1/4–20	5.75
	R	13/16	1/8–40, 5/32–32, 3/16–24, 7/32–24, 1/4–20, 5/16–18	6.50
	S	13/16	1/16–72, 1/8–40, 3/16–24, 1/4–20, 5/16–18	5.75
	T	13/16	1/16–72, 3/32–56, 1/8–40, 5/32–32, 3/16–24, 7/32–24, 1/4–20, 9/32–20, 5/16–18	8.50
	25	13/16	4–48, 6–40, 8–36, 10–30, 12–28	5.65
	26	13/16	4–48, 6–40, 8–36, 10–30, 12–28, 14–24	6.25
	27	13/16	4–48, 6–40, 8–36, 10–30, 12–28, 14–24, 16–22	6.75
	28	13/16	4–48, 6–40, 8–36, 10–30, 12–28, 14–24, 16–22, 18–20	7.30
	29	13/16	2–64, 3–56, 4–48, 6–40, 8–36, 10–30, 12–28, 14–24	7.30
	30	13/16	2–64, 3–56, 4–48, 6–40, 8–36, 10–30, 12–28, 14–24, 16–22, 18–20	8.00
Without Tap Wrench	16	1	3/16–24, 1/4–20, 5/16–18, 3/8–16, 7/16–14	6.60
	17	1	1/4–20, 5/16–18, 3/8–16, 7/16–14	5.70
	17A	1	1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13	6.75
	18	1	12–24, 14–20, 16–18, 18–18, 20–16, 24–16	6.90
	18A	1	12–24, 14–20, 16–18, 18–18, 20–16	6.00
	19	1	14–20, 16–18, 18–18, 20–16	5.00
	21	1 5/16	3/16–24, 1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13	9.60
	22	1 5/16	1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13	8.40
	23	1 5/16	1/4–20, 5/16–18, 3/8–16, 1/2–13	7.00
	24	1 5/16	1/4–20, 3/8–16, 1/2–13	5.75

A. S. M. E. Standard

Hart "Duplex"

For Bolts and Rods



A prominent feature of the "Duplex" is that it is unnecessary to turn back over the thread after it is once cut.

When set to any desired size, can instantly be released and lifted off and reset in same size without trial, thus insuring all the threads uniformly alike. It adjusts to all the variations in iron—rough oversized iron is shaved to standard size and threaded at the same time.

No wrenches or screw drivers are required for the adjustment of dies.

Plug taps cutting even sizes will be shipped with these sets unless otherwise specified. We can supply sets with 1/32 over sizes, in which case taper taps will be sent. Tap Wrenches are not included unless ordered. Packed in neat hardwood box as shown.

With U. S. Standard, V or Whitworth Threads

U. S. Standard supplied unless otherwise ordered

Set	Cutting	Set
AA	3/16–24, 1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13*	$15.00
A	1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13*, 5/8–11, 3/4–10	20.00
B	1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13*, 5/8–11, 3/4–10, 7/8–9, 1–8	30.00
B2	1/2–13*, 5/8–11, 3/4–10, 7/8–9, 1–8	22.00
B3	3/16–24, 1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13*, 5/8–11, 3/4–10, 7/8–9, 1–8	35.00
BB	1/2–13,* 5/8–11, 3/4–10, 7/8–9, 1–8, 1 1/8–7, 1 1/4–7	37.00
BB2	1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13*, 5/8–11, 3/4–10, 7/8–9, 1–8, 1 1/8–7, 1 1/4–7	48.00
C	1/2–13*, 5/8–11, 3/4–10, 7/8–9, 1–8, 1 1/8–7, 1 1/4–7, 1 3/8–6, 1 1/2–6	45.00
C2	3/4–10, 7/8–9, 1–8, 1 1/8–7, 1 1/4–7, 1 3/8–6, 1 1/2–6	40.00
C3	1/4–20, 5/16–18, 3/8–16, 7/16–14, 1/2–13*, 5/8–11, 3/4–10, 7/8–9, 1–8, 1 1/8–7, 1 1/4–7, 1 3/8–6, 1 1/2–6	57.00

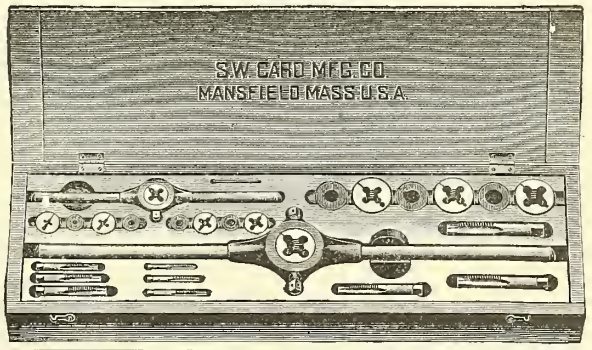
*Sets with V or Whitworth threads are furnished 1/2 inch, 12 threads. Sets B3, BB2, and C3 have two stocks.

With Metric Threads (International Standard)

Set	Cutting	Set
AA	6, 7, 8, 9, 10, 11 and 12 mm	$13.00
A	6, 7, 8, 9, 10, 11, 12, 14, 16, 18 and 20 mm	21.00
B	6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24 and 27 mm	31.50
B2	14, 16, 18, 20, 22, 24 and 27 mm	22.00
BB	14, 16, 18, 20, 22, 24, 27, 30 and 33 mm	39.00
C	14, 16, 18, 20, 22, 24, 27, 30, 33, 36 and 39 mm	45.00
C2	22, 24, 27, 30, 33, 36 and 39 mm	37.00

Machinists Screw Plates

Improved



These Screw Plates are furnished with Round Adjustable Dies and Steel Guides. The dies are adjusted by means of a tapering screw, which permits sufficient adjustment to obtain either a tight or a loose fit. They are constructed so that they will always grip the screw whether it is moved in or out, thereby keeping the cutting teeth in perfect alignment.

Sets Nos. 40 to 56 are furnished with plug, and Sets Nos. 60 to 100A with taper taps. Sets Nos. 40 to 56 have adjustable tap wrench 7½ inches long. Sets Nos. 100 and 100A have two stocks.

Sets Nos. 40 to 45 are for cutting A. S. M. E. machine screw threads.

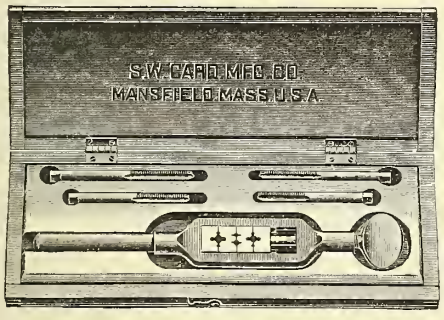
Each set is furnished in a hardwood case, as shown.

Set No.	Cutting	Length Stock Inches	Each
40	4–48, 6–40, 8–36, 10–30, 12–28 (A. S. M. E. Standard)	7	$5.75
41	4–48, 6–40, 8–36, 10–30, 12–28, 14–24 (A. S. M. E. Standard)	7	6.50
42	4–48, 6–40, 8–36, 10–30, 12–28, 14–24, 16–22 (A. S. M. E. Standard)	7	7.00
43	4–48, 6–40, 8–36, 10–30, 12–28, 14–24, 16–22, 18–20 (A. S. M. E. Standard)	7	8.00
44	2–64, 3–56, 4–48, 6–40, 8–36, 10–30, 12–28, 14, 24 (A. S. M. E. Standard)	7	8.00
45	2–64, 3–56, 4–48, 6–40, 8–36, 10–30, 12–28, 14–24, 16–22, 18–20 (A. S. M. E. Standard)	7	9.00
50	4–36, 6–32, 8–32, 10–24, 12–24	7	5.75
50½	4–36, 6–32, 8–32, 10–24, 12–24, 14–20	7	6.50
51	4–36, 6–32, 8–32, 10–24, 12–24, 14–20, 16–18	7	7.00
52	4–36, 6–32, 8–32, 10–24, 12–24, 14–20, 16–18, 18–18	7	8.00
52A	2–56, 3–48, 4–36, 6–32, 8–32, 10–24, 12–24, 14–20	7	8.00
52B	2–56, 3–48, 4–36, 6–32, 8–32, 10–24, 12–24, 14–20, 16–18, 18–18	7	9.00

Set No.	Cutting	Length Stock Inches	Each
53	$\frac{1}{8}$–40, $\frac{5}{32}$–32, $\frac{3}{16}$–24, $\frac{7}{32}$–24, $\frac{1}{4}$–20	7	$5.75
54	$\frac{1}{8}$–40, $\frac{5}{32}$–32, $\frac{3}{16}$–24, $\frac{7}{32}$–24, $\frac{1}{4}$–20, $\frac{5}{16}$–18	7	6.50
55	$\frac{1}{8}$–40, $\frac{3}{16}$–32, $\frac{1}{4}$–20, $\frac{5}{16}$–18	7	5.25
56	$\frac{1}{8}$–40, $\frac{5}{32}$–32, $\frac{3}{16}$–24, $\frac{1}{32}$–24, $\frac{1}{4}$–20, $\frac{9}{32}$–20, $\frac{5}{16}$–18	7	7.00
60	$\frac{3}{16}$–24, $\frac{1}{4}$–20, $\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14	10½	8.75
60A	$\frac{1}{4}$–20, $\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14	10½	7.50
70	$\frac{1}{4}$–20, $\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13	14	10.50
70A	$\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13	14	8.90
80	$\frac{1}{4}$–20, $\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10	23	16.00
80A	$\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10	23	13.00
80B	$\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10	23	9.25
90	$\frac{1}{4}$–20, $\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10, $\frac{7}{8}$–9, 1–8	29	26.00
90A	$\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10, $\frac{7}{8}$–9, 1–8	29	22.00
90B	$\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10, $\frac{7}{8}$–9, 1–8	29	18.50
100	$\frac{1}{4}$–20, $\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10, $\frac{7}{8}$–9, 1–8	14 and 29	25.00
100A	$\frac{1}{4}$–20, $\frac{5}{16}$–18, $\frac{3}{8}$–16, $\frac{7}{16}$–14, $\frac{1}{2}$–13, $\frac{5}{8}$–11, $\frac{3}{4}$–10	10½ and 23	17.00

Screw plates of fractional sizes will be furnished U. S. Standard Threads unless otherwise ordered. V Standard and Whitworth Standard furnished at same prices. Rough Iron sizes in V and U. S. Standard threads furnished if desired.

Card



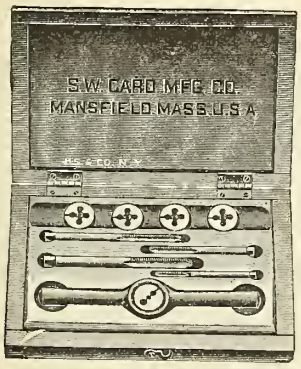
For Plug Taps fitting this plate see Index

Each complete Plate as catalogued sent in a hard wood case

	Each
Set No. 00. Stock, 6 inches long; 4 pairs of Dies and 4 Taps; cutting 2–56, 3–48, 4–36, 6–32	$2.50
Set No. 00 A. Stock, 6 inches long; 3 pairs of Dies and 4 Taps; cutting 4–36, 6–32, 8–32, 10–24	2.50
Set No. 00 M. Stock, 6 inches long; 3 pairs of Dies and 4 Taps; cutting $\frac{1}{16}$–72, $\frac{3}{32}$–56, $\frac{7}{64}$–56, $\frac{1}{8}$–40	2.50
Set No. 00 N. Stock, 6 inches long; 3 pairs of Dies and 4 Taps; cutting $\frac{1}{8}$–40, $\frac{9}{64}$–40, $\frac{5}{32}$–32, $\frac{3}{16}$–24	2.50
Set No. 0. Stock, 7½ inches long; 4 pairs of Dies and 4 Taps; cutting 4–36, 6–32, 10–24, 14–20	3.00
Set No. 0 A. Stock, 7½ inches long; 3 pairs of Dies and 4 Taps; cutting 10–24, 12–24, 14–20, 16–18	3.25
Set No. 0 M. Stock, 7½ inches long; 4 pairs of Dies and 4 Taps; cutting $\frac{7}{64}$–56, $\frac{1}{8}$–40, $\frac{3}{16}$–24, $\frac{1}{4}$–20	3.00
Set No. 0 N. Stock, 7½ inches long; 3 pairs of Dies and 4 Taps; cutting $\frac{3}{16}$–24, $\frac{7}{32}$–24, $\frac{1}{4}$–20, $\frac{9}{32}$–20	3.25

Extra Stocks and Dies

	Each		Each
Stocks for 00 Plates	$1.00	Dies	$ .50
Stocks for 0 Plates	1.25	Dies	.50



Watchmakers

Card No. 401

Set No. 1. Stock, 3¼ inches long; Dies, $\frac{7}{16}$ inch in diameter; 4 Taps and 5 Dies, including Tap Wrench Die; cutting 80, 100, 120, 140 threads.....Each, $3.50

	Each
Extra Dies	.35
Extra Taps	.35

For extra Stocks see Index

The sizes and threads in this Plate correspond to the sizes of watch screws.

The Dies in this Plate are adjustable for making tight or loose fits.

Jewelers

Card No. 402

Set No. 1. Stock, 3¼ inches long; Dies, $\frac{7}{16}$ inch in diameter; 4 Taps and 5 Dies, including Tap Wrench Die; cutting $\frac{1}{16}$, 72; $\frac{3}{32}$, 60; $\frac{1}{8}$, 50; $\frac{9}{64}$, 40.....Each, $3.50

	Each
Extra Dies	.35

For extra Taps and Stocks see index

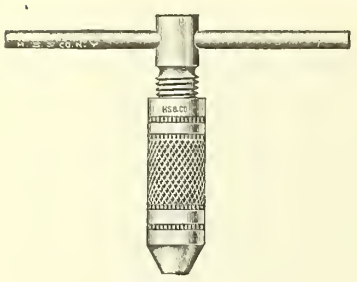
We have selected these sizes and threads as those best suited to the use of jewelers.

The Dies in this Plate are adjustable for making tight or loose fits.



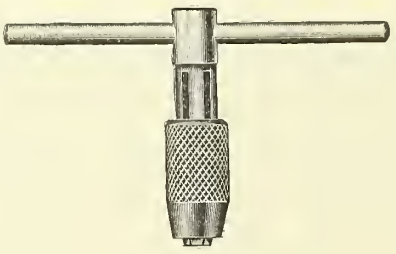
Tap Wrenches

Jaws are made of hardened tool steel. The long knurled sleeves provide a good strong grip



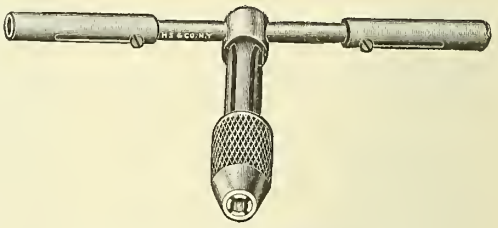
No. 21

Holds Taps $\frac{1}{16}$ to $\frac{1}{4}$ inch; holds Drills $\frac{1}{16}$ to $\frac{3}{16}$ inch.....Each $ .50



No. 22

Holds Taps $\frac{3}{16}$ to $\frac{1}{2}$ inch; holds Drills $\frac{3}{16}$ to $\frac{5}{16}$ inch.....Each $1.00

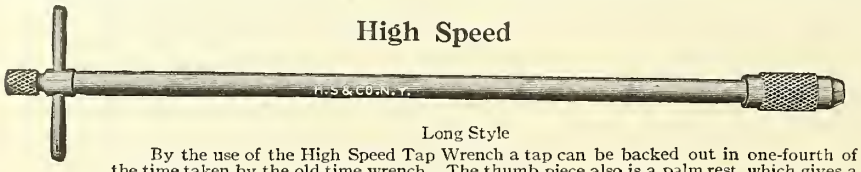


No. 23, Adjustable Handle

Holds Taps from $\frac{3}{16}$ to $\frac{1}{2}$ inch; holds Drills $\frac{3}{16}$ to $\frac{5}{16}$ inch.....Each $1.50

Handle 8 ins. over all when extended, 5¾ ins. when closed

High Speed

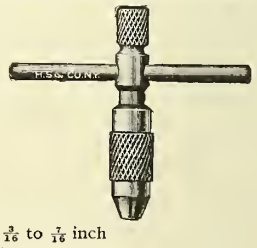


Long Style

By the use of the High Speed Tap Wrench a tap can be backed out in one-fourth of the time taken by the old time wrench. The thumb piece also is a palm rest, which gives a better hold of the wrench, resulting in better work and fewer broken taps. Note the extra lengths in which these are supplied. Every tool room should have a set.

Capacity $\frac{1}{16}$ to $\frac{3}{16}$ inch	Each
No. 4, 2¾ inches long	$.40
No. 4A, 6¼ inches long	.75

Capacity $\frac{1}{8}$ to $\frac{1}{4}$ inch	Each
No. 5, 3½ inches long	$ 50
No. 5A, 7 inches long	.90
No. 5B, 13 inches long	1.00



Capacity $\frac{3}{16}$ to $\frac{7}{16}$ inch	Each
No. 6, 4⅝ inches long	$1.00
No. 6A, 7¼ inches long	1.50
No. 6B, 13¼ inches long	1.60

Pulley

No. 5X 13 inches long, capacity ⅛ to ¼ inch.....Each $1.00

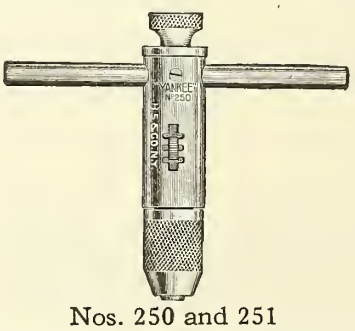
No. 6X 13¼ inches long, capacity $\frac{3}{16}$ to $\frac{7}{16}$ inch.....Each 1.60



Ratchet

Yankee

Right and Left Hand, and Rigid



Nos. 250 and 251

The distinguishing features are its adaptability, convenience, and efficiency for working in close quarters, corners, and inaccessible places.

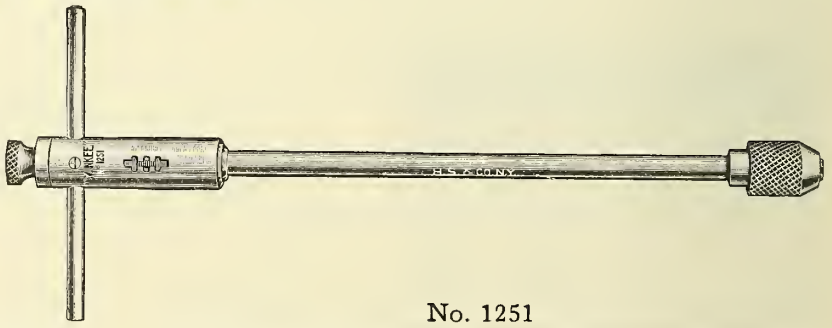
With the shifter at top, ratchet is left hand; at bottom, right hand; in center, rigid, as ordinary Tap Wrench.

The crossbar is held central by a friction device and of ample leverage for even larger taps than the chuck will hold.

A knurled thumb piece at top of Wrench affords a ready means of starting in and backing out the tap quickly. In the end of this thumb piece is a countersunk hole to use Tap Wrench on lathe center when desired.

The cross arm can be readily withdrawn, so that little room is taken up in tool chest or drawer.

Particularly suitable in holding small drills for use on lathe centers.



No. 1251

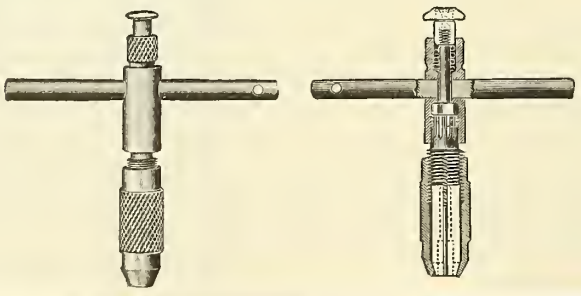
The ratchet and pawls are made of tool steel, hardened and tempered. The chuck has hardened steel jaws. All parts of tool are made of steel and polished.

No. 250. Holds up to $\frac{3}{16}$ inch Taps; outside diameter of chuck, ¾ inch; length over all, 3¼ inches Each $1.25

No. 251 Holds up to $\frac{5}{16}$ inch Taps, outside diameter of chuck, ⅞ inch; length over all, 5 inches Each $1.75

No. 1251 Same as No. 251, except length over all is 13 inches for work in steel cars, etc., and where long reach is necessary Each $2.25

Alert



This wrench can be quickly changed from a solid to a right and left, turning too without the inconvenience of adjusting by pin or pawl. The change is made by simply pressing a swivel button with the thumb or palm. When this button is released the wrench again becomes a solid tool. The cross bar is drilled both through the center and on extreme end. This feature, with the ratchet arrangement, makes it possible to do tapping operations in corners and out-of-the way places.

Another excellent feature is the knurled upper sleeve, for quick backing out.

The push button is centered, for tapping on a lathe. The wrenches carefully made, hardened, tempered and inspected.

No. 1	Capacity $\frac{1}{16}$ to $\frac{3}{16}$ inch taps	Each $1.25
No. 2	Capacity ⅛ to ¼ inch taps	Each 1.25
No. 3	Capacity $\frac{3}{16}$ to $\frac{7}{16}$ inch taps	Each 1.50

Wrenches or Holders for Taps, Reamers or Drills

Horsefield Patent Tap and Reamer

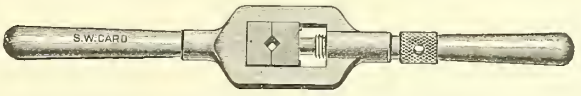


Card No. 208

These Wrenches are drop-forged from bar steel, have hardened tool steel jaws, and are light, strong and durable.
In workmanship, style and finish they are unexcelled.

Number	Length, Inches	Holding Taps	Each
6	7	1/16 to 1/4	$1.50
7	11	3/16 to 1/2	2.00
8	15	1/4 to 3/4	2.50
9	20	3/8 to 1	3.50
10	30	3/4 to 1 1/2	7.00
12	40	1 1/4 to 2 1/4	16.00

Adjustable Tap



Card No. 206

Number	Length, Inches	Holding Taps	Each
0	5	1/16 to 3/16	$1.00
1	7 1/2	1/8 to 3/8	1.50
1 1/2	9 1/2	3/16 to 1/2	2.00
2	12	1/4 to 5/8	2.00
3	14	1/2 to 3/4	3.00
4	19	3/4 to 1 1/8	4.00
5	24	7/8 to 1 1/2	5.25

Adjustable Tap and Reamer



Morse No. 156

Style of No. 0

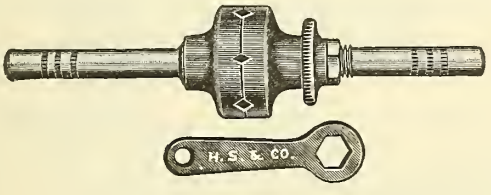


Morse No. 155

Style of all sizes from No. 1 up

Size	Length Over All Inches	Fitting Taps Inches Inclusive	Fitting Reamers Inches Inclusive	Fitting Squares Inches Inclusive	Each
No. 0	5 1/8	1/16 to 1/4	1/8 to 11/32	1/16 to 3/16	$1.60
No. 1	6	1/16 to 5/16	1/8 to 15/32	1/16 to 1/4	2.00
No. 2	8 1/2	3/16 to 9/16	3/16 to 15/32	1/8 to 5/16	2.50
Style A	12 3/4	1/4 to 13/16	1/4 to 11/16	3/16 to 7/16	3.00
Style B	17 1/8	1/2 to 1 1/8	3/8 to 1 11/32	1/4 to 3/4	4.00
Style C	23	3/4 to 1 5/8	11/16 to 1 21/32	7/16 to 1	5.00
Style D	45 1/4	1 1/4 to 2 1/16	1 1/16 to 2 1/16	3/4 to 1 1/4	15.00
Style E	50	1 3/4 to 2 1/2	1 7/16 to 2 1/2	1 to 1 5/8	47.50
Style F	56	2 1/8 to 3 1/8	2 1/8 to 3	1 1/4 to 2	62.50

Turret Head Tap and Drill



Holds drills from No. 50 to 1/4 inch. Taps from 1/16 to 1/2 inch.

This tool has six sizes of milled square holes, ranging from 1/16 to 7/32 inch square. Turret head is 1 inch in diameter, of hardened tool steel.

The holes being diametrically opposite, a center for trueing drills or taps is available.

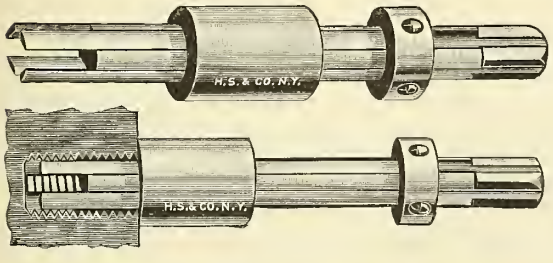
	Each
No. 133 With Wrench	$1.80

Tap Extractors

Walton

For Removing Broken Taps

This tool is a device for removing taps broken at or below the surface of the work The broken tap is removed easily and quickly, and without injury to the thread



Nominal Size of Tap	Each	Nominal Size of Tap	Each
No. 8	$1.50	1/2	$1.85
3/16	1.50	9/16	2.00
No. 10	1.50	5/8	2.20
No. 12	1.55	3/4	2.45
1/4	1.55	7/8	2.75
5/16	1.60	1	3.10
3/8	1.60	1 1/8	3.50
7/16	1.70	1 1/4	4.00

These tools can of course be used for equivalent gauge or fractional sizes, and for intermediate sizes to the next listed tool larger.

Die Holders

Diamond Die Stocks

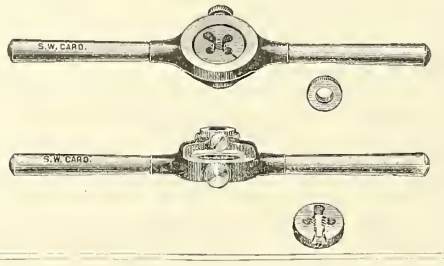
Holding Round Solid and Round Adjustable Dies



Length Inches	Outside Diameter of Die Inches	Each
3¼	7/16	$ .40
5	5/8	.40
7	13/16	.50
9	1	1.00
14	1 5/16	1.25
18	1½	1.25
18	1 9/16	1.50
23	1¾	1.50
29	2¼	1.75

Improved Die Stocks

Holding Round Solid and Round Adjustable Dies

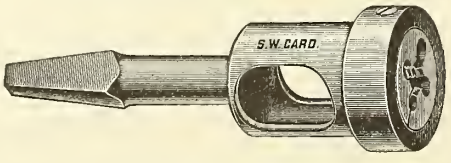


Length Inches	Outside Diameter of Die Inches	Each
7	13/16	$1.00
10½	1	1.50
14	1 5/16	2.00
23	1¾	2.25
29	2¼	2.50

Guides for Improved Screw Plate Stocks

	Each
For Dies, outside diameter 13/16 inches	$ .15
For Dies, outside diameter, 1 inch	.25
For Dies, outside diameter, 1 5/16 inches	.30
For Dies, outside diameter, 1¾ inches	.40
For Dies, outside diameter, 2¼ inches	.50

Bit Brace Die Holders



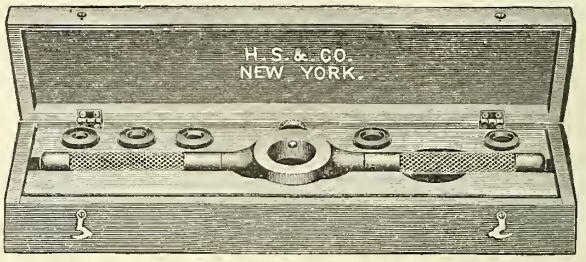
Card No. 802

		Each
No. 1.	Holding Round Adjustable Dies, five-eighths of an inch in diameter	$ .50
No. 2	Holding Smith Patent Adjustable Dies, thirteen-sixteenths of an inch in diameter	.50
No. 3.	Holding Smith Patent Adjustable Dies, one inch in diameter	.75

Prices are for Holders only

Improved Round Die Stocks

Guides for Each Cutting Size



Card No. 303

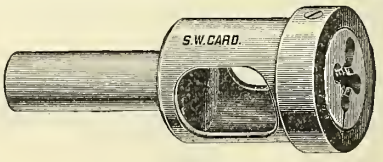
Assorted Numbers	Length Stock Inches	Diameter Die Stock Holders Inches	Range of Steel Guides	Stock and Guides
			Machine Screw Sizes	
50 S	7	13/16	4, 6, 8, 10, 12, 14	$1.90
51 S	7	13/16	4, 6, 8, 10, 12, 14, 16, 18	2.20
52 S	7	13/16	2, 3, 4, 6, 8, 10, 12, 14	2.20
53 S	7	13/16	2, 3, 4, 6, 8, 10, 12, 14, 16, 18	2.50
60 S-2	10½	1	4, 6, 8, 10, 12, 14, 16, 18	3.50
			Fractional Size V, U. S. S. or Whitworth	
54 S	7	13/16	1/8, 5/32, 3/16, 7/32, 1/4	1.75
55 S	7	13/16	1/8, 5/32, 3/16, 7/32, 1/4, 5/16	1.90
60 S	10½	1	3/16, 1/4, 5/16, 3/8, 7/16	2.75
70 S	14	1 5/16	1/4, 5/16, 3/8, 7/16, 1/2	3.50
80 S	23	1¾	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	5.00
90 S	29	2¼	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	7.00
90 S-2	10½–29	1–2¼	3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1	8.25

No Dies or Taps are furnished with these assortments.

Each Stock furnished with an assortment of Steel Guides within the range limits of the Dies Stock is intended to hold. Stock and Guides complete in hardwood hinged cover box. Everything in its place.

Lathe Die Holders

For Use in Lathe or Turret of Screw Machine



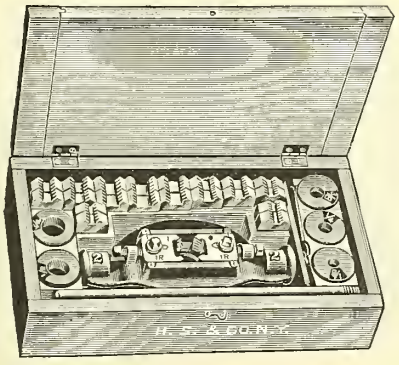
Card No. 801

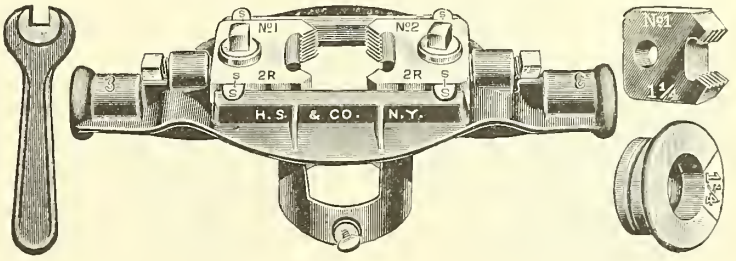
		Each
No. 1.	Holding Round Adjustable Dies, five-eighths of an inch in diameter	$ .50
	The Shanks of the No. 1 Holders are one-half inch in diameter.	
No. 1½.	Holding Smith Patent Adjustable Dies, thirteen-sixteenths of an inch in diameter	.50
	The Shanks of the No. 1½ Holders are one-half, nine-sixteenths, and eleven-sixteenths of an inch in diameter.	
No. 2.	Holding Smith Patent Adjustable Dies, one inch in diameter	.75
	The Shanks of the No. 2 Holders are one-half, nine-sixteenths, and eleven-sixteenths of an inch in diameter.	
No. 3.	Holding Smith Patent Adjustable Dies, one and five-sixteenths inches in diameter	1.50
	The Shanks of the No. 3 Holders are eleven-sixteenths, three-quarters, and thirteen-sixteenths of an inch in diameter.	
No. 4.	Holding Smith Patent Adjustable Dies, one and nine-sixteenths inches in diameter	2.75
	The Shanks of the No. 4 Holders are three-quarters, thirteen-sixteenths, and one inch in diameter.	
No. 5.	Holding Smith Patent Adjustable Dies, two and one-quarter inches in diameter	4.00
	The Shanks of the No. 5 Holders are one and one-sixteenth, one and one-eighth, and one and one-quarter inches in diameter.	

Prices are for Holders only.
When ordering mention size shank desired.

Adjustable Pipe Stocks and Dies

Genuine Armstrong



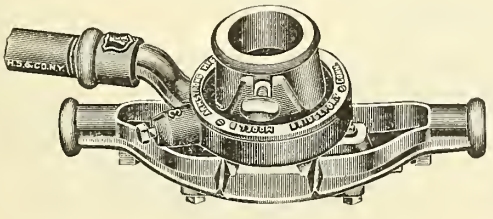


Number	Number of Dies	Cutting Pipe Inches	Complete	Extra Stock	Extra Dies	Extra Bushings	Extra Wrenches	Collar Screws	Adjusting Screws	Thumb Screws	Handles Set	Long Guide	Leader Screw
*1	4 Right	⅛ to ½	$9.00	$3.25	$1.25	$ .20	$ .25	$ .12	$ .10	$ .10	$ .30		
1	4 each Right and Left	⅛ to ½	14.00	3.25	1.25	.20	.25	.12	.10	.10	.30		
*2	5 Right	¼ to 1	12.00	4.00	1.50	.25	.25	.12	.10	.10	.50	$. 50	
2	6 Right	⅛ to 1	14.00	4.00	1.50	.25	.25	.12	.10	.10	.50	.50	
2	5 each Right and Left	¼ to 1	20.00	4.00	1.50	.25	.25	.12	.10	.10	.50	.50	
2	6 each Right and Left	⅛ to 1	23.00	4.00	1.50	.25	.25	.12	.10	.10	.50	.50	
*2½	4 Right	½ to 1¼	12.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
2½	6 Right	¼ to 1¼	18.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
2½	4 each Right and Left	½ to 1¼	18.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
2½	6 each Right and Left	¼ to 1¼	23.00	4.50	3.25	.40	.25	.15	.15	.10	.50		
*3	3 Right	1¼ to 2	20.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	4 Right	1 to 2	24.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	5 Right	¾ to 2	28.50	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	6 Right	½ to 2	33.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	3 each Right and Left	1¼ to 2	32.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	4 each Right and Left	1 to 2	40.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	5 each Right and Left	¾ to 2	48.50	7.00	4.00	.50	.50	.15	.15	.15	.75		
3	6 each Right and Left	½ to 2	57.00	7.00	4.00	.50	.50	.15	.15	.15	.75		
*6	2 Right	2½ and 3	40.00	25.00	15.00	1.00	.50	.25	.20	.15	3.00	.....	$4.00
6	2 each Right and Left	2½ and 3	55.00	25.00	15.00	1.00	.50	.25	.20	.15	3.00	.....	4.00
*7	4 Right	2½ to 4	60.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 Right	2½ and 3	45.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 Right	3½ and 4	45.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	4 each Right and Left	2½ to 4	92.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 each Right and Left	2½ and 3	60.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00
7	2 each Right and Left	3½ and 4	60.00	30.00	16.00	1.50	.75	.25	.20	.15	3.00	.....	5.00

Sets marked * will be supplied unless otherwise specified.

Ratchet Attachments

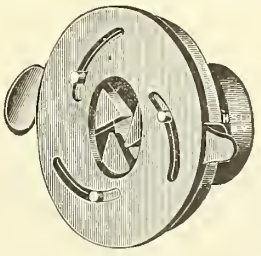
For Armstrong Pipe Stocks



	Each
For No. 2 Stock	$2.50
For No. 2½ Stock	3.00
For No. 3 Stock	3.50
For No. 6 Stock	5.00
For No. 7 Stock	5.00

Bard Adjustable Bushings

For Armstrong Pipe Stocks



	Each
For No. 1 Stock	$4.50
For No. 2 Stock	5.00
For No. 2½ Stock	6.00
For No. 3 Stock	8.00

Nye Skip Tooth Dies

For Armstrong Pipe Stocks

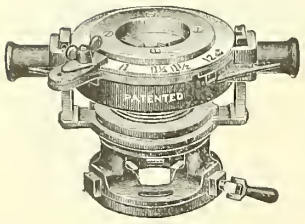
These Dies are made from a solid block of the finest steel obtainable and are warranted free from all defects in material or workmanship. They are made under the Nye skin tooth patent and are the easiest cutting Pipe Dies on the market.



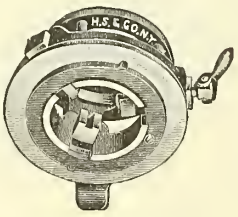
	Each
⅛ inch to ½ inch to fit No. 1 stock	$3.50
⅛ inch to 1 inch to fit No. 2 stock	3.50
½ inch to 1¼ inch to fit No. 2½ stock	5.00
½ inch x ¾ D. E. inch to fit No. 2½ stock	5.00
1 inch x 1¼ D. E. inch to fit No. 2½ stock	5.00
½ inch to 2 inch to fit No. 3 stock	5.00
2½ inch x 3 D. E. inch to fit No. 6 stock	25.00
3½ inch x 4 D. E. inch to fit No. 7 stock	35.00

Pipe Die Stocks

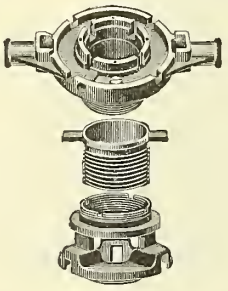
Beaver



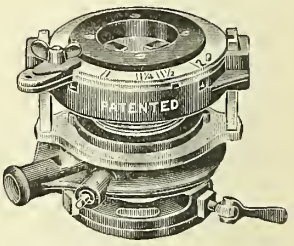
No. 25. 1 to 2 inches



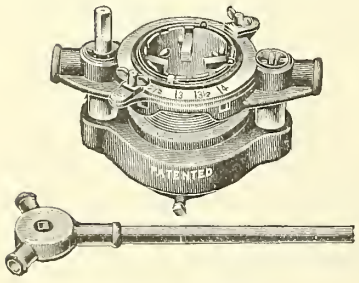
Universal Chuck



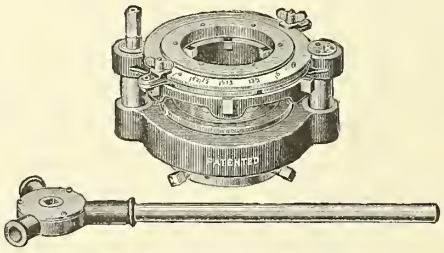
Detachable Barrel



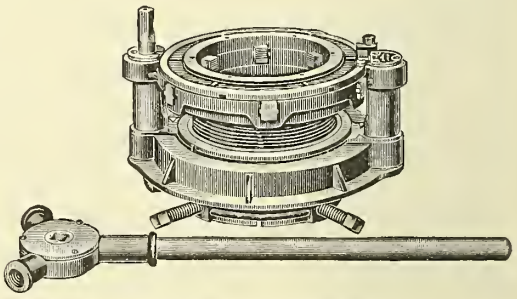
No. 26. 1 to 2-inch Ratchet



No. 41. 2½ to 4 inches



No. 60. 2½ to 6 inches



No. 80. 4½ to 8 inches

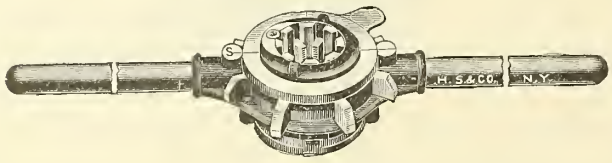
These Die Stocks have narrow receding dies, making it possible for one man to cut any size of pipe. They are adjustable for cutting over and under size threads.

Nos. 25, 26 and 41 thread all sizes with one set of dies (no changing); No. 60 uses two sets (2½, 3, 3½) and (4, 4½, 5, 6); No. 80 two sets (4½, 5, 6), and (7, 8); Nos. 25 and 26 are furnished with a universal chuck which centers and grips all sizes by simply turning a cam, insuring straight threads and doing away with all loose bushings and grip screws.

Nos. 25 and 26 have detachable barrels or lead screws, and in case of wear are easily replaced.

Number	25	26	41	60	80
Threads Pipe, right hand, inches	1 to 2	1 to 2	2½ to 4	2½ to 6	4½ to 8
Shipping Weight, pounds	25	30	100	200	230
Complete Stock	$30.00	$35.00	$110.00	$220.00	$300.00
Extra Dies, per set	3.50	3.50	9.00	14.00	20.00

Beaverette



No. 6. ¼ to ¾ inch

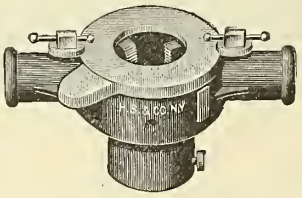
These Stocks thread four sizes of pipe, of two different pitches without changing dies. Two sets of dies, each threading two sizes, are held in the Stock. Both are operated by a single cam so as to retire one set while the other is being adjusted to the desired size. The dies are of the wide non-receding type. A three-jaw centering device does away with all loose bushings.

No. 6. Threads ¼, ⅜, ½ and ¾ inch complete, $15.00.

Extra Dies, ⅛ (¼-⅜), (½–¾), (R. or L), per single set, $3.00.

Net weight 8 pounds.

Warren



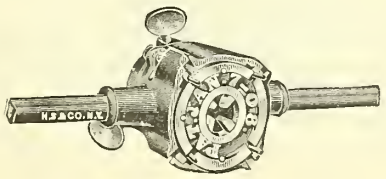
Especially adapted for threading electric conduit pipe

These Stocks thread two sizes of pipe with one set of dies. They are strong and simple in construction, made entirely of steel and malleable iron. The dies are of the wide non-receding type. Furnished with right or left hand dies, as ordered. Dies are adjustable to cut over and under size threads.

Number	Threading, Inch	Complete	Extra Dies
120	¼ and ⅜	$6.50	$1.50
121	½ and ¾	7.00	1.60
122	1 and 1¼	8.00	2.00
123	1½ and 2	10.00	2.50

Toledo Pipe Threading Devices

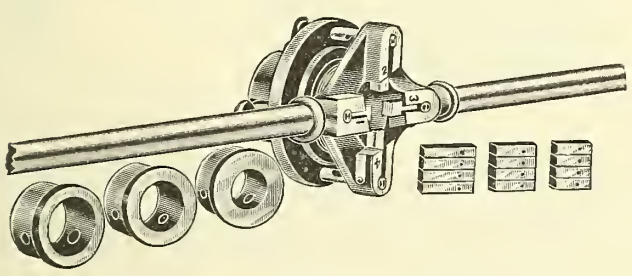
Adjustable



No. 0 threads ⅛ to ¾-inch pipe, utilizing three sets of Dies, one set threads ⅛-inch pipe, another the ¼ and ⅜ inch, and the third set ½ and ¾ inch.

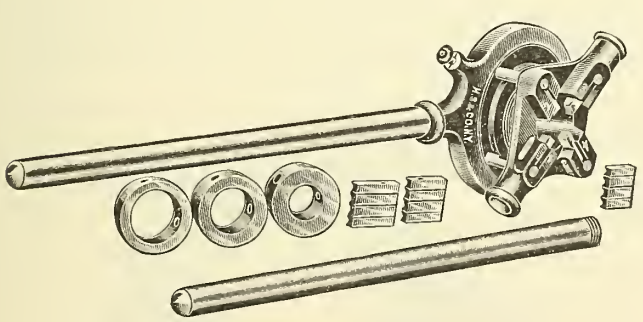
The tool is light and compact, and measures 26 inches between tips of handles. Left Hand Dies for ½ inch and ¾ inch sizes only, can be supplied. Weight 6½ pounds.

No. 0, ⅛ to ¾ inch inclusive, complete $16.00
Extra Dies, right hand, single set 2.50
Extra Dies, right hand, complete set 7.50



With a No. 1 device, one man can thread 2-inch pipe easily with one hand. A separate set of Dies is used for each size of pipe. The tool is compact and weighs 17 pounds.

No. 1, 1 to 2 inches inclusive, complete $24.00
Extra Dies, right hand, single set 2.50
Extra Dies, right hand, complete set 10.00



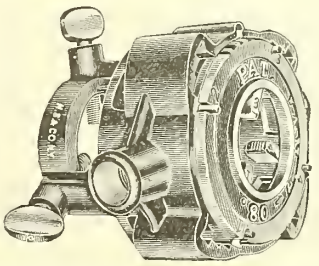
No. 1A device is adapted for threading pipe in restricted places, otherwise inaccessible. The tool is the same as the No. 1, except it has ratchet attachment.

No. 1A, 1 to 2 inches inclusive, complete $30.00
Extra Dies, right hand, single set 2.50
Extra Dies, right hand, complete set 10.00

Left Hand Devices

Both the No. 1 and No. 1A devices can be furnished (reversed in all their parts) for cutting left hand threads only. Neither tool will do both.

Adjustable



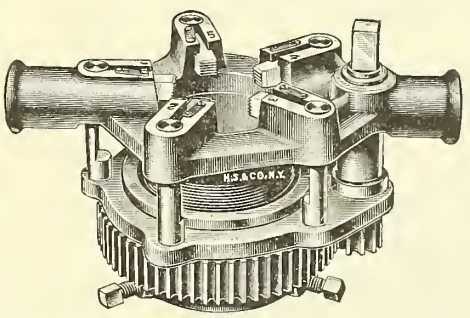
No. 10 tool will thread four sizes of pipe, from 1 to 2 inches, with one set of Dies. Entirely self-contained, there being no loose parts. Micrometer thumb screws enable the operator to center the tool on the pipe without bushings. Left hand Dies can be furnished, but require a separate set for each size of pipe, or four sets to thread the four sizes from 1 to 2 inch pipe. Tool weighs 17 pounds.

No. 10, 1 to 2 inches inclusive, right hand, complete $28.00
Extra Dies, right hand, per set 2.75
Extra Dies, left hand, single set 2.75
Extra Dies, left hand, complete set 11.00

No. 10A is the same as the No. 10, except with ratchet attachment

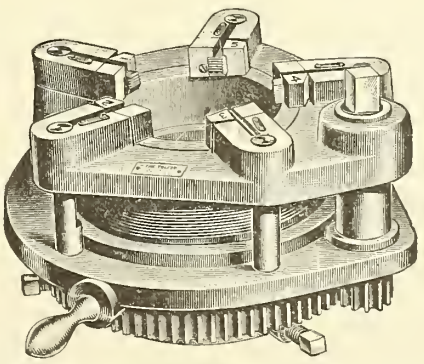
No. 10A Complete 34.00

Geared Adjustable



No. 2 has a capacity of 2½ to 4-inch pipe. With it one man can cut 4-inch threads easily. Tool is operated by ratchet handle or driving cross. Compact and portable. Weighs 80 pounds.

No. 2, 2½ to 4 inches, complete $100.00
Extra Dies, right hand, single set 8.00
Extra Dies, right hand, complete set 32.00



No. 3 threads 8-inch pipe with such ease that one man can operate it. The tool is compact and portable. Its net weight is 155 pounds. With clearance in other directions it may be operated on a pipe, the center of which is within 10 inches of a wall or other obstruction.

No. 3, 4½ to 8 inches, inclusive, complete $300.00
Extra Dies, right hand, single set 12.00
Extra Dies, right hand, complete set 60.00

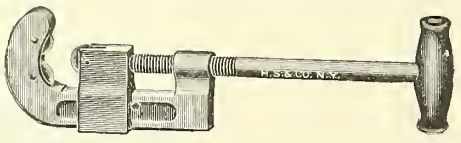
Pipe Cutters



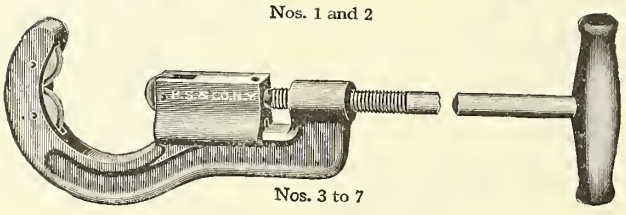
Genuine Saunders, Wheel and Roller

Number	1	2	3	4	5
Cuts pipe from, inches	⅛ to 1	1 to 2	2 to 3	2½ to 4	4 to 6
Each	$3.00	4.50	11.00	18.00	28.00
Extra wheels or cutters, each	.24	.32	.60	.60	.60
Extra rollers, each	.24	.32	.50	.50	.60

Barnes Improved Three Wheel

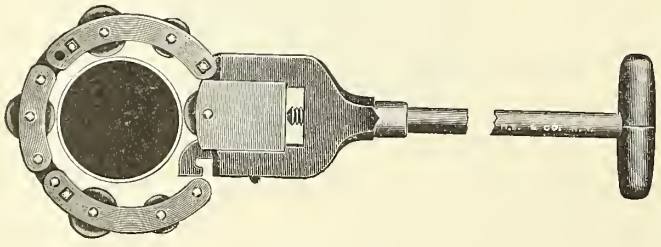


Nos. 1 and 2



Nos. 3 to 7

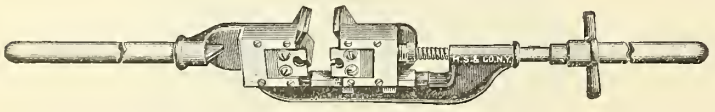
Number	1	2	3	4	5	6	7
Cuts pipe from, inches	⅛ to 1	½ to 2	1½ to 3	2½ to 4	4 to 6	6 to 8	9 to 12
Each	$4.50	6.00	10.00	20.00	30.00	40.00	50.00
Extra cutters, each	.25	.30	.40	.50	.75	.75	.75



Hall Patent

For cutting Cast Iron or Soil Pipe

Number	1	2	3
Cuts cast iron pipe, inches	4, 6, 8	10, 12, 14	16, 18, 20, 24
Cutters complete, each	$25.00	$34.00	$50.00
Extra loops, with wheels, each	7.00	8.25	10.00
Block with wheel, each	.95	1.00	1.25
Wheels, each	.23	.26	.26
Spindle with handle, each	.70	1.00	1.60
Extra bolts for loops, each	.12	.12	.14

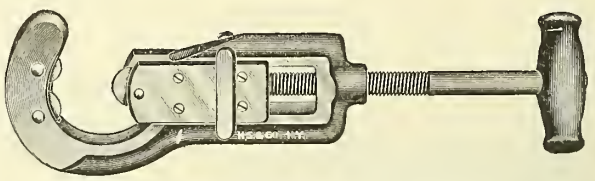


Beaver, "Square End"

They cut the pipe off square and clean, leaving no burrs to ream or file, and preserve the full pipe opening, and make square ends on which threading dies start easier, last longer and run straight.

Automatic feed. Simply pull on the handles same as a Die Stock. The form of the knives regulates the depth of cut. Quicker and easier than a wheel cutter and you cannot split or crush the pipe.

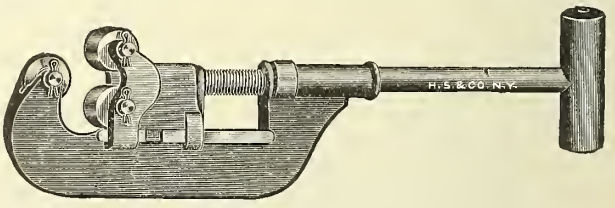
No.	Size Inches	Complete Tool (with two sets Extra Knives)	Shipping Weight Pounds	Extra Set Knives
1	⅛ to 1	$18.00	8	$1.20
5	½ to 2	20.00	13	1.50
10	2½ to 4	90.00	53	2.50



Genuine Armstrong Improved

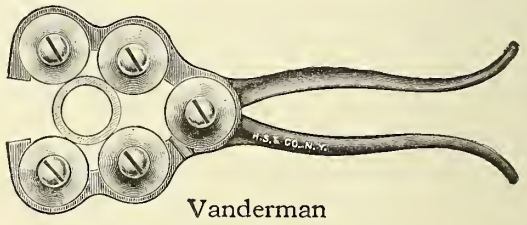
The Armstrong Cutter has a very large holding or cutting capacity. With each cutter is furnished two rollers to take the place of the two wheels in the hook, so that the cutter can be used as a single wheel or three-wheel cutter.

Number	1B	2B	3B
Cuts pipe from, inches	⅛ to 1¼	½ to 2½	1½ to 4
Each	$4.50	6.00	15.00
Extra cutter wheels	.25	.30	.50
Extra rollers	.25	.30	.50



Trimo

Number	1	2	3
Cuts pipe from, inches	⅛ to 1¼	½ to 2	1¼ to 3
Each	$4.50	6.00	10.00
Extra wheels or cutters, each	.30	.30	.40
Extra rollers, each	.30	.30	.40
Extra frames, each	2.25	2.50	3.50
Extra handles, each	.35	.35	.35
Extra handle screws, each	1.00	1.25	2.00



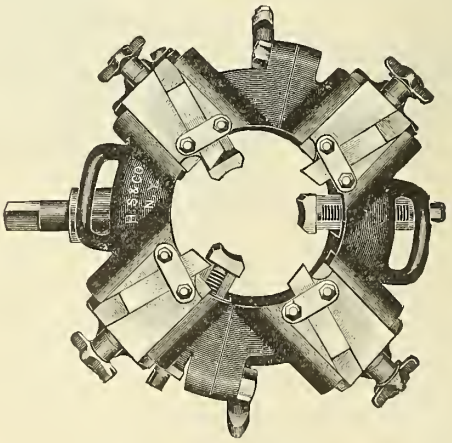
Vanderman

For cutting Lead Pipe

Cuts quickly and smoothly and makes no chips

Nickel-plated, each, $1.25 Japanned, each, **$1.00**

Extra Cutter Wheels, per set 25 cents



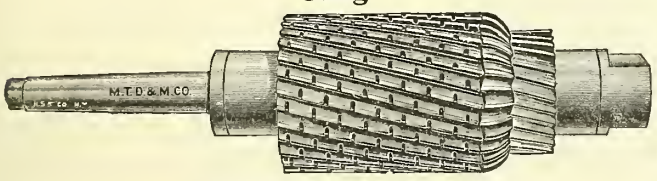
Toledo No. 250

The cutting is done by four knives automatically fed by star feed. Will cut pipe perfectly square without a burr. The knives are of uniform section and can be reground. The cutter can, if necessity demands, be split in two to go on pipe that is set up.

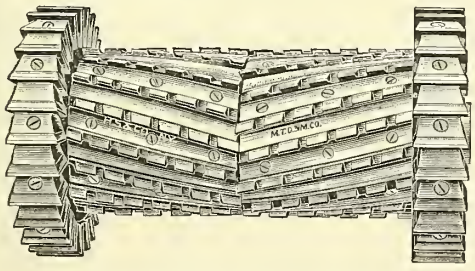
With ratchet attachment, each....$80.00

Milling Cutters

Gang

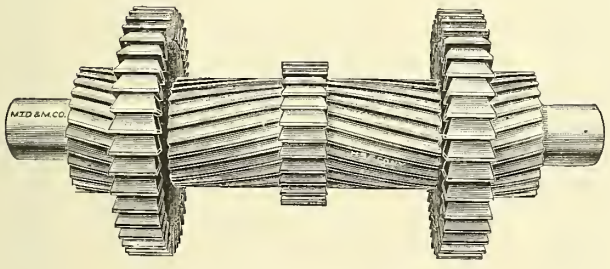


One with Nicked Teeth



Spiral and Side Cutters

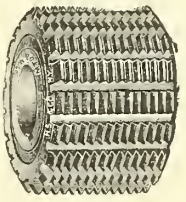
With Inserted Teeth



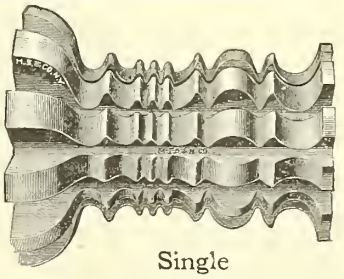
Spiral and Side Cutters

Formed

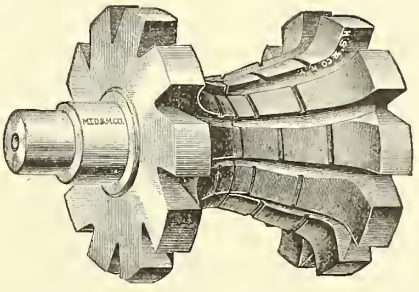
These Cutters can be sharpened without changing their form



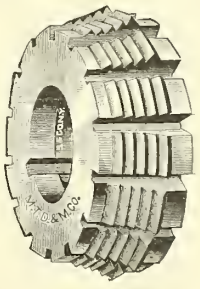
Single



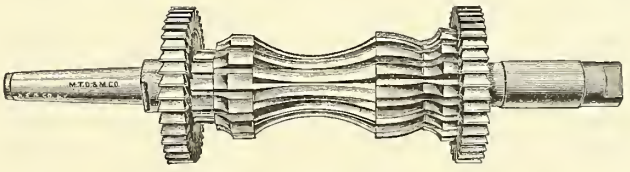
Single



Single



Single



Gang

Table of Cutting Speeds

Diameter Inches	Feet Per Minute: 5	10	15	20	25	30	35	40	45	50
	Revolutions Per Minute									
½	38.2	76.4	114.6	152.9	191.1	229.3	267.5	305.7	344.0	382.2
⅝	30.6	61.2	91.8	122.5	153.1	183.7	214.3	244.9	275.5	306.1
¾	25.4	50.8	76.3	101.7	127.1	152.5	178.0	203.4	228.8	254.2
⅞	21.8	43.6	65.5	87.3	109.1	130.9	152.7	174.5	196.3	218.9
1	19.1	38.2	57.3	76.4	95.5	114.6	133.8	152.9	172.0	191.1
1⅛	17.0	34.0	51.0	68.0	85.0	102.0	119.0	136.0	153.0	170.0
1¼	15.3	30.6	45.8	61.2	76.3	91.8	106.9	122.5	137.4	153.1
1⅜	13.9	27.8	41.7	55.6	69.5	83.3	97.2	111.1	125.0	138.9
1½	12.7	25.4	38.2	50.8	63.7	76.3	89.2	101.7	114.6	127.1
1⅝	11.8	23.5	35.0	47.0	58.8	70.5	82.2	93.9	105.7	117.4
1¾	10.9	21.8	32.7	43.6	54.5	65.5	76.4	87.3	98.2	109.1
1⅞	10.2	20.4	30.6	40.7	50.9	61.1	71.3	81.5	91.9	101.9
2	9.6	19.1	28.7	38.2	47.8	57.3	66.9	76.4	86.0	95.5
2¼	8.5	17.0	25.4	34.0	42.4	51.0	59.4	68.0	76.2	85.0
2½	7.6	15.3	22.9	30.6	38.2	45.8	53.5	61.2	68.8	76.3
2¾	6.9	13.9	20.8	27.8	34.7	41.7	48.6	55.6	62.5	69.5
3	6.4	12.7	19.1	25.5	31.8	38.2	44.6	51.0	57.3	63.7
3½	5.5	10.9	16.4	21.8	27.3	32.7	38.2	43.6	49.1	54.5
4	4.8	9.6	14.3	19.1	23.9	28.7	33.4	38.2	43.0	47.8
4½	4.2	8.5	12.7	16.9	21.2	25.4	29.6	34.0	38.1	42.4
5	3.8	7.6	11.5	15.3	19.1	22.9	26.7	30.6	34.4	38.2
5½	3.5	6.9	10.4	13.9	17.4	20.8	24.3	27.8	31.3	34.7
6	3.2	6.4	9.6	12.7	15.9	19.1	22.3	25.5	28.7	31.8
7	2.7	5.5	8.1	10.9	13.6	16.4	19.1	21.8	24.6	27.3
8	2.4	4.8	7.2	9.6	11.9	14.3	16.7	19.1	21.1	23.9
9	2.1	4.2	6.4	8.5	10.6	12.7	14.9	17.0	19.1	21.2
10	1.9	3.8	5.7	7.6	9.6	11.5	13.4	15.3	17.2	19.1
11	1.7	3.5	5.2	6.9	8.7	10.4	12.2	13.9	15.6	17.4
12	1.6	3.2	4.8	6.4	8.0	9.6	11.1	12.7	14.3	15.9
13	1.5	2.9	4.4	5.9	7.3	8.8	10.3	11.8	13.2	14.7
14	1.4	2.7	4.1	5.5	6.8	8.1	9.6	10.9	12.3	13.6
15	1.3	2.5	3.8	5.1	6.4	7.6	8.9	10.2	11.5	12.7
16	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.7	11.9
17	1.1	2.2	3.4	4.5	5.6	6.7	7.9	9.0	10.1	11.2
18	1.1	2.1	3.2	4.2	5.3	6.4	7.4	8.5	9.6	10.6
19	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.1	10.1
20	1.0	1.9	2.9	3.8	4.8	5.7	6.7	7.6	8.6	9.6
21	.9	1.8	2.7	3.6	4.5	5.5	6.4	7.3	8.1	9.1
22	.9	1.7	2.6	3.5	4.3	5.2	6.1	6.9	7.8	8.7
23	.8	1.7	2.5	3.3	4.1	5.0	5.8	6.6	7.5	8.3
24	.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0
25	.8	1.5	2.3	3.1	3.8	4.6	5.3	6.1	6.9	7.6
26	.7	1.5	2.2	2.9	3.7	4.4	5.1	5.9	6.6	7.3
27	.7	1.4	2.1	2.8	3.5	4.2	5.0	5.7	6.4	7.1
28	.7	1.4	2.0	2.7	3.4	4.1	4.8	5.5	6.1	6.8
29	.7	1.3	2.0	2.6	3.3	4.0	4.6	5.3	5.9	6.6
30	.6	1.3	1.9	2.5	3.2	3.8	4.5	5.1	5.7	6.4

The above table will be convenient for finding the number of revolutions per minute required to give a periphery speed from 5 to 50 feet per minute of diameters from ½ to 30 inches.

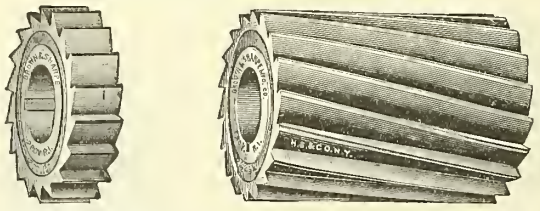
Examples: A mill 2 inches in diameter to have a periphery speed of 35 feet per minute, should make about 67 revolutions, while a 1⅛-inch mill should make 120 revolutions to have the same periphery speed. If a ¾-inch mill makes 250 revolutions per minute, the periphery speed is about 50 feet.

For Standard Keyways and suggestions see Index.

Milling Cutters with coarse teeth, specially adapted for heavy work, made to order at special prices.

Gang or Formed Milling Cutters can be supplied in any combination or shape desired. Prices furnished on receipt of sketch, templet or sample of piece to be milled. Always give diameter of hole and direction in which cutter is to revolve. Above illustrations are suggestive and show specials that have been made.

Milling Cutters



Cutters of ¾ inch face and over have teeth of a spiral form. Cutters varying from the following list are made to order of any required size Brown & Sharpe Nos. M-9 to M-162, Morse Style No. 126

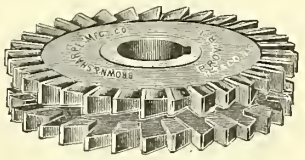
Number	Diameter Inches	Width of Face, Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
M-9	2¼	3/16	⅞	$1.30	$2.05
M-10	2¼	½	⅞	1.75	2.85
M-11	2¼	1	⅞	2.50	4.55
M-12	2¼	1¾	⅞	3.30	5.80
M-14	2½	3/16	1	1.30	2.10
M-15	2½	¼	1	1.40	2.30
M-16	2½	5/16	1	1.50	2.55
M-17	2½	⅜	1	1.60	2.65
M-18	2½	7/16	1	1.70	2.80
M-19	2½	½	1	1.80	3.00
M-20	2½	9/16	1	1.90	3.20
M-21	2½	⅝	1	2.00	3.45
M-22	2½	11/16	1	2.10	3.55
M-23	2½	¾	1	2.20	3.80
M-24	2½	13/16	1	2.30	4.00
M-25	2½	⅞	1	2.40	4.15
M-26	2½	1	1	2.60	4.55
M-27	2½	1⅛	1	2.75	4.85
M-28	2½	1¼	1	2.90	5.15
M-29	2½	1½	1	3.10	5.65
M-30	2½	1¾	1	3.40	6.30
M-31	2½	2	1	3.70	6.90
M-32	2½	2¼	1	3.90	7.35
M-33	2½	2½	1	4.10	7.85
M-34	2½	2¾	1	4.25	8.20
M-35	2½	3	1	4.50	8.80
M-36	2½	3½	1	5.00	9.90
M-37	2½	4	1	5.50	11.00
M-38	2¾	3/16	1	1.30	2.20
M-39	2¾	¼	1	1.50	2.50
M-40	2¾	5/16	1	1.60	2.70
M-41	2¾	⅜	1	1.80	2.90
M-42	2¾	7/16	1	1.85	3.20
M-43	2¾	½	1	1.90	3.30
M-44	2¾	9/16	1	2.00	3.55
M-45	2¾	⅝	1	2.10	3.90
M-45A	2¾	11/16	1	2.30	4.05
M-45B	2¾	¾	1	2.50	4.35
M-45C	2¾	⅞	1	2.85	4.95
M-46	2¾	1	1	3.10	5.35
M-47	2¾	1⅛	1	3.25	5.50
M-48	2¾	1¼	1	3.40	6.10
M-49	2¾	1½	1	3.75	6.80
M-50	2¾	1¾	1	4.00	7.40
M-51	2¾	2	1	4.20	7.95
M-52	2¾	2½	1	4.60	9.00
M-53	2¾	3	1	5.00	10.00
M-54	2¾	3½	1	5.50	11.20
M-55	2¾	4	1¼	6.00	12.65
M-56	2¾	5	1¼	7.40	15.30
M-57	2¾	6	1¼	10.00	19.80
M-61	3	3/16	1	1.35	2.35
M-62	3	¼	1	1.60	2.75
M-63	3	5/16	1	1.85	3.20
M-64	3	⅜	1¼	2.10	3.55
M-65	3	7/16	1¼	2.25	3.85
M-66	3	½	1¼	2.40	4.10
M-67	3	9/16	1¼	2.55	4.40
M-68	3	⅝	1¼	2.70	4.70
M-69	3	11/16	1¼	2.85	4.95
M-70	3	¾	1¼	3.00	5.20
M-71	3	⅞	1¼	3.30	5.75
M-72	3	1	1¼	3.60	6.35
M-73	3	1¼	1¼	4.00	7.20
M-74	3	1½	1¼	4.30	7.85
M-75	3	1¾	1¼	$4.50	$8.45
M-76	3	2	1¼	4.70	9.00
M-77	3	2½	1¼	5.20	10.35
M-78	3	3	1¼	5.40	11.20
M-79	3	3½	1¼	5.90	12.50
M-80	3	4	1¼	6.40	13.80
M-81	3	5	1¼	7.80	16.90
M-82	3	6	1¼	10.80	22.15
M-83	3½	3/16	1	1.45	2.65
M-84	3½	¼	1	1.70	3.10
M-85	3½	5/16	1	2.05	3.65
M-86	3½	⅜	1	2.40	4.25
M-87	3½	7/16	1	2.75	4.40
M-88	3½	½	1¼	3.15	5.45
M-89	3½	9/16	1¼	3.30	5.75
M-90	3½	⅝	1¼	3.45	6.05
M-91	3½	11/16	1¼	3.65	6.45
M-92	3½	¾	1¼	3.85	6.80
M-93	3½	⅞	1¼	4.35	7.70
M-94	3½	1	1¼	4.75	8.25
M-95	3½	1¼	1¼	5.15	9.10
M-96	3½	1½	1¼	5.60	10.00
M-97	3½	1¾	1¼	6.00	11.30
M-98	3½	2	1¼	6.40	12.30
M-99	3½	2½	1¼	6.90	13.80
M-100	3½	3	1¼	7.40	15.35
M-101	3½	3½	1¼	8.15	16.70
M-102	3½	4	1¼	9.15	19.30
M-103	3½	5	1¼	10.40	22.20
M-104	3½	6	1¼	11.90	26.30
M-104A	4	¼	1	2.00	3.80
M-104B	4	5/16	1	2.50	4.55
M-104C	4	⅜	1	3.00	5.35
M-105	4	¼	1¼	2.00	3.80
M-106	4	5/16	1¼	2.50	4.55
M-107	4	⅜	1¼	3.00	5.35
M-108	4	7/16	1¼	3.50	6.15
M-109	4	½	1¼	3.90	6.85
M-110	4	½	1½	3.90	6.85
M-111	4	9/16	1¼	4.10	7.25
M-112	4	⅝	1¼	4.30	7.65
M-113	4	11/16	1¼	4.50	8.05
M-114	4	¾	1¼	4.70	8.45
M-115	4	¾	1½	4.70	8.45
M-116	4	⅞	1¼	5.15	9.30
M-117	4	1	1¼	5.65	10.25
M-118	4	1	1½	5.65	10.25
M-119	4	1¼	1¼	6.25	11.60
M-120	4	1¼	1½	6.25	11.60
M-121	4	1½	1¼	6.65	12.70
M-122	4	1½	1½	6.65	12.70
M-123	4	1¾	1¼	7.05	13.70
M-124	4	1¾	1½	7.05	13.70
M-125	4	2	1¼	7.45	14.85
M-126	4	2	1½	7.45	14.85
M-127	4	2½	1¼	8.40	17.20
M-128	4	3	1¼	9.00	19.10
M-128A	4	3	1½	9.00	19.10
M-129	4	3½	1¼	10.00	21.55
M-130	4	4	1¼	11.00	23.95
M-131	4	4	1½	11.00	23.95
M-132	4	5	1¼	13.50	28.95
M-133	4	5	1½	13.50	28.95
M-134	4	6	1¼	15.50	34.45

(Continued lower left corner of next page)

In ordering state diameter, width of face, and size of hole desired. For Standard Keyways and suggestions see Index.

Milling Cutters

Interlocking Side



These Cutters are made in pairs and can be adjusted easily for maintaining a standard width of slot.

Brown & Sharpe Nos. S-200 to S-226, Morse Style No. 126 G

Number	Diameter Inches	Total Width of Face, Inches	Hole Inches	Carbon Steel Pair	High Speed Steel Pair
S-200	2	3/8	1/2	$3.70	$6.10
S-201	2	1/2	1/2	4.00	6.50
S-202	2	3/4	1/2	4.40	7.10
S-203	2	3/8	5/8	3.70	6.10
S-204	2	1/2	5/8	4.00	6.50
S-205	2	3/4	5/8	4.40	7.10
S-206	2 1/2	1/2	7/8	4.40	6.60
S-207	2 1/2	3/4	7/8	4.90	7.40
S-208	2 1/2	1	7/8	5.30	8.20
S-209	2 3/4	1/2	7/8	4.60	7.10
S-210	2 3/4	3/4	7/8	5.30	8.00
S-211	2 3/4	1	7/8	5.60	8.90
S-212	3	1/2	1	4.90	7.70
S-213	3	3/4	1	6.00	9.50
S-214	3	1	1	6.70	10.80
S-215	3 1/2	1 1/8	1	9.10	15.30
S-216	3 1/2	1 1/4	1	9.10	15.30
S-217	4	1 1/4	1	11.10	18.90
S-218	4	1 1/4	7/8	11.10	18.90
S-219	4	1 1/2	1	12.00	20.80
S-220	5	1 1/2	1	12.70	24.90
S-221	5	1 3/4	1	13.80	27.20
S-222	6	1 7/8	1 1/4	17.30	37.10
S-223	6	1 7/8	1 1/2	17.30	37.10
S-224	7	2 1/4	1 1/4	34.50	63.10
S-225	8	2 3/4	1 1/4	46.00	93.30
S-226	8	2 3/4	1 1/2	46.00	93.30

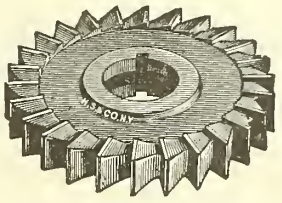
Milling Cutters

Brown & Sharpe Nos. M-9 to M-162, Morse Style No. 126

(Continued from preceding page)

Number	Diameter Inches	Width of Face, Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
M-136	4	6	1 1/2	$15.50	$34.45
M-137	4 1/2	3/8	1 3/4	3.35	6.20
M-138	4 1/2	3/8	2	3.35	6.20
M-139	4 1/2	7/16	1 3/4	3.75	6.90
M-140	4 1/2	7/16	2	3.75	6.90
M-141	4 1/2	1/2	1 3/4	4.10	7.50
M-142	4 1/2	1/2	2	4.10	7.50
M-143	4 1/2	9/16	1 3/4	4.40	8.15
M-144	4 1/2	9/16	2	4.40	8.15
M-145	4 1/2	5/8	1 3/4	4.60	8.60
M-146	4 1/2	5/8	2	4.60	8.60
M-147	4 1/2	11/16	1 3/4	4.85	9.10
M-148	4 1/2	11/16	2	4.85	9.10
M-149	4 1/2	3/4	1 3/4	5.10	9.60
M-150	4 1/2	3/4	2	5.10	9.60
M-151	4 1/2	7/8	1 3/4	5.50	10.50
M-152	4 1/2	7/8	2	5.50	10.50
M-153	4 1/2	1	1 3/4	6.00	11.55
M-154	4 1/2	1	2	6.00	11.55
M-155	4 1/2	1 1/4	1 3/4	6.60	13.00
M-156	4 1/2	1 1/4	2	6.60	13.00
M-157	4 1/2	1 1/2	1 3/4	7.25	14.60
M-158	4 1/2	1 1/2	2	7.25	14.60
M-159	4 1/2	1 3/4	1 3/4	8.00	16.30
M-160	4 1/2	1 3/4	2	8.00	16.30
M-161	4 1/2	2	1 3/4	8.75	18.00
M-162	4 1/2	2	2	8.75	18.00

Side



These Cutters are often used in pairs for sizing nuts, bolt heads, etc., and are then called "Straddle Mills." They have teeth upon both sides and edges. Other sizes made to order.

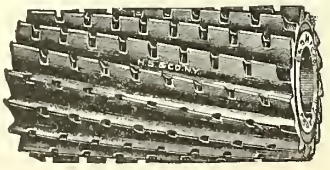
Brown & Sharpe Nos. S-10 to S-54, Morse Style No. 126 B

Number	Diameter Inches	Width of Face Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
S-10	2	3/16	1/2	$1.85	$3.05
S-11	2	1/4	1/2	2.00	3.25
S-12	2	3/8	1/2	2.20	3.55
S-13	2	3/16	5/8	1.85	3.05
S-14	2	1/4	5/8	2.00	3.25
S-15	2	3/8	5/8	2.20	3.55
S-16	2 1/2	1/4	7/8	2.20	3.30
S-17	2 1/2	5/16	7/8	2.30	3.60
S-18	2 1/2	3/8	7/8	2.45	3.70
S-19	2 1/2	7/16	7/8	2.55	3.85
S-20	2 1/2	1/2	7/8	2.65	4.10
S-21	2 3/4	1/4	7/8	2.30	3.55
S-22	2 3/4	5/16	7/8	2.50	3.80
S-23	2 3/4	3/8	7/8	2.65	4.00
S-24	2 3/4	7/16	7/8	2.75	4.35
S-25	2 3/4	1/2	7/8	2.80	4.45
S-26	3	1/4	1	2.45	3.85
S-27	3	5/16	1	2.75	4.35
S-28	3	3/8	1	3.00	4.75
S-29	3	7/16	1	3.20	5.10
S-30	3	1/2	1	3.35	5.40
S-31	3 1/2	7/16	1	3.75	5.75
S-32	3 1/2	1/2	1	4.20	6.95
S-33	3 1/2	9/15	1	4.55	7.65
S-34	3 1/2	5/8	1	4.55	7.65
S-35	4	1/2	1	5.10	8.55
S-35A	4	1/2	1 1/4	5.10	8.55
S-36	4	5/8	1	5.55	9.45
S-37	4	5/8	7/8	5.55	9.45
S-38	4	5/8	1 1/4	5.55	9.45
S-39	4	3/4	1	6.00	10.40
S-39A	4	3/4	1 1/4	6.00	10.40
S-40	4	7/8	1	6.50	11.35
S-40A	4	7/8	1 1/4	6.50	11.35
S-41	5	3/4	1	6.35	12.45
S-42	5	3/4	1 1/4	6.35	12.45
S-43	5	7/8	1	6.90	13.65
S-43A	5	7/8	1 1/4	6.90	13.65
S-44	5	1	1	7.80	15.05
S-44A	5	1	1 1/4	7.80	15.05
S-45	6	3/4	1	7.60	15.35
S-45A	6	3/4	1 1/4	7.60	15.35
S-46	6	15/16	1 1/4	8.65	18.55
S-47	6	15/16	1 1/2	8.65	18.55
S-47A	6	1	1	8.65	18.55
S-47B	6	1	1 1/4	8.65	18.55
S-48	7	1	1 1/4	16.10	28.95
S-49	7	1 1/8	1 1/4	17.25	31.55
S-50	8	1	1 1/4	19.55	37.30
S-51	8	1 3/8	1 1/4	23.00	46.65
S-52	8	1 3/8	1 1/2	23.00	46.65
S-53	8	1 3/8	1 3/4	23.00	46.65
S-54	8	1 3/8	2	23.00	46.65

In ordering state diameter, width of face, and size of hole desired. For Standard Keyways and suggestions see index.

Milling Cutters

With Nicked Teeth



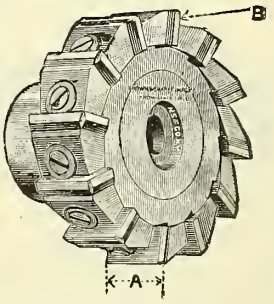
Cutters of this form are especially adapted for the heavier class of milling. The teeth being nicked, the chip is broken up, thus enabling a heavier cut to be taken than would be possible with the ordinary milling cutter

Brown & Sharpe Nos. M-200 to M-239, Morse Style No. 126 L

Number	Diameter Inches	Width of Face Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
M-200	2½	2½	1	$4.90	$8.95
M-201	2½	3	1	5.40	10.00
M-202	2½	3½	1	6.00	11.25
M-203	2½	4	1	6.60	12.45
M-204	3	2½	1¼	6.25	11.10
M-205	3	3	1¼	6.50	12.05
M-206	3	3½	1¼	7.10	13.50
M-207	3	4	1¼	7.70	14.90
M-208	3	5	1¼	9.40	17.80
M-209	3	6	1¼	13.00	25.10
M-210	3½	2½	1¼	8.25	15.60
M-211	3½	3	1¼	8.90	17.30
M-212	3½	3½	1¼	9.80	18.90
M-213	3½	4	1¼	11.00	21.55
M-214	3½	5	1¼	12.50	25.00
M-215	3½	6	1¼	14.25	29.45
M-216	4	2½	1¼	10.00	19.35
M-217	4	2½	1½	10.00	19.35
M-218	4	3	1¼	10.80	21.50
M-219	4	3	1½	10.80	21.50
M-220	4	3½	1¼	12.00	24.20
M-221	4	3½	1½	12.00	24.20
M-222	4	4	1¼	13.20	26.90
M-223	4	4	1½	13.20	26.90
M-224	4	5	1¼	16.20	32.55
M-225	4	5	1½	16.20	32.55
M-226	4	6	1¼	18.00	38.45
M-227	4	6	1½	18.60	38.45
M-228	4½	2½	1¾	11.50	22.90
M-229	4½	2½	2	11.50	22.90
M-230	4½	3	1¾	12.75	25.95
M-231	4½	3	2	12.75	25.95
M-232	4½	3½	1¾	14.25	29.00
M-233	4½	3½	2	14.25	29.00
M-234	4½	4	1¾	15.75	34.45
M-235	4½	4	2	15.75	34.45
M-236	4½	5	1¾	18.75	39.45
M-237	4½	5	2	18.75	39.45
M-238	4½	6	1¾	22.25	46.85
M-239	4½	6	2	22.25	46.85

Face Milling Cutters

With Inserted Teeth



Left Hand Cutter

Brown & Sharpe Nos. 1 to 8, Morse Style No. 126 Y

The cut shows a form of Cutter specially adapted for all classes of face milling. The body is of machinery steel provided with a taper hole and keyway and is held firmly in place on the arbor by a screw.

The teeth are of either carbon tool steel, hardened, or of high speed steel; but unless otherwise ordered, are furnished of high speed steel. They are held in place by taper bushings and screws and can thus be easily adjusted or removed. The bushings, screws and teeth are interchangeable.

Number of Mill	Size Inches	Face A	Face B	Number of Taper Hole	Number of Arbor on which Cutter can be used	Carbon Steel Each	High Speed Steel Each
1	5½	2¼	1 1/16	10	79 or 80	$15.00	$15.00
2	5½	2¼	1 1/16	12	81, 82, 84, 85 or 87	15.00	15.00
3	6½	2¼	1 1/16	10	79 or 80	17.50	17.50
4	6½	2¼	1 1/16	12	81, 82, 83, 84, 85 or 87	17.50	17.50
6	7½	2¼	1 1/16	12	81, 82, 83, 84, 85 or 87	20.00	20.00
7	8½	2¼	1 3/16	12	81, 82, 83, 84, 85 or 87	22.50	22.50
8	9½	2¼	1 3/16	12	81, 82, 83, 84, 85 or 87	25.00	25.00

In ordering, state whether Right or Left Hand cutters are wanted. Other sizes made to order.

In ordering teeth, state whether for Right or Left Hand Cutters.

In ordering give diameter, face of Cutter, size of hole and keyway required. Prices on application.

With Inserted Teeth and Threaded Holes

These Cutters are the same in design as shown above, except that they are provided with threaded holes, and are used directly upon the spindle of the machine.

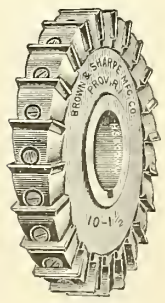
Brown & Sharpe Nos. 10 to 26

Number	Hole Diameter Inches	Hole Thread	Cutter Diameter Inches	Cutter Face A Inches	Cutter Face B Inches	Carbon Steel Each	High Speed Steel Each
10	2½	4, L. H.	5½	2¼	1 1/16	$17.50	$17.50
12	2½	4, L. H.	6½	2¼	1 1/16	20.00	20.00
16	2½	4, L. H.	7½	2¼	1 1/16	22.50	22.50
15	3¼	3½, L. H.	6½	2¼	1 1/16	20.00	20.00
18	3¼	3½, L. H.	7½	2¼	1 1/16	22.50	22.50
21	3¼	3½, L. H.	8½	2¼	1 3/16	25.00	25.00
24	3¼	3½, L. H.	9½	2¼	1 3/16	27.50	27.50
19	4	3, L. H.	7½	2¼	1 1/16	22.50	22.50
22	4	3, L. H.	8½	2¼	1 3/16	25.00	25.00
25	4	3, L. H.	9½	2¼	1 3/16	27.50	27.50
22A	4½	2¾, L. H.	8½	2¼	1 3/16	25.00	25.00
26	4½	2¾, L. H.	9½	2¼	1 3/16	27.50	27.50

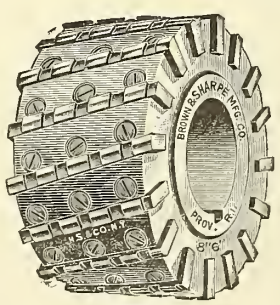
To determine what machines and attachments these Cutters are used on measure outside diameter of thread on end of spindle.

Milling and Side Milling Cutters

With Inserted Teeth



Side Milling



Milling

We recommend that Milling Cutters and Side Milling Cutters more than 8 inches in diameter be made with inserted teeth. With following exceptions, these cutters are made to order. Prices for all sizes not listed on application.

The teeth of the cutters are inserted in the periphery of the machinery steel body. They are made of either carbon tool steel or of high speed steel, but unless otherwise ordered, are furnished of high speed steel. The bushings, screws and teeth are interchangeable, thus allowing the teeth to be easily adjusted or removed.

Brown & Sharpe Nos. S-100 to S-104, Morse Style No. 126 J

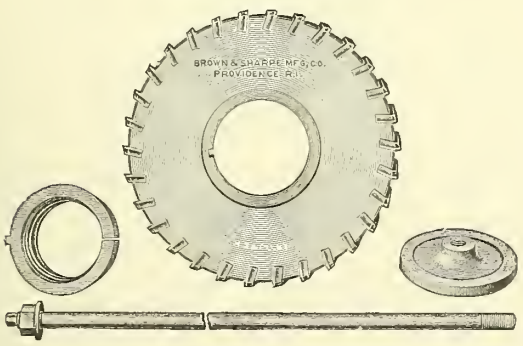
Side Milling

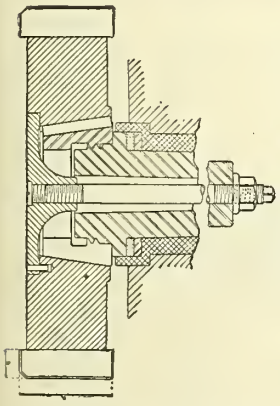
Number	Diameter Inches	Width of Face Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
S-100	6	2	1¼	$21.25	$21.25
S-101	7	2	1¼	25.00	25.00
S-102	8	2	1½	27.50	27.50
S-103	9	2	1½	30.00	30.00
S-104	10	2	1½	32.50	32.50

In ordering give diameter, face of Cutter, size of hole and keyway required. For Standard Keyways and suggestions see Index.

Face Milling Cutters

With Inserted Teeth





Means are provided for quickly releasing the Cutters from the spindle and provision is made whereby the same Cutter may be used on machines of different sizes of spindles by employing special sleeves.

The Cutter is made with a taper hole to fit a split sleeve of steel that is screwed on the spindle. It is keyed to the sleeve and is drawn on to the taper of the sleeve by a drawing-in bolt. As the drawing-in bolt is tightened the sleeve is contracted and closely grips the spindle, thus furnishing the full efficiency of the drive to the Cutter at all times. It will be noted in the section that the Cutter is held close to the spindle shoulder, thus increasing the working space.

The body of the Cutter is of machinery steel, while the blades are of high speed steel.

Brown & Sharpe Nos. 50 to 61

Number	Diameter Inches	Face A Inches	Face B Inch	Small Diam. of Taper Hole Inches	Used with Sleeve Number	Each
50	7	3	15/16	3	1	$30.00
51	8	3	15/16	3	1	34.00
52	8	3 1/4	15/16	3 3/4	2 and 5	36.00
53	9	3 1/4	15/16	3 3/4	2 and 5	40.00
54	9	3 1/2	15/16	4 1/2	6 and 8	42.00
55	9	3 3/4	15/16	5	7, 9 and 10	44.00
56	10	3 1/4	15/16	3 3/4	2 and 5	46.00
57	10	3 1/2	15/16	4 1/2	6 and 8	48.00
58	10	3 3/4	15/16	5	7, 9 and 10	50.00
59	12	3 1/2	15/16	4 1/2	6 and 8	57.00
60	12	3 3/4	15/16	5	7, 9 and 10	60.00
61	15	3 3/4	15/16	5	7, 9 and 10	75.00

End Mills

With B. & S. Taper Shanks



Cut shows Left Hand. In ordering, state whether Right or Left Hand Mills are wanted.

Brown & Sharpe Nos. E-10 to E-49, Morse Style Nos. 126½ F

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-10	1/4	4	13/16	2 7/16	$1.00	$1.40
E-11	1/4	5	13/16	3	1.15	1.70
E-12	5/16	4	7/8	2 1/2	1.00	1.40
E-13	5/16	5	7/8	3 1/16	1.15	1.70
E-14	3/8	4	7/8	2 1/2	1.10	1.55
E-15	3/8	5	7/8	3 1/16	1.20	1.75
E-16	7/16	4	15/16	2 9/16	1.10	1.55
E-17	7/16	5	15/16	3 1/8	1.25	1.80
E-18	1/2	5	1	3 3/16	1.30	1.90
E-19	1/2	7	1 1/8	5 1/8	1.45	2.40
E-20	9/16	5	1 1/16	3 1/4	1.35	2.00
E-21	9/16	7	1 1/4	5 1/4	1.50	2.50
E-22	5/8	5	1 1/4	3 7/16	1.45	2.20
E-23	5/8	7	1 1/2	5 1/2	1.70	2.80
E-24	11/16	7	1 1/2	5 1/2	1.75	2.85
E-25	11/16	9	1 1/2	6 3/4	1.90	3.75
E-26	3/4	7	1 5/8	5 5/8	1.80	2.95
E-27	3/4	9	1 5/8	6 7/8	1.95	3.85
E-28	13/16	7	1 5/8	5 5/8	1.90	3.35
E-29	13/16	9	1 5/8	6 7/8	2.00	4.05
E-30	7/8	7	1 3/4	5 3/4	2.10	3.55
E-31	7/8	9	1 3/4	7	2.25	4.25
E-32	15/16	7	1 3/4	5 3/4	2.10	3.70
E-33	15/16	9	1 3/4	7	2.25	4.25
E-34	1	7	1 7/8	5 7/8	2.15	3.80
E-35	1	9	1 7/8	7 1/8	2.30	4.35
E-36	1 1/16	7	1 7/8	5 7/8	2.15	3.95
E-37	1 1/16	9	1 7/8	7 1/8	2.35	4.40
E-38	1 1/8	7	2	6	2.25	4.20
E-39	1 1/8	9	2	7 1/4	2.40	4.60
E-40	1 3/16	7	2	6	2.25	4.30
E-41	1 3/16	9	2	7 1/4	2.50	4.90
E-42	1 1/4	7	2	6	2.25	4.45
E-43	1 1/4	9	2	7 1/4	2.55	5.10
E-44	1 5/16	9	2 1/8	7 3/8	2.75	5.75
E-45	1 3/8	9	2 1/8	7 3/8	2.75	6.25
E-46	1 7/16	9	2 1/4	7 1/2	3.00	6.50
E-47	1 1/2	9	2 1/4	7 1/2	3.00	6.85
E-48	1 5/8	9	2 3/8	7 5/8	3.25	7.45
E-49	1 3/4	9	2 1/2	7 3/4	3.50	8.30

For other End Mills, see next page

Parts for Face Milling Cutters

Clamping Plates

Brown & Sharpe Nos. 1 to 5

Number	Used with Cutter	Diameter of Tapped Hole Inch	Each
1	50 and 51	5/8	$1.00
2	52, 53 and 56	5/8	1.00
3	52, 53 and 56	11/16	1.00
4	54, 57 and 59	11/16	1.00
5	55, 58, 60 and 61	11/16	1.00

The drawing-in bolts for use with the cutters are furnished on short notice. When ordering, the diameter of the spindle hole and the length of the spindle over all must be given.

Bolts and Nuts, $1.50

For Standard Keyways and suggestions see Index

Sleeves

Brown & Sharpe Nos. 1 to 10

Number	Outside Diameter of Small End Inches	Length Inches	Taper per Foot in Diameter Inches	Bore Diameter Inches	Bore Threads per Inch, Left Hand, U. S. S.	Each
1	3	2	3 1/2	2 1/2	4	$ 7.50
2	3 3/4	2 1/4	3 1/2	2 1/2	4	8.50
5	3 3/4	2 1/4	3 1/2	3 1/4	3 1/2	9.50
6	4 1/2	2 1/2	3 1/2	3 1/4	3 1/2	10.50
7	5	2 3/4	3 1/2	3 1/4	3 1/2	11.50
8	4 1/2	2 1/2	3 1/2	4	3	11.50
9	5	2 3/4	3 1/2	4	3	12.50
10	5	2 3/4	3 1/2	4 1/2	2 3/4	13.50

End Mills

With Morse Taper Shanks



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand. Brown and Sharpe Nos. E-300 to E-338, Morse Style No. 126F

Number	Diameter Inch	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-300	1/4	1	13/16	3 11/16	$1.15	$1.70
E-301	5/16	1	7/8	3 3/4	1.15	1.70
E-302	3/8	1	7/8	3 3/4	1.20	1.75
E-303	7/16	1	15/16	3 13/16	1.25	1.85
E-304	7/16	2	1	4 1/2	1.40	2.25
E-305	1/2	1	1	3 7/8	1.30	1.90
E-306	1/2	2	1 1/8	4 5/8	1.45	2.30
E-307	9/16	1	1 1/16	3 15/16	1.35	2.00
E-308	9/16	2	1 1/4	4 3/4	1.50	2.40
E-309	5/8	2	1 1/2	5	1.55	2.50
E-310	11/16	2	1 1/2	5	1.75	2.75
E-311	3/4	2	1 5/8	5 1/8	1.80	2.85
E-312	3/4	3	1 5/8	6	1.95	3.45
E-313	13/16	2	1 5/8	5 1/8	1.90	3.05
E-314	13/16	3	1 5/8	6	2.00	3.50
E-315	7/8	2	1 3/4	5 1/4	2.10	3.40
E-316	7/8	3	1 3/4	6 1/8	2.25	3.85
E-317	15/16	2	1 3/4	5 1/4	2.10	3.45
E-318	15/16	3	1 3/4	6 1/8	2.25	3.85
E-319	1	2	1 7/8	5 3/8	2.15	3.40
E-320	1	3	1 7/8	6 1/4	$2.30	$4.00
E-321	1 1/16	2	1 7/8	5 3/8	2.15	3.75
E-322	1 1/16	3	1 7/8	6 1/4	2.30	4.05
E-323	1 1/8	3	2	6 3/8	2.35	4.25
E-324	1 3/16	3	2	6 3/8	2.40	4.45
E-325	1 1/4	3	2	6 3/8	2.45	4.65
E-326	1 1/4	4	2	7 3/8	2.55	5.00
E-327	1 5/16	3	2 1/8	6 1/2	2.65	5.10
E-328	1 5/16	4	2 1/8	7 1/2	2.75	5.40
E-329	1 3/8	3	2 1/8	6 1/2	2.65	5.20
E-330	1 3/8	4	2 1/8	7 1/2	2.75	5.60
E-331	1 7/16	3	2 1/4	6 5/8	2.75	5.50
E-332	1 7/16	4	2 1/4	7 5/8	3.00	6.10
E-333	1 1/2	3	2 1/4	6 5/8	2.75	5.65
E-334	1 1/2	4	2 1/4	7 5/8	3.00	6.25
E-335	1 5/8	4	2 3/8	7 3/4	3.25	7.05
E-336	1 3/4	4	2 3/8	7 3/4	3.50	7.80
E-337	1 7/8	4	2 1/2	7 7/8	3.75	8.55
E-338	2	4	2 1/2	7 7/8	4.00	9.35

Spiral, with B. & S. Taper Shanks



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand. Brown and Sharpe Nos. E-100 to E-139, Morse Style No. 126 1/2 H

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-100	1/4	4	13/16	2 7/16	$1.00	$1.40
E-101	1/4	5	13/16	3	1.15	1.70
E-102	5/16	4	7/8	2 1/2	1.00	1.40
E-103	5/16	5	7/8	3 1/16	1.15	1.70
E-104	3/8	4	7/8	2 1/2	1.10	1.55
E-105	3/8	5	7/8	3 1/16	1.20	1.75
E-106	7/16	4	15/16	2 9/16	1.10	1.55
E-107	7/16	5	15/16	3 1/8	1.25	1.80
E-108	1/2	5	1	3 3/16	1.30	1.90
E-109	1/2	7	1 1/8	5 1/8	1.45	2.40
E-110	9/16	5	1 1/16	3 1/4	1.35	2.00
E-111	9/16	7	1 1/4	5 1/4	1.50	2.50
E-112	5/8	5	1 1/4	3 7/16	1.45	2.20
E-113	5/8	7	1 1/2	5 1/2	1.70	2.80
E-114	11/16	7	1 1/2	5 1/2	1.75	2.85
E-115	11/16	9	1 1/2	6 3/4	1.90	3.75
E-116	3/4	7	1 5/8	5 5/8	1.80	2.95
E-117	3/4	9	1 5/8	6 7/8	1.95	3.85
E-118	13/16	7	1 5/8	5 5/8	1.90	3.35
E-119	13/16	9	1 5/8	6 7/8	2.00	4.05
E-120	7/8	7	1 3/4	5 3/4	2.10	3.55
E-121	7/8	9	1 3/4	7	2.25	4.25
E-122	15/16	7	1 3/4	5 3/4	2.10	3.70
E-123	15/16	9	1 3/4	7	2.25	4.25
E-124	1	7	1 7/8	5 7/8	2.15	3.80
E-125	1	9	1 7/8	7 1/8	2.30	4.35
E-126	1 1/16	7	1 7/8	5 7/8	2.15	3.95
E-127	1 1/16	9	1 7/8	7 1/8	2.35	4.40
E-128	1 1/8	7	2	6	2.25	4.20
E-129	1 1/8	9	2	7 1/4	2.40	4.60
E-130	1 3/16	7	2	6	2.25	4.30
E-131	1 3/16	9	2	7 1/4	2.56	4.90
E-132	1 1/4	7	2	6	2.25	4.45
E-133	1 1/4	9	2	7 1/4	2.55	5.10
E-134	1 5/16	9	2 1/8	7 3/8	2.75	5.75
E-135	1 3/8	9	2 1/8	7 3/8	2.75	6.25
E-136	1 7/16	9	2 1/4	7 1/2	3.00	6.50
E-137	1 1/2	9	2 1/4	7 1/2	3.00	6.85
E-138	1 5/8	9	2 3/8	7 5/8	3.25	7.45
E-139	1 3/4	9	2 1/2	7 3/4	3.50	8.30

Spiral, with Morse Taper Shanks



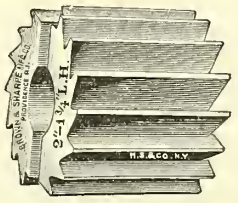
In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand. Brown and Sharpe Nos. E-395 to E-433, Morse Style No. 126 1/2 G

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-395	1/4	1	13/16	3 11/16	$1.15	$1.70
E-396	5/16	1	7/8	3 3/4	1.15	1.70
E-397	3/8	1	7/8	3 3/4	1.20	1.75
E-398	7/16	1	15/16	3 13/16	1.25	1.85
E-399	7/16	2	1	4 1/2	1.40	2.25
E-400	1/2	1	1	3 7/8	1.30	1.90
E-401	1/2	2	1 1/8	4 5/8	1.45	2.30
E-402	9/16	1	1 1/16	3 15/16	1.35	2.00
E-403	9/16	2	1 1/4	4 3/4	1.50	2.40
E-404	5/8	2	1 1/2	5	1.55	2.50
E-405	11/16	2	1 1/2	5	1.75	2.75
E-406	3/4	2	1 5/8	5 1/8	1.80	2.85
E-407	3/4	3	1 5/8	6	1.95	3.45
E-408	13/16	2	1 5/8	5 1/8	1.90	3.05
E-409	13/16	3	1 5/8	6	2.00	3.50
E-410	7/8	2	1 3/4	5 1/4	2.10	3.40
E-411	7/8	3	1 3/4	6 1/8	2.25	3.85
E-412	15/16	2	1 3/4	5 1/4	2.10	3.45
E-413	15/16	3	1 3/4	6 1/8	2.25	3.85
E-414	1	2	1 7/8	5 3/8	2.15	3.40
E-415	1	3	1 7/8	6 1/4	2.30	4.00
E-416	1 1/16	2	1 7/8	5 3/8	2.15	3.75
E-417	1 1/16	3	1 7/8	6 1/4	2.30	4.05
E-418	1 1/8	3	2	6 3/8	2.35	4.25
E-419	1 3/16	3	2	6 3/8	2.40	4.45
E-420	1 1/4	3	2	6 3/8	2.45	4.65
E-421	1 1/4	4	2	7 3/8	2.55	5.00
E-422	1 5/16	3	2 1/8	6 1/2	2.65	5.10
E-423	1 5/16	4	2 1/8	7 1/2	2.75	5.40
E-424	1 3/8	3	2 1/8	6 1/2	2.65	5.20
E-425	1 3/8	4	2 1/8	7 1/2	2.75	5.60
E-426	1 7/16	3	2 1/4	6 5/8	2.75	5.50
E-427	1 7/16	4	2 1/4	7 5/8	3.00	6.10
E-428	1 1/2	3	2 1/4	6 5/8	2.75	5.65
E-429	1 1/2	4	2 1/4	7 5/8	3.00	6.25
E-430	1 5/8	4	2 3/8	7 3/4	3.25	7.05
E-431	1 3/4	4	2 3/8	7 3/4	3.50	7.80
E-432	1 7/8	4	2 1/2	7 7/8	3.75	8.55
E-433	2	4	2 1/2	7 7/8	4.00	9.35

For Standard Keyways and suggestions see Index. For Collets see Index. For list of Tapers see Index

Shell End Mills

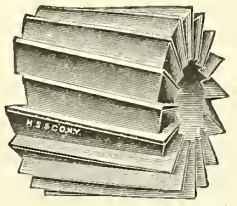
Straight



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.
Brown and Sharpe Nos. F-10 to F-38, Morse Style No. 126 P

Number	Diameter Inches	Length of Cut Inches	Number of Arbor on which Cutter can be used	Hole Inch	Carbon Steel Each	High Speed Steel Each
F-10	1 1/4	1 1/4	89	1/2	$2.80	$4.50
F-11	1 5/16	1 1/4		1/2	2.90	4.65
F-12	1 3/8	1 1/4	92	1/2	3.00	4.80
F-13	1 7/16	1 1/4	93	1/2	3.10	4.95
F-14	1 1/2	1 1/4		1/2	3.20	5.10
F-15	1 9/16	1 3/4		3/4	3.90	5.50
F-16	1 5/8	1 3/4	90	3/4	3.95	5.70
F-17	1 11/16	1 3/4		3/4	4.00	5.90
F-18	1 3/4	1 3/4	94	3/4	4.05	6.10
F-19	1 13/16	1 3/4	96	3/4	4.10	6.30
F-20	1 7/8	1 3/4		3/4	4.15	6.50
F-21	1 15/16	1 3/4	97	3/4	4.20	6.70
F-22	2	1 3/4	101	3/4	4.30	6.90
F-23	2 1/16	1 3/4		3/4	4.35	7.10
F-24	2 1/8	1 3/4	103	3/4	4.40	7.30
F-25	2 3/16	1 3/4		3/4	4.50	7.50
F-26	2 1/4	2 1/4		1	4.90	8.00
F-27	2 5/16	2 1/4	91	1	4.95	8.25
F-28	2 3/8	2 1/4		1	5.00	8.55
F-29	2 7/16	2 1/4	95	1	5.05	8.85
F-30	2 1/2	2 1/4	98	1	5.10	9.15
F-31	2 9/16	2 1/4		1	5.20	9.45
F-32	2 5/8	2 1/4	100	1	5.35	9.75
F-33	2 11/16	2 1/4	102	1	5.50	10.05
F-34	2 3/4	2 1/4		1	5.65	10.40
F-35	2 13/16	2 1/4	104	1	5.80	10.70
F-36	2 7/8	2 1/4	105	1	5.95	11.05
F-37	2 15/16	2 1/4		1	6.10	11.40
F-38	3	2 1/4		1	6.30	11.75

Spiral



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.
Brown and Sharpe Nos. F-100 to F-128, Morse Style No. 126½ P

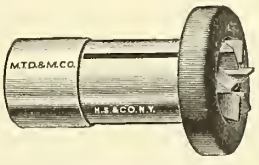
Number	Diameter Inches	Length of Cut Inches	Number of Arbor on which Cutter can be used	Hole Inch	Carbon Steel Each	High Speed Steel Each
F-100	1 1/4	1 1/4	89	1/2	$2.80	$4.50
F-101	1 5/16	1 1/4		1/2	2.90	4.65
F-102	1 3/8	1 1/4	92	1/2	3.00	4.80
F-103	1 7/16	1 1/4	93	1/2	3.10	4.95
F-104	1 1/2	1 1/4		1/2	3.20	5.10
F-105	1 9/16	1 3/4		3/4	3.90	5.50
F-106	1 5/8	1 3/4	90	3/4	3.95	5.70
F-107	1 11/16	1 3/4		3/4	4.00	5.90
F-108	1 3/4	1 3/4	94	3/4	4.05	6.10
F-109	1 13/16	1 3/4	96	3/4	4.10	6.30
F-110	1 7/8	1 3/4		3/4	4.15	6.50
F-111	1 15/16	1 3/4	97	3/4	4.20	6.70
F-112	2	1 3/4	99	3/4	4.30	6.90
F-113	2 1/16	1 3/4	101	3/4	4.35	7.10
F-114	2 1/8	1 3/4	103	3/4	4.40	7.30
F-115	2 3/16	1 3/4		3/4	4.50	7.50
F-116	2 1/4	2 1/4		1	4.90	8.00
F-117	2 5/16	2 1/4	91	1	4.95	8.25
F-118	2 3/8	2 1/4		1	5.00	8.55
F-119	2 7/16	2 1/4	95	1	5.05	8.85
F-120	2 1/2	2 1/4	98	1	5.10	9.15
F-121	2 9/16	2 1/4		1	5.20	9.45
F-122	2 5/8	2 1/4	100	1	5.35	9.75
F-123	2 11/16	2 1/4	102	1	5.50	10.05
F-124	2 3/4	2 1/4		1	5.65	10.40
F-125	2 13/16	2 1/4	104	1	5.80	10.70
F-126	2 7/8	2 1/4	105	1	5.95	11.05
F-127	2 15/16	2 1/4		1	6.10	11.40
F-128	3	2 1/4		1	6.30	11.75

Hollow Mills



Morse No. 126½ E

Adjustable



Morse No. 126 E

Diameter of Hole Inch	Each	Outside Diameter Inch	Whole Length Inches
3/32	$1.00	5/8	1 1/2
1/8	1.00	5/8	1 1/2
5/32	1.00	5/8	1 1/2
3/16	1.00	5/8	1 1/2
7/32	1.00	5/8	1 1/2
1/4	1.00	5/8	1 1/2
9/32	1.50	3/4	1 1/2
5/16	1.50	3/4	1 1/2
11/32	1.50	3/4	1 1/2

Diameter of Hole Inch	Each	Outside Diameter Inches	Whole Length Inches
3/8	$2.00	1	1 3/4
7/16	2.00	1	1 3/4
1/2	2.00	1	1 3/4
9/16	2.00	1 1/4	2
5/8	2.00	1 1/4	2
11/16	2.50	1 1/2	2
3/4	2.50	1 1/2	2
7/8	2.50	1 3/4	2 1/4
1	2.50	1 3/4	2 1/4

Diameter of Hole Inch	Each	Diameter of Shank Inch	Whole Length Inches
3/32	$1.60	5/8	1 1/2
1/8	1.60	5/8	1 1/2
5/32	1.60	5/8	1 1/2
3/16	1.60	5/8	1 1/2
7/32	1.60	5/8	1 1/2
1/4	1.60	5/8	1 1/2
9/32	1.80	3/4	2
5/16	1.80	3/4	2
11/32	1.80	3/4	2
3/8	2.00	3/4	2

Diameter of Hole Inch	Each	Diameter of Shank Inches	Whole Length Inches
7/16	$2.00	3/4	2
1/2	2.20	1	2 1/4
9/16	2.40	1	2 1/4
5/8	2.60	1	2 1/4
11/16	2.80	1 1/4	2 1/2
3/4	3.00	1 1/4	2 1/2
13/16	3.20	1 1/4	2 1/2
7/8	3.40	1 1/2	2 3/4
15/16	3.60	1 1/2	2 3/4
1	3.80	1 1/2	2 3/4

The holes in these Mills are carefully ground to size, and have a proper relief. Forcing the Ring on the Mill will correct any slight wear

For Standard Keyways and suggestions, see Index

End Mills

With Center Cut

These End Mills are useful where it is desired to cut into the work with the end of the mill and then move along, as in cams, grooves, etc., as the teeth are sharp on the inside, and thus cut a path out from the first entering point. They are also useful in taking heavy cuts, especially in cast iron

With B. & S. Taper Shanks



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.

Brown & Sharpe Nos. E-200 to E-229, Morse Style No. 126½J

Number	Diameter Inches	Number of Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-200	1/2	5	1	3 3/16	$1.50	$2.10
E-201	1/2	7	1 1/8	5 1/8	1.80	2.90
E-202	9/16	5	1 1/16	3 1/4	1.70	2.45
E-203	9/16	7	1 1/4	5 1/4	1.85	2.95
E-204	5/8	5	1 1/4	3 7/16	1.80	2.65
E-205	5/8	7	1 1/2	5 1/2	2.10	3.35
E-206	11/16	7	1 1/2	5 1/2	2.15	3.40
E-207	11/16	9	1 1/2	6 3/4	2.35	4.40
E-208	3/4	7	1 5/8	5 5/8	2.25	3.55
E-209	3/4	9	1 5/8	6 7/8	2.45	4.55
E-210	13/16	7	1 5/8	5 5/8	2.35	3.80
E-211	13/16	9	1 5/8	6 7/8	2.50	4.65
E-212	7/8	7	1 3/4	5 3/4	2.60	4.20
E-213	7/8	9	1 3/4	7	2.80	4.85
E-214	15/16	7	1 3/4	5 3/4	2.60	4.35
E-215	15/16	9	1 3/4	7	2.80	5.05
E-216	1	7	1 7/8	5 7/8	2.70	4.65
E-217	1	9	1 7/8	7 1/8	2.85	5.15
E-218	1 1/16	7	1 7/8	5 7/8	2.70	4.70
E-219	1 1/16	9	1 7/8	7 1/8	2.95	5.25
E-220	1 1/8	7	2	6	2.80	4.95
E-221	1 1/8	9	2	7 1/4	3.00	5.50
E-222	1 3/16	7	2	6	2.80	5.15
E-223	1 3/16	9	2	7 1/4	3.10	5.80
E-224	1 1/4	7	2	6	2.80	5.25
E-225	1 1/4	9	2	7 1/4	3.20	6.10
E-226	1 5/16	9	2 1/8	7 3/8	3.45	6.70
E-227	1 3/8	9	2 1/8	7 3/8	3.45	6.85
E-228	1 7/16	9	2 1/4	7 1/2	3.75	7.45
E-229	1 1/2	9	2 1/4	7 1/2	3.75	7.65

With Morse Taper Shanks



In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Left Hand.

Brown & Sharpe Nos. E-500 to E-529, Morse Style No. 126½ I

Number	Diameter Inches	Number Taper	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
E-500	1/2	1	1	3 7/8	$1.50	$2.10
E-501	1/2	2	1 1/8	4 5/8	1.80	2.90
E-502	9/16	1	1 1/16	3 15/16	1.70	2.45
E-503	9/16	2	1 1/4	4 3/4	1.85	3.00
E-504	5/8	2	1 1/2	5	2.10	3.25
E-505	11/16	2	1 1/2	5	2.15	3.40
E-506	3/4	2	1 5/8	5 1/8	2.25	3.55
E-507	3/4	3	1 5/8	6	2.45	4.55
E-508	13/16	2	1 5/8	5 1/8	2.35	3.80
E-509	13/16	3	1 5/8	6	2.50	4.65
E-510	7/8	2	1 3/4	5 1/4	2.60	4.20
E-511	7/8	3	1 3/4	6 1/8	2.80	4.95
E-512	15/16	2	1 3/4	5 1/4	2.60	4.35
E-513	15/16	3	1 3/4	6 1/8	2.80	5.05
E-514	1	2	1 7/8	5 3/8	2.70	4.65
E-515	1	3	1 7/8	6 1/4	2.85	5.15
E-516	1 1/16	2	1 7/8	5 3/8	2.70	4.75
E-517	1 1/16	3	1 7/8	6 1/4	2.95	5.25
E-518	1 1/8	3	2	6 3/8	3.00	5.50
E-519	1 3/16	3	2	6 3/8	3.10	5.80
E-520	1 1/4	3	2	6 3/8	3.20	6.10
E-521	1 1/4	4	2	7 3/8	3.30	6.50
E-522	1 5/16	3	2 1/8	6 1/2	3.45	6.70
E-523	1 5/16	4	2 1/8	7 1/2	3.55	7.10
E-524	1 3/8	3	2 1/8	6 1/2	3.45	6.85
E-525	1 3/8	4	2 1/8	7 1/2	3.55	7.25
E-526	1 7/16	3	2 1/4	6 5/8	3.75	7.45
E-527	1 7/16	4	2 1/4	7 5/8	4.00	7.85
E-528	1 1/2	3	2 1/4	6 5/8	3.75	7.65
E-529	1 1/2	4	2 1/4	7 5/8	4.00	8.00

Slotting "Two Lipped," with B. & S. Taper Shanks



Brown & Sharpe

These End Mills are new in design and are found especially adaptable to rapidly milling slots in steel and iron from the solid, where previously it was necessary to drill a series of holes and make several cuts in milling the slot. The best results are obtained by maintaining a high surface speed. A depth of cut equal to one half the diameter of the mill, can usually be taken from solid stock. In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Right Hand

Number	Diameter Inch	Number of Taper Shank	Length of Cut Inches	Whole Length Inches	High Speed Steel Each
E-600	1/4	7	3/8	4 3/8	$2.00
E-601	5/16	7	15/32	4 15/32	2.10
E-602	3/8	7	9/16	4 9/16	2.15
E-603	7/16	7	21/32	4 21/32	2.25
E-604	1/2	7	3/4	4 3/4	2.40
E-605	9/16	7	27/32	4 27/32	2.50
E-606	5/8	7	15/16	4 15/16	2.80
E-607	11/16	7	1 1/32	5 1/32	2.85
E-608	3/4	7	1 1/8	5 1/8	2.95
E-609	3/4	9	1 1/8	6 3/8	3.85
E-610	13/16	7	1 7/32	5 7/32	3.35
E-611	13/16	9	1 7/32	6 15/32	4.05
E-612	7/8	7	1 5/16	5 5/16	$3.55
E-613	7/8	9	1 5/16	6 9/16	4.25
E-614	15/16	9	1 13/32	6 21/32	4.25
E-615	1	9	1 1/2	6 3/4	4.35
E-616	1 1/16	9	1 19/32	6 27/32	4.40
E-617	1 1/8	9	1 11/16	6 15/16	4.60
E-618	1 3/16	9	1 25/32	7 1/32	4.90
E-619	1 1/4	9	1 7/8	7 1/8	5.10
E-620	1 5/16	9	1 31/32	7 7/32	5.75
E-621	1 3/8	9	2 1/16	7 5/16	6.25
E-622	1 7/16	9	2 5/32	7 13/32	6.50
E-623	1 1/2	9	2 1/4	7 1/2	6.85

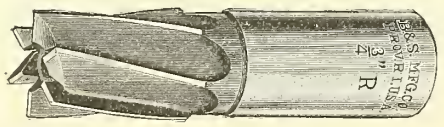
For Standard Keyways and suggestions see Index

End Mills

With Center Cut

These End Mills are useful where it is desired to cut into the work with the end of the mill and then move along, as in cams, grooves, etc., as the teeth are sharp on the inside, and thus cut a path out from the first entering point. They are also useful in taking heavy cuts, especially in cast iron.

With Straight Shanks



To be used with Spring Collets

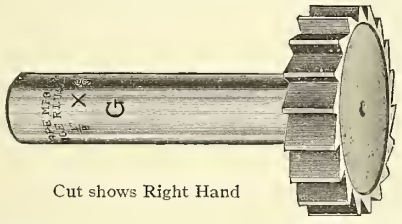
Brown & Sharpe

In ordering, state whether Right or Left Hand Mills are wanted. Cut shows Right Hand

Diameter Inch	Length of Cut Inch	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
1/8	5/16	1 1/4	$ .35	$ .50
5/32	5/16	1 1/4	.40	.60
3/16	9/16	1 1/2	.45	.70
7/32	9/16	1 1/2	.50	.80
1/4	3/4	1 7/8	.55	.90
9/32	3/4	1 7/8	.60	1.00
5/16	13/16	1 15/16	.70	1.10
11/32	13/16	1 15/16	.75	1.20
3/8	13/16	2	.80	1.30
13/32	13/16	2	.85	1.40

Diameter Inch	Length of Cut Inches	Whole Length Inches	Carbon Steel Each	High Speed Steel Each
7/16	7/8	2 1/8	$1.00	$1.50
1/2	15/16	2 1/4	1.25	1.70
9/16	15/16	2 5/16	1.35	1.90
5/8	1	2 3/8	1.50	2.10
11/16	1	2 3/8	1.60	2.30
3/4	1 1/8	2 15/16	1.70	2.50
13/16	1 1/8	2 15/16	1.80	2.75
7/8	1 5/16	3 3/16	1.90	3.00
15/16	1 5/16	3 3/16	2.00	3.25
1	1 3/8	3 7/16	2.05	3.50

Woodruff Keyway Cutters



Cut shows Right Hand

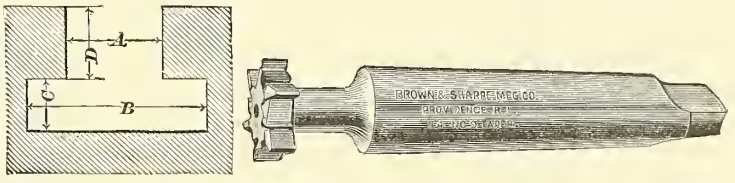
Brown and Sharpe. Right Hand Cutters are furnished unless otherwise ordered

Number	Diameter Inches	Thickness Inch	Shank Inch	Carbon Steel Each	High Speed Steel Each
*1	1/2	1/16	1/2	$ .95	
*2	1/2	3/32	1/2	.95	
3	1/2	1/8	1/2	.95	$1.20
4	5/8	3/32	1/2	1.10	1.40
5	5/8	1/8	1/2	1.10	1.40
6	5/8	5/32	1/2	1.10	1.40
7	3/4	1/8	1/2	1.20	1.60
8	3/4	5/32	1/2	1.20	1.60
9	3/4	3/16	1/2	1.20	1.60
10	7/8	5/32	1/2	1.40	1.95
11	7/8	3/16	1/2	1.40	1.95
12	7/8	7/32	1/2	1.40	1.95
A	7/8	1/4	1/2	1.40	1.95
13	1	3/16	1/2	1.55	2.35
14	1	7/32	1/2	1.55	2.35
15	1	1/4	1/2	1.55	2.35
B	1	5/16	1/2	1.55	2.35
16	1 1/8	3/16	1/2	1.75	2.75
17	1 1/8	7/32	1/2	1.75	2.75
18	1 1/8	1/4	1/2	1.75	2.75
C	1 1/8	5/16	1/2	1.75	2.75
19	1 1/4	3/16	1/2	1.90	3.20
20	1 1/4	7/32	1/2	1.90	3.20
21	1 1/4	1/4	1/2	1.90	3.20
D	1 1/4	5/16	1/2	1.90	3.20
E	1 1/4	3/8	1/2	1.90	3.20
22	1 3/8	1/4	1/2	2.15	3.80
23	1 3/8	5/16	1/2	2.15	3.80
F	1 3/8	3/8	1/2	2.15	3.80
24	1 1/2	1/4	1/2	2.15	3.95
25	1 1/2	5/16	1/2	2.15	3.95
G	1 1/2	3/8	1/2	2.15	3.95

*1 and 2 not made from High Speed Steel

Standard T-Slot Cutters

With B. & S. Taper Shanks



In ordering, state whether Right or Left Hand Cutters are wanted. Cuts show Left Hand.

Brown and Sharpe Nos. 4 to 43, Morse Style No. 126W

Number	Width of Slot A Inch	Diam. of Neck of Cutter Inch	Width of Slot B Inches	Depth C Inch	Extreme Limit D Inches	Number of Taper	Carbon Steel Each	High Speed Steel Each
4	1/4	7/32	1/2	5/32	5/16	4	$1.50	$2.10
7	1/4	7/32	1/2	5/32	5/16	5	1.60	2.25
10	5/16	9/32	5/8	5/32	3/8	5	1.80	2.60
13	5/16	9/32	5/8	5/32	3/8	7	2.10	3.25
16	3/8	11/32	11/16	7/32	7/16	5	2.00	2.90
19	3/8	11/32	11/16	7/32	7/16	7	2.20	3.35
22	7/16	3/8	13/16	7/32	7/16	7	2.35	3.65
25	7/16	3/8	13/16	7/32	7/16	9	2.50	4.25
28	1/2	7/16	15/16	9/32	9/16	7	2.60	4.15
31	1/2	7/16	15/16	9/32	9/16	9	2.80	4.80
34	5/8	17/32	1 3/16	13/32	3/4	9	3.10	5.55
37	3/4	21/32	1 5/16	17/32	1	9	3.45	6.35
40	7/8	25/32	1 5/8	11/16	1 1/16	9	3.75	7.75
43	1	29/32	1 7/8	13/16	1 3/16	9	4.00	8.95

These Cutters are made 1/32 inch larger in diameter and 1/64 inch greater in thickness than the figures given, to allow for sharpening

With Morse Taper Shanks. Morse No. 126 V

Diameter Inches	Thickness Inch	Diameter of Neck Inch	Whole Length Inches	Length of Neck Inches	Number of Shank	Carbon Steel Each	High Speed Steel Each
1/2	5/32	7/32	3 1/16	1/4	1	$1.65	$2.25
5/8	5/32	9/32	3 1/8	5/16	1	1.95	2.60
11/16	7/32	11/32	3 7/8	3/8	2	2.15	2.90
13/16	7/32	3/8	3 15/16	7/16	2	2.50	3.65
15/16	9/32	7/16	4 1/32	1/2	2	2.75	4.15
1 3/16	13/32	17/32	5 3/32	5/8	3	3.25	5.55
1 5/16	17/32	21/32	5 15/32	15/16	3	3.60	6.35
1 5/8	11/16	25/32	6 27/32	1 1/16	4	3.90	7.75
1 7/8	13/16	29/32	7 1/32	1 3/16	4	4.15	8.95

For Standard Keyways and suggestions see Index

Milling Cutters

Cotter Mills



Morse No. 126½ L

With Morse Taper Shanks

Diameter Inch	Each	Whole Length Inches	Length of Body Inches	Shank
¼	$2.60	3 13/16	1¼	No. 1
5/16	2.70	4 1/16	1½	No. 1
⅜	2.80	4¼	1 11/16	No. 1
7/16	2.90	4 7/16	1⅞	No. 1
⅜	2.95	4 13/16	1 11/16	No. 2
7/16	3.05	5	1⅞	No. 2
½	3.15	5¼	2⅛	No. 2
9/16	3.25	5 7/16	2 5/16	No. 2
⅝	3.35	5⅝	2½	No. 2
½	$3.35	6	2⅛	No. 3
9/16	3.45	6 3/16	2 5/16	No. 3
⅝	3.55	6⅜	2½	No. 3
11/16	3.65	6⅜	2½	No. 3
¾	3.80	6⅜	2½	No. 3
13/16	3.95	6⅜	2½	No. 3
⅞	4.10	6⅜	2½	No. 3
15/16	4.25	6⅜	2½	No. 3
1	4.40	6⅜	2½	No. 3

Morse No. 126½ M

With Brown & Sharpe Taper Shanks

Diameter Inch	Each	Whole Length Inches	Length of Body Inches	Shank
¼	$2.60	3⅛	1¼	No. 5
5/16	2.70	3⅜	1½	No. 5
⅜	2.80	3 9/16	1 11/16	No. 5
7/16	2.90	3¾	1⅞	No. 5
⅜	2.95	5⅜	1 11/16	No. 7
7/16	3.05	5 9/16	1⅞	No. 7
½	3.15	5 13/16	2⅛	No. 7
9/16	3.25	6	2 5/16	No. 7
⅝	3.35	6 3/16	2½	No. 7
½	$3.35	6 15/16	2⅛	No. 9
9/16	3.45	7⅛	2 5/16	No. 9
⅝	3.55	7 5/16	2½	No. 9
11/16	3.65	7 5/16	2½	No. 9
¾	3.80	7 5/16	2½	No. 9
13/16	3.95	7 5/16	2½	No. 9
⅞	4.10	7 5/16	2½	No. 9
15/16	4.25	7 5/16	2½	No. 9
1	4.40	7 5/16	2½	No. 9

Angular Cutters



These Angular Cutters, of 45, 50 60, 70 or 80 degree angle, both Right and Left Hand, are suitable for cutting the teeth of cutters and mills. Cut shows Right Hand.

Brown & Sharpe Nos. J-10 to J-13, Morse Style No. 126 R

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
J-10	2½	½	⅞	$2.65	$4.10
J-11	2¾	½	1	2.80	4.45
J-12	3	½	1¼	3.35	5.40
J-13	3¼	½	1½	3.75	6.15



With Side Ground Concave

These Cutters have the side ground concave, and are made with 45, 50, 60, 70 and 80 degree angle, both Right and Left Hand.

In ordering, state whether Right or Left Hand is wanted.

Brown & Sharpe Nos. J-50 to J-53, Morse Style No. 126 A.

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
J-50	2½	½	⅞	$2.65	$4.10
J-51	2¾	½	1	2.80	4.45
J-52	3	½	1¼	3.35	5.40
J-53	3¼	½	1½	3.75	6.15

With Threaded Hole

These Cutters have an angle of 60 degree and are made both Right and Left Hand

Brown & Sharpe Nos. J-25 and J-26

Number	Diameter Inches	Thickness Inch	Hole Inch	Thread	Carbon Steel Each	High Speed Steel Each
J-25	1¼	7/16	⅜	20, L	$2.25	$3.15
J-26	1⅝	9/16	½	16, L	2.50	3.50



Double Angle Cutters

These Cutters are carried in stock with 45, 60 or 90 degree included angle.

V-shaped Cutters of any angle made to order.

Brown & Sharpe Nos. J-100 to J-102, Morse Style No. 126-S.

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel, Each
J-100	2½	½	⅞	$2.65	$4.10
J-101	2¾	½	1	2.80	4.45
J-102	3	½	1¼	3.35	5.40

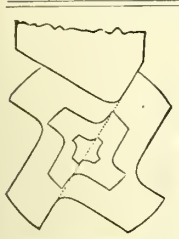
Formed Cutters with Double Angle

Are of the same dimensions as Cutters listed above. They are made to order and can be sharpened by grinding without changing their form. Prices furnished on application

For Standard Keyways and suggestions see page 139

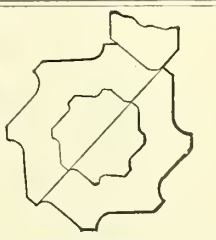
Milling Cutters

For Grooving Taps and Reamers



Form of Tap





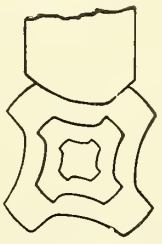
Form of Reamer

Number	Diameter of Tap Inches	Number of Teeth in Tap	Diameter of Reamer Inches	Number of Teeth in Reamer	Diameter of Cutter Inches	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-10	0 to 1/8	4	1/8 to 1/4	6	2	1	$2.00	$2.85
L-11	5/32 to 1/4	4	9/32 to 3/8	6	2	1	2.10	3.00
L-12	9/32 to 3/8	4	13/32 to 1/2	6	2 1/8	1	2.20	3.20
L-13	7/16 to 5/8	4	17/32 to 1 1/8	6 to 8	2 1/4	1	2.40	3.60
L-14	11/16 to 7/8	4	1 5/32 to 1 3/4	8 to 10	2 3/8	1	2.40	3.70
L-15	15/16 to 1 1/4	4	1 25/32 to 2	10	2 1/2	1	2.70	4.30
L-16	1 5/16 to 1 5/8	4	.....	.....	2 5/8	1	2.70	4.55
L-17	1 11/16 to 2	4	.....	.....	2 7/8	1	3.00	5.30

Brown & Sharpe Nos. L-10 to L-17. Morse Style No. 126 H-B for Taps, Style No. 126 H-C for Reamers.
Are adapted for fluting reamers, for which purpose it is necessary only to cut one or more grooves of a less depth in order to flute unevenly.
Can be sharpened by grinding without changing their form. In ordering give number of cutter, or diameter and number of teeth of tap or reamer as by above lists.

For Grooving Taps



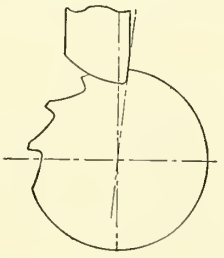


Brown and Sharpe Nos. L-50 to L-59, Morse Style No. 126H

Number	Diameter of Tap Inches	Diameter of Cutter Inches	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-50	0 to 1/8	2	1	$2.00	$2.85
L-51	5/32 to 1/4	2	1	2.10	3.00
L-52	9/32 to 3/8	2 1/8	1	2.20	3.15
L-53	7/16 to 5/8	2 1/4	1	2.40	3.55
L-54	11/16 to 7/8	2 3/8	1	2.40	3.70
L-55	15/16 to 1 1/4	2 1/2	1	2.70	4.30
L-56	1 5/16 to 1 5/8	2 5/8	1	2.70	4.45
L-57	1 11/16 to 2	2 7/8	1	3.00	5.25
L-58	2 1/16 to 2 7/16	3 1/8	1	3.40	5.50
L-59	2 1/2 to 3	3 3/8	1	3.80	6.00

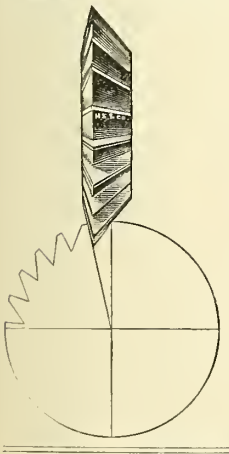
This style of Cutter is adapted to grooving taps only. These Cutters do not make so deep a groove in proportion to the width as the tap and reamer cutters. They are not suitable for fluting reamers. They can be sharpened by grinding without changing their form.

For Fluting Reamers



The cut shows a form of Cutter that makes a tooth that allows the chips to be removed more readily and has greater strength than the form made by the Cutters for grooving taps and reamers
Brown & Sharpe Nos. L-75 to L-84, Morse Style No. 126H-A

Number	Diameter of Reamer Inches	Number of Teeth	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-75	1/8 to 3/16	6	1	$2.00	$3.10
L-76	1/4 to 5/16	6	1	2.10	3.10
L-77	3/8 to 7/16	6	1	2.20	3.30
L-78	1/2 to 11/16	6 to 8	1	2.40	3.60
L-79	3/4 to 1	8	1	2.40	3.75
L-80	1 1/16 to 1 1/2	10	1	2.70	4.15
L-81	1 9/16 to 2 1/8	12	1	2.70	4.30
L-82	2 1/4 to 3	14	1	3.00	4.75
L-83	3 1/16 to 3 1/2	14	1	3.30	5.20
L-84	3 9/16 to 5	14 to 16	1	3.70	5.70



For Spiral Mills

These Cutters are especially adapted to the cutting of spiral mills, either 40, 48 or 53 degree angle on one side and 12 degree on the other.

The cut illustrates a Right Hand Cutter at work, in the position required in cutting the teeth of a spiral cutter.

In ordering specify Right or Left Hand.

Brown and Sharpe Nos. J-150 to J-153, Morse Style No. 126 D.

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
J-150	2 1/2	1/2	7/8	$2.65	$4.10
J-151	2 3/4	1/2	1	2.80	4.45
J-152	3	1/2	1 1/4	3.35	5.40
*J-153	3 1/4	1/2	1 1/2	3.75	6.15

*Can be furnished 40 degree on one side and 12 degree on the other, or 53 degree on one side and 12 degree on the other.

Angular Cutters and Cutters for Spiral Mills

Formed Cutter

These Cutters are of the same dimensions as Cutters for spiral mills listed above. They are made to order and can be sharpened by grinding without changing their form. Prices furnished on application.



For Making Twist Drills

In ordering give number of Cutter or size of drill by the following list.

These Cutters can be sharpened by grinding without changing their form.

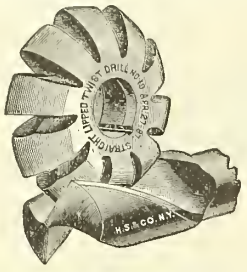
Brown and Sharpe Nos. L-110 to L-116.

Number	Diameter of Drill Inches	Diameter of Circle made by Cutter Inch	Diameter of Cutter Inches	Hole in Cutter Inch	Carbon Steel Each	High Speed Steel Each
L-100	1/16	.06	2	1	$1.50	$2.15
L-101	1/8	.08	2	1	1.70	2.40
L-102	3/16	.11	2	1	1.90	2.70
L-103	1/4	.15	2	1	2.10	3.00
L-104	5/16	.19	2 1/4	1	2.30	3.35
L-105	3/8	.23	2 1/4	1	2.40	3.50
L-106	7/16	.27	2 1/4	1	2.60	3.80
L-107	1/2	.31	2 1/4	1	2.80	4.10
L-108	9/16	.35	2 3/8	1	3.00	4.45
L-109	5/8	.39	2 3/8	1	3.20	4.75
L-110	11/16	.44	2 3/8	1	3.40	5.05
L-111	3/4	.50	2 1/2	1	3.60	5.40
L-112	13/16	.56	2 1/2	1	3.80	5.70
L-113	7/8	.62	2 3/4	1	4.00	6.20
L-114	15/16	.70	2 3/4	1	4.20	6.55
L-115	1	.77	3	1	4.50	7.20
L-116	1 1/8	.85	3	1	5.00	8.20

For Standard Keyways and suggestions see page 139

Milling Cutters

For Making Straight Lipped Twist Drills



Brown & Sharpe

Number	Diameter of Drill Inches	Diameter of Cutter Inches	Hole in Cutter Inches	Carbon Steel Each	High Speed Steel Each
L-200	1/16	2	1	$1.50	$2.20
L-201	1/8	2	1	1.70	2.50
L-202	3/16	2	1	1.90	2.80
L-203	1/4	2	1	2.10	3.10
L-204	5/16	2 1/4	1	2.30	3.40
L-205	3/8	2 1/4	1	2.40	3.60
L-206	7/16	2 1/4	1	2.60	3.90
L-207	1/2	2 1/4	1	2.80	4.20
L-208	9/16	2 5/8	1	3.00	4.40
L-209	5/8	2 5/8	1	3.20	4.95
L-210	11/16	2 5/8	1	3.40	5.25
L-211	3/4	2 5/8	1	3.60	5.55
L-212	13/16	2 7/8	1	3.80	6.00
L-213	7/8	2 7/8	1	4.00	6.35
L-214	15/16	2 7/8	1	4.20	6.65
L-215	1	3	1	4.50	7.30
L-216	1 1/8	3	1	5.00	8.10
L-217	1 1/4	3 1/4	1	5.50	9.15
L-218	1 1/2	3 3/4	1 1/4	6.25	11.15
L-219	1 3/4	3 3/4	1 1/4	7.00	12.55
L-220	2	4	1 1/4	7.75	14.55
L-221	2 1/4	4 1/4	1 1/4	8.50	16.50
L-222	2 1/2	4 1/2	1 1/4	9.25	18.60

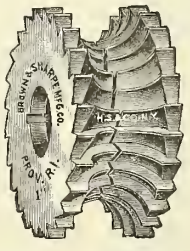
These Cutters can be sharpened by grinding without changing their form



Convex and Interlocking Concave

These Cutters have plain or milling cutter teeth

Brown & Sharpe



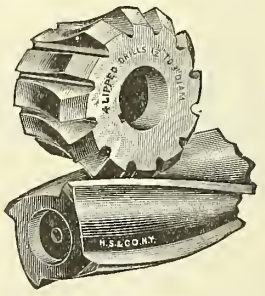
Convex

Number	Diameter of Circle Inches	Diameter of Cutter Inches	Size of Hole Inch	Carbon Steel Each	High Speed Steel Each
C-50	3/8	2 1/4	7/8	$3.10	$7.25
C-51	1/2	2 1/4	7/8	3.60	8.00
C-52	5/8	2 3/4	1	4.00	9.15
C-53	3/4	3	1	4.40	9.85
C-54	7/8	3 1/4	1	4.80	11.25
C-55	1	3 1/4	1	5.25	11.95
C-56	1 1/8	3 1/2	1	5.75	13.40
C-57	1 1/4	3 1/2	1	6.25	14.50
C-58	1 3/8	3 3/4	1	7.00	16.05
C-59	1 1/2	3 3/4	1	7.75	17.25

Interlocking Concave

C-50A	3/8	2 1/4	7/8	$5.25	$10.20
C-51A	1/2	2 1/4	7/8	6.10	11.00
C-52A	5/8	2 3/4	1	6.80	12.40
C-53A	3/4	3	1	7.50	14.00
C-54A	7/8	3 1/4	1	8.15	15.40
C-55A	1	3 1/4	1	8.90	15.75
C-56A	1 1/8	3 1/2	1	9.75	18.75
C-57A	1 1/4	3 1/2	1	10.60	20.40
C-58A	1 3/8	3 3/4	1	11.90	22.30
C-59A	1 1/2	3 3/4	1	13.15	24.65

For Making Four-Lipped Twist Drills



Brown & Sharpe

A form of Cutter especially adapted to cutting Four-lipped Twist Drills that are used in screw and chucking machines for roughing out holes previous to reaming. These drills are made, when possible, as shell drills to be used on an arbor and should have a spiral or "twist" of 15 degrees.

In ordering, give number of Cutter or size of drill by the following list.

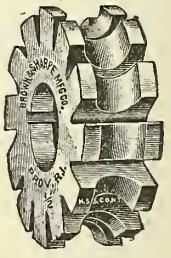
Can be sharpened by grinding without changing their form.

Number	Diameter of Drill Inches	Diameter of Cutter Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
L-250	To 1 1/2	2 3/4	1	$6.00	$ 9.55
L-251	1 1/2 to 3	3	1	7.00	12.40

Convex and Concave, for Milling Half Circles



Convex



Concave

These Cutters can be sharpened by grinding without changing their outline.

In ordering state whether Convex or Concave.

Brown & Sharpe Nos. C-10 to C-24A, Morse Style No. 126-C.

Convex

Number	Diameter of Circle Inches	Diameter of Cutter Inches	Size of Hole Inches	Carbon Steel Each	High Speed Steel Each
C-10	1/8	2	7/8	$2.00	$2.85
C-11	3/16	2	7/8	2.25	2.90
C-12	1/4	2	7/8	2.50	3.20
C-13	5/16	2 1/4	7/8	2.80	4.10
C-14	3/8	2 1/4	7/8	3.10	4.55
C-15	7/16	2 1/4	7/8	3.35	4.95
C-16	1/2	2 1/4	7/8	3.60	5.35
C-17	5/8	2 3/4	1	4.00	5.95
C-18	3/4	3	1	4.40	7.10
C-19	7/8	3 1/4	1	4.80	8.00
C-20	1	3 1/4	1	5.25	8.80
C-21	1 1/8	4	1 1/4	5.75	9.90
C-22	1 1/4	4	1 1/4	6.25	10.80
C-23	1 3/8	4 1/4	1 1/4	7.00	12.20
C-24	1 1/2	4 1/4	1 1/4	7.75	13.90

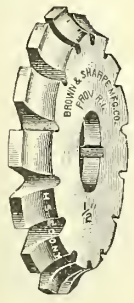
Concave

C-10A	1/8	2	7/8	$2.40	$3.50
C-11A	3/16	2	7/8	2.70	3.95
C-12A	1/4	2	7/8	3.00	4.40
C-13A	5/16	2 1/4	7/8	3.35	5.00
C-14A	3/8	2 1/4	7/8	3.70	5.55
C-15A	7/16	2 1/4	7/8	4.00	6.00
C-16A	1/2	2 1/4	7/8	4.30	6.50
C-17A	5/8	2 3/4	1	4.80	7.85
C-18A	3/4	3	1	5.25	8.75
C-19A	7/8	3 1/4	1	5.75	10.00
C-20A	1	3 1/4	1	6.30	11.00
C-21A	1 1/8	4	1 1/4	6.90	12.50
C-22A	1 1/4	4	1 1/4	7.50	13.60
C-23A	1 3/8	4 1/4	1 1/4	8.40	15.70
C-24A	1 1/2	4 1/4	1 1/4	9.30	17.25

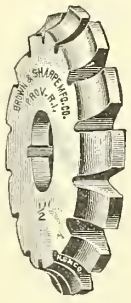
For Standard Keyways and suggestions see page 139

Corner Rounding Cutters

Single



Left Hand



Right Hand

These Cutters have side as well as radial clearance and can be ground without changing their outline.

In ordering single Cutters, state whether Right or Left Hand is wanted

Brown & Sharpe Nos. C-100 to C-114, Morse Style No. 126 N

Number	Radius of Circle Inch	Diameter Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
C-100	1/16	2	7/8	$2.00	$2.90
C-101	3/32	2	7/8	2.25	3.30
C-102	1/8	2	7/8	2.50	3.65
C-103	5/32	2 1/4	7/8	2.70	4.05
C-104	3/16	2 1/4	7/8	2.90	4.35
C-105	7/32	2 1/4	7/8	3.10	4.65
C-106	1/4	2 1/4	7/8	3.30	4.95
C-107	5/16	2 3/4	1	3.50	5.70
C-108	3/8	3	1	3.70	5.90
C-109	7/16	3 1/4	1	3.90	6.35
C-110	1/2	3 1/4	1	4.20	6.80
C-111	9/16	3 1/2	1	4.50	8.10
C-112	5/8	3 1/2	1	5.00	9.00
C-113	11/16	3 3/4	1	5.75	10.40
C-114	3/4	3 3/4	1	6.50	11.80

Double



Number	Radius of Circle Inch	Diameter Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
C-100	1/16	2	7/8	$2.40	$3.50
C-101	3/32	2	7/8	2.70	3.95
C-102	1/8	2	7/8	3.00	4.40
C-103	5/32	2 1/4	7/8	3.35	4.95
C-104	3/16	2 1/4	7/8	3.70	5.50
C-105	7/32	2 1/4	7/8	4.00	6.00
C-106	1/4	2 1/4	7/8	4.30	6.45
C-107	5/16	2 3/4	1	4.80	7.65
C-108	3/8	3	1	5.25	8.65
C-109	7/16	3 1/4	1	5.75	9.75
C-110	1/2	3 1/4	1	6.30	11.00
C-111	9/16	3 1/2	1	6.90	12.45
C-112	5/8	3 1/2	1	7.50	13.50
C-113	11/16	3 3/4	1	8.40	15.40
C-114	3/4	3 3/4	1	9.30	17.00

Metal Slitting Saws



These are thin Milling Cutters. They are ground on the sides so as to be a little thicker at the outer edge than near the center in order to give a proper clearance in cutting deep slots.

In ordering special saws please state for what purpose they are required.

Brown & Sharpe Nos. G-50 to G-84, Morse Style No. 132

Number	Diameter Inches	Thickness Inch	Hole Inches	Carbon Steel Each	High Speed Steel Each
G-50	2 1/2	1/32	7/8	$1.00	$2.50
G-51	2 1/2	3/64	7/8	.95	2.40
G-52	2 1/2	1/16	7/8	.90	2.35
G-53	2 1/2	3/32	7/8	.90	2.35
G-54	2 1/2	1/8	7/8	.90	2.35
G-55	2 1/2	5/32	7/8	1.10	2.60
G-56	3	1/32	1	1.25	2.95
G-57	3	3/64	1	1.10	2.60
G-58	3	1/16	1	1.00	2.50
G-59	3	3/32	1	1.00	2.50
G-60	3	1/8	1	1.00	2.50
G-61	3	5/32	1	1.15	2.85
G-62	4	1/32	1	2.25	4.60
G-63	4	3/64	1	1.45	3.15
G-64	4	1/16	1	1.25	2.95
G-65	4	3/32	1	1.20	2.85
G-66	4	1/8	1	1.20	2.85
G-67	4	5/32	1	1.40	3.45
G-68	4	3/16	1	1.60	3.45
G-69	5	1/16	1	1.80	3.85
G-70	5	3/32	1	1.50	3.35
G-71	5	1/8	1	1.50	3.35
G-72	5	1/8	1 1/4	1.50	3.35
G-73	5	1/8	1 1/2	1.50	3.35
G-74	5	5/32	1	1.90	4.30
G-75	5	3/16	1	2.30	4.30
G-76	6	1/16	1	4.00	7.50
G-77	6	3/32	1	3.00	5.85
G-78	6	1/8	1	2.70	5.35
G-79	6	3/16	1 1/2	3.50	6.45
G-79A	6	3/16	1 3/4	3.50	6.45
G-80	6	3/16	1	3.50	6.45
G-81	7	1/16	1	7.50	11.00
G-82	7	3/32	1	4.50	8.35
G-83	7	1/8	1	3.80	7.20
G-84	8	1/8	1	5.75	12.00

For Standard Keyways and suggestions see page 139

Screw Slotting Cutters



These Cutters have a fine pitch of teeth especially adapted for the slotting of screw heads and similar work. They are not ground on the sides
Brown & Sharpe, Nos. H-10 to H-66, Morse Style No. 131

Number	Diameter of Screw Head to be slotted Inches	Gauge No. American Standard	Thickness of Cutter Decimals	Diameter of Cutter Inches	Size of Hole Inch	Carbon Steel Each
H-10	1 5/16	5	.182	2 3/4	1	$ .70
H-11	1 1/8	6	.162	2 3/4	1	.60
H-12	1	7	.144	2 3/4	1	.50
H-13	7/8	8	.128	2 3/4	3/4, 1	.45
H-14	3/4—13/16	9	.114	2 3/4	3/4, 1	.40
H-15	5/8	10	.102	2 3/4	3/4, 1	.35
H-16	.....	11	.091	2 3/4	3/4, 1	.30
H-17	1/2—9/16	12	.081	2 3/4	3/4, 1	.25
H-18	.....	13	.072	2 3/4	3/4, 1	.20
H-19	3/8—7/16	14	.064	2 3/4	1/2, 5/8, 3/4, 1	.20
H-20	11/32	15	.057	2 3/4	1/2, 5/8, 3/4, 1	.15
H-21	5/16	16	.051	2 3/4	1/2, 5/8, 3/4, 1	.15
H-22	.....	17	.045	2 3/4	1/2, 5/8, 3/4, 1	.15
H-23	1/4—9/32	18	.040	2 3/4	1/2, 5/8, 3/4, 1	.15
H-24	3/16—7/32	19	.035	2 3/4	1/2, 5/8, 3/4, 1	.15
H-25	.....	20	.032	2 3/4	1/2, 5/8, 3/4, 1	.15
H-26	1/8	21	.028	2 3/4	1/2, 5/8, 3/4, 1	.15
H-27	1/8	22	.025	2 3/4	1/2, 5/8, 3/4, 1	.15
H-28	.....	23	.023	2 3/4	1/2, 5/8, 3/4, 1	.15
H-29	.....	24	.020	2 3/4	1/2, 5/8, 3/4, 1	.15
H-30	.....	25	.018	2 3/4	1/2, 5/8, 3/4, 1	.15
H-31	.....	26	.016	2 3/4	1/2, 5/8, 3/4, 1	.15
H-32	.....	27	.014	2 3/4	1/2, 5/8, 3/4, 1	.15
H-33	.....	28	.012	2 3/4	1/2, 5/8, 3/4, 1	.15
H-34	.....	30	.010	2 3/4	1/2, 5/8, 3/4, 1	.15
H-35	.....	32	.008	2 3/4	1/2, 5/8, 3/4, 1	.15
H-36	.....	34	.006	2 3/4	1/2, 5/8, 3/4, 1	.15
H-36A	.....	10	.102	2 1/4	5/8	.30
H-36B	.....	11	.091	2 1/4	5/8	.25
H-36C	.....	12	.081	2 1/4	5/8	.20
H-36D	.....	13	.072	2 1/4	5/8	.15
H-36E	.....	14	.064	2 1/4	5/8	.15
H-36F	.....	15	.057	2 1/4	5/8	.15
H-36G	.....	16	.051	2 1/4	5/8	.15
H-36H	.....	17	.045	2 1/4	5/8	$ .15
H-36I	.....	18	.040	2 1/4	5/8	.15
H-36J	.....	19	.035	2 1/4	5/8	.15
H-37	3/16	20	.032	2 1/4	1/2, 5/8, 3/4	.15
H-38	1/8	21	.028	2 1/4	1/2, 5/8, 3/4	.15
H-39	.....	22	.025	2 1/4	1/2, 5/8, 3/4	.15
H-40	.....	23	.023	2 1/4	1/2, 5/8, 3/4	.15
H-41	.....	24	.020	2 1/4	1/2, 5/8, 3/4	.15
H-42	.....	25	.018	2 1/4	1/2, 5/8, 3/4	.15
H-43	.....	26	.016	2 1/4	1/2, 5/8, 3/4	.15
H-44	.....	27	.014	2 1/4	1/2, 5/8, 3/4	.15
H-45	.....	28	.012	2 1/4	1/2, 5/8, 3/4	.15
H-46	.....	30	.010	2 1/4	1/2, 5/8, 3/4	.15
H-47	.....	32	.008	2 1/4	1/2, 5/8, 3/4	.15
H-48	.....	34	.006	2 1/4	1/2, 5/8, 3/4	.15
H-49	3/8	14	.064	1 3/4	5/8	.15
H-50	11/32	15	.057	1 3/4	5/8	.15
H-51	5/16	16	.051	1 3/4	5/8	.15
H-52	9/32	17	.045	1 3/4	5/8	.15
H-53	1/4	18	.040	1 3/4	5/8	.15
H-54	7/32	19	.035	1 3/4	5/8	.15
H-55	3/16	20	.032	1 3/4	5/8	.15
H-56	1/8	21	.028	1 3/4	5/8	.15
H-57	.....	22	.025	1 3/4	5/8	.15
H-58	.....	23	.023	1 3/4	5/8	.15
H-59	.....	24	.020	1 3/4	3/8, 1/2, 5/8	.12
H-60	.....	25	.018	1 3/4	3/8, 1/2, 5/8	.12
H-61	.....	26	.016	1 3/4	3/8, 1/2, 5/8	.12
H-62	.....	27	.014	1 3/4	3/8, 1/2, 5/8	.12
H-63	.....	28	.012	1 3/4	3/8, 1/2, 5/8	.12
H-64	.....	30	.010	1 3/4	3/8, 1/2, 5/8	.12
H-65	.....	32	.008	1 3/4	3/8, 1/2, 5/8	.12
H-66	.....	34	.006	1 3/4	3/8, 1/2, 5/8	.12

See Index for Screw Slotting Cutter Arbors

Formed Saws for Slitting Copper

Brown & Sharpe Style



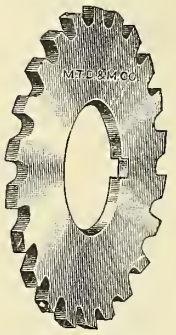
Each alternate tooth is V shaped and as the others are flat, the chip is split and forced out sidewise, having less tendency to clog than where the ordinary saw is employed.

These Saws are designed especially for the slitting or sawing of metals that are of a soft or tenacious character and are superior to the ordinary saw usually employed for this purpose. The teeth are formed and backed off the same as in all formed milling cutters, and are sharpened by grinding the face, thus retaining the outline of the saw. The sides of the Saw are ground concave for clearance.

These Saws are made to order.

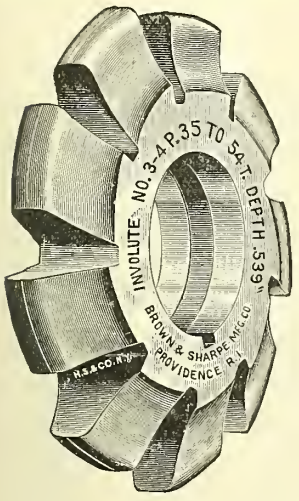
Prices on application.

Morse Style



Morse No. 132A

For Standard Keyways and suggestions see page 139



Involute Cutters

For Teeth of Gear Wheels

Which can be Sharpened by Grinding without changing their Form

Cutters for the teeth of Gear Wheels, from their peculiar construction, can be sharpened by grinding the faces of the teeth. This operation can be repeated without altering the form of the tooth which the Cutter makes, thereby rendering them much more valuable than cutters of ordinary form.

Orders should be given by annexed tables, stating the number of cutter and the diametral pitch required. By diametral pitch is meant the number of teeth to the inch in diameter on pitch circle of any wheel. In ordering Cutters for worm wheels, give the number of teeth in wheel, the diameter of worm and number of threads to the inch.

Center Line on Gear Cutters

We call attention to the center line on our Gear Cutters, which is convenient in setting Cutters central with the work spindle.

Directions for Using

The Cutters should be kept perfectly sharp by grinding the face of the teeth on the side of a solid emery or vulcanite wheel, which has its edge beveled on one side so as to reach to the bottom of the teeth. This wheel should be put on an arbor with a shoulder and nut, so that the flat side will run true, and at a velocity of from 2,000 to 3,000 revolutions per minute. Speeds and feeds of Cutters cannot be governed by any set rule. When using High Speed Steel Cutters a periphery speed of 80 feet per minute in cast iron and steel is offered as a suggestion to base speeds for any particular work when using Carbon Steel Cutters. This base will be too high, and will have to be modified to suit special conditions. If used in a common hand lathe the top of the rest should be made square or vertical to the face of the wheel, or what is better, use a small platform in the place of the rest. Then by laying the Cutter on the rest or platform, the face of the teeth can be ground square, which is very important. The Cutters should not be crowded too hard, especially when cutting through at the end of the tooth. The depth of the space made by these Cutters affords ample clearance, as it exceeds the working depth of the tooth by an amount equal to one-tenth of the thickness of the tooth on the pitch line. For wrought iron or steel use plenty of good lard oil as a lubricant.

To Set Central

A frequent source of trouble in cutting accurate gears is found in the failure of the operator to set the Cutter central. The indicator furnished with the machine provides a satisfactory means for practically all varieties of work, but many times a very accurate and quiet running gear is required. In order to attain this, it is absolutely essential that the Cutter be central.

The best method of setting the Cutter central is first to turn a blank identical in diameter with the gear to be cut, and after centering it as nearly as possible, take a single cut through the blank. Without changing the position of the Cutter, remove the blank from the work arbor and turn it end for end. Permit the blank to remain loose on the arbor and feed the Cutter into the slot already cut. Then revolve the Cutter by pulling the belt so as to mark its position in relation to the slot produced at the first cut.

If the Cutter is exactly central, the second cut will follow the outline of the first; but if out of center the Cutter at its second passage will cut some stock from the top of the space on one side and from the bottom on the other side. In the latter case the Cutter should be moved laterally away from the side of the tooth from which the stock was taken at the deepest part of cut and another cut taken in another part of the blank, and the above operations repeated until the Cutter is properly centered.

Eight Cutters are made for each pitch, as follows:

No. 1 will cut wheels from 135 teeth to a rack
No. 2 will cut wheels from 55 teeth to 134 teeth
No. 3 will cut wheels from 35 teeth to 54 teeth
No. 4 will cut wheels from 26 teeth to 34 teeth
No. 5 will cut wheels from 21 teeth to 25 teeth
No. 6 will cut wheels from 17 teeth to 20 teeth
No. 7 will cut wheels from 14 teeth to 16 teeth
No. 8 will cut wheels from 12 teeth to 13 teeth

We are prepared to furnish to order Gear Cutters from 2 to 8 pitch inclusive of half numbers, for the accommodation of those who require a finer division of the number of teeth to be cut with each Cutter than can be cut with the regular numbers as listed above.

The half numbers are as follows:

No. of Cutter	Range	No. of Cutter	Range
1½	80 to 134 teeth	5½	19 to 20 teeth
2½	42 to 54 teeth	6½	15 to 16 teeth
3½	30 to 34 teeth	7½	13 teeth
4½	23 to 25 teeth		

Table Showing Depth of Space and Thickness of Tooth in Spur Wheels when Cut with these Cutters

Diametral Pitch	Depth to be Cut in Gear Inches	Thickness of Tooth at Pitch Line Inches	Diametral Pitch	Depth to be Cut in Gear Inch	Thickness of Tooth at Pitch Line Inch
1¼	1.726	1.257	11	.196	.143
1½	1.438	1.047	12	.180	.131
1¾	1.233	.898	14	.154	.112
2	1.078	.785	16	.135	.098
2¼	.958	.697	18	.120	.087
2½	.863	.628	20	.108	.079
2¾	.784	.570	22	.098	.071
3	.719	.523	24	.090	.065
3½	.616	.448	26	.083	.060
4	.539	.393	28	.077	.056
5	.431	.314	30	.072	.052
6	.359	.262	32	.067	.049
7	.308	.224	36	.060	.044
8	.270	.196	40	.054	.039
9	.240	.175	48	.045	.033
10	.216	.157			

For Standard Keyways and suggestions, see page 139

Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe or Morse

If Morse is desired order Style No. 131B
All gears of same pitch cut with these Cutters are interchangeable

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
*1	8½	8½	2	$45.00	$85.00
*1¼	7¾	7¾	2	38.00	70.00
*1½	7	7	1¾	32.00	55.00
1¾	6½	6½	1¾	24.00	45.00
2	5¾	5¾	1½	16.00	35.00
*2¼	5¾	5¾	1½	13.00	28.00
2½	5½	5¾	1½	11.00	23.00
*2¾	5⅛	5½	1½	10.00	20.00
3	4⅜	4¾	1¼	8.00	18.00
*3¼	4¼	4⅝	1¼	7.00	16.00
*3½	4⅛	4½	1¼	6.75	14.00
*3¾	4	4⅜	1¼	6.50	13.00
4	3⅞	4¼	1¼	6.00	12.00
*4½	3¾	4	1¼	5.50	11.00
5	3⅝	3¾	1¼	5.00	10.00
*5½	3⅝	3¾	1¼	5.00	9.00
6	3	3⅛	1	4.30	8.00
7	2⅞	2⅞	1	4.10	7.00
8	2⅞	2⅞	1	3.90	6.00
9	2¾	2¾	1	3.70	5.50
10	2¼	2⅜	⅞	3.50	5.00
11	2¼	2⅜	⅞	3.30	4.50
12	2⅛	2¼	⅞	3.10	4.25
*13	2⅛	2¼	⅞	2.90	4.00
14	2	2⅛	⅞	2.70	3.75
*15	2	2⅛	⅞	2.60	3.60
16	2	2⅛	⅞	2.50	3.50
18	1⅞	2	⅞	2.40	3.40
20	1⅞	2	⅞	2.30	3.30
22	1⅞	2	⅞	2.20	3.20
24	1¾	1¾	⅞	2.10	3.10
26	1¾	1¾	⅞	2.00	3.00
28	1¾	1¾	⅞	1.80	3.00
30	1¾	1¾	⅞	1.80	3.00
32	1¾	1¾	⅞	1.80	3.00
*34	1¾	1¾	⅞	1.80	3.00
36	1¾	1¾	⅞	1.80	3.00
*38	1¾	1¾	⅞	1.80	3.00
40	1¾	1¾	⅞	1.80	3.00
*44	1¾	1¾	⅞	1.80	3.00
48	1¾	1¾	⅞	1.80	3.00
*50	1¾	1¾	⅞	1.80	3.00
*56	1¾	1¾	⅞	1.80	3.00
*60	1¾	1¾	⅞	1.80	3.00
*64	1¾	1¾	⅞	1.80	3.00
*70	1¾	1¾	⅞	1.80	3.00
*80	1¾	1¾	⅞	1.80	3.00
*120	1¾	1¾	⅞	1.80	3.00

Brown & Sharpe or Morse
Large Diameters

If Morse is desired order Style No. 131H
All gears of same pitch cut with these Cutters are interchangeable

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
1	8½	8½	1½ or 2	$45.00	$85.00
1¼	7¾	7¾	1½ or 2	38.00	70.00
1½	7¼	7¼	1½ or 2	33.00	60.00
1¾	6¾	6¾	1½ or 2	25.00	54.00
2	6¼	6¼	1½ or 2	16.50	38.50
2¼	6¼	6¼	1½ or 2	13.50	30.80
2½	6¼	6¼	1½ or 2	12.00	26.50
2¾	5¾	6¼	1½ or 2	10.50	25.00
3	5¼	5¼	1½ or 2	9.50	19.00
4	5¼	5¼	1½ or 2	8.00	15.85
5	5¼	5¼	1½ or 2	7.00	14.20
6	4¼	4¼	1½ or 2	5.80	10.40
7	4¼	4¼	1½ or 2	5.60	9.10
8	4¼	4¼	1½ or 2	5.40	8.60
10	4¼	4¼	1½ or 2	5.20	7.80
12	4¼	4¼	1½ or 2	4.35	6.65
14	4¼	4¼	1½ or 2	4.00	6.00
16	4¼	4¼	1½ or 2	4.00	6.00

For above Cutters with 1½-inch hole the Keyways are ⅜ inch wide and $\frac{3}{16}$ inch deep; with 2-inch hole the Keyways are ½ inch wide and $\frac{3}{16}$ inch deep.

Brown & Sharpe or Morse

If Morse is desired order Style No. 131K
For use on No. 4 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3	4⅜	4¾	1¼	$8.00	$18.00
*3¼	4¼	4⅝	1¼	7.00	16.00
*3½	4⅛	4½	1¼	6.75	14.00
*3¾	4	4⅜	1¼	6.50	13.00
4	3⅞	4¼	1¼	6.00	12.00
*4½	3¾	4	1¼	5.50	11.00
5	3⅝	3¾	1¼	5.00	10.00
*5½	3⅝	3¾	1¼	5.00	9.00
6	3½	3½	1¼	4.80	8.40
7	3⅜	3⅜	1¼	4.60	8.00
8	3¼	3¼	1¼	4.40	7.30
9	3⅛	3⅛	1¼	4.20	6.65
10	3	3	1¼	4.00	6.00
11	2⅞	2⅞	1¼	3.80	5.40
12	2⅞	2⅞	1¼	3.60	5.10
*13	2⅞	2⅞	1¼	3.40	4.80
*14	2⅞	2⅞	1¼	3.20	4.50
*15	2⅞	2⅞	1¼	3.10	4.35
*16	2⅞	2⅞	1¼	3.00	4.20
*18	2⅞	2⅞	1¼	2.90	4.10
*20	2¾	2¾	1¼	2.80	4.00

Brown & Sharpe or Morse

If Morse is desired order Style No. 131J. For use on No. 3 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
4	3½	3⅝	1	$5.50	$12.00
*4½	3⅜	3½	1	5.00	11.00
5	3¼	3⅜	1	4.75	10.00
*5½	3⅛	3¼	1	4.50	9.00
6	3	3⅛	1	4.30	8.00
7	2⅞	2⅞	1	4.10	7.00
8	2⅞	2⅞	1	3.90	6.00
9	2¾	2¾	1	3.70	5.50
10	2¾	2¾	1	3.60	5.30
11	2⅝	2⅝	1	3.50	4.95
12	2⅝	2⅝	1	3.35	4.70
*13	2⅝	2⅝	1	3.15	4.40
14	2½	2½	1	2.95	4.15
*15	2½	2½	1	2.85	4.00
16	2½	2½	1	$2.75	$3.85
18	2⅜	2⅜	1	2.65	3.75
20	2⅜	2⅜	1	2.55	3.65
22	2¼	2¼	1	2.45	3.55
24	2¼	2¼	1	2.35	3.45
*26	2¼	2¼	1	2.25	3.30
*28	2¼	2¼	1	2.05	3.30
*30	2¼	2¼	1	2.05	3.30
*32	2¼	2¼	1	2.05	3.30
*34	2¼	2¼	1	2.05	3.30
*36	2¼	2¼	1	2.05	3.30
*38	2¼	2¼	1	2.05	3.30
*40	2¼	2¼	1	2.05	3.30
*44	2¼	2¼	1	2.05	3.30
*48	2¼	2¼	1	2.05	3.30

Cutters marked * are made to order only. In ordering give the number of Cutter and diametral pitch required. Eight Cutters made for each pitch, see page 131. 3 pitch and coarser in cast iron and 4 pitch and coarser in steel, require 2 cuts to insure accuracy. For Standard Keyways and suggestions see page 139. Keep Cutters sharp.

Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe or Morse

If Morse is desired order Style No. 131L
For use on No. 5 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
2	5¾	5¾	1½	$16.00	$35.00
*2¼	5¾	5¾	1½	13.00	28.00
2½	5½	5¾	1½	11.00	23.00
*2¾	5⅛	5½	1½	10.00	20.00
3	5	5¼	1½	9.00	19.00
*3¼	4¾	5	1½	8.00	17.80
*3½	4⅝	4⅞	1½	7.50	15.40
*3¾	4⅜	4⅝	1½	7.00	14.30
4	4¼	4½	1½	6.50	13.20
*4½	4⅛	4⅜	1½	6.00	12.10
5	4	4¼	1½	5.50	11.00
*5½	3⅞	4⅛	1½	5.50	10.00
6	3¾	3⅞	1½	5.30	9.00
7	3⅝	3⅝	1½	5.10	8.25
8	3½	3½	1½	4.90	7.50
*9	3½	3½	1½	4.70	7.00
*10	3½	3½	1½	4.70	6.50

Brown & Sharpe or Morse

If Morse is desired order Style No. 131M
For use on No. 6 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
1¾	6½	6½	1¾	$24.00	$45.00
2	6½	6½	1¾	17.00	42.00
*2¼	6¼	6½	1¾	13.50	33.60
2½	5⅞	6⅛	1¾	11.50	26.00
*2¾	5⅝	5⅞	1¾	10.50	23.00
3	5⅜	5⅝	1¾	9.50	22.00
*3¼	5¼	5½	1¾	8.50	20.00
*3½	5	5¼	1¾	7.75	16.80
*3¾	4¾	5	1¾	7.50	15.60
4	4⅝	4¾	1¾	7.00	14.40
*4½	4½	4⅝	1¾	6.50	13.20
5	4⅜	4⅜	1¾	6.00	12.00
*5½	4⅜	4⅜	1¾	6.00	10.80
6	4¼	4¼	1¾	5.80	10.40
*7	4⅛	4⅛	1¾	5.60	9.10
*8	4	4	1¾	5.40	7.80

Cutters marked * are made to order only. In ordering give the number of Cutter and diametral pitch required. Eight Cutters made for each pitch, see page 131. 3 pitch and coarser in cast iron and 4 pitch and coarser in steel, require 2 cuts to insure accuracy. For Standard Keyways and suggestions see page 139. Keep Cutters sharp.

Metric Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe

We are prepared to furnish, at short notice, Cutters for cutting the teeth of gear wheels according to the metric system. Module is the pitch diameter in mm. divided by the number of teeth in the gear. Pitch diameter in mm. is the module multiplied by the number of teeth in the gear. M = Module. N = Number of teeth in gear. D′ = Pitch Diameter in mm. D′ = M x N. For example: M = 3.50 mm.; N = 100; D′ = 3.50 x 100 = 3.50 mm. For further explanation see formulas next page.

For use on No. 3 Automatic Gear Cutting Machines

Module MM.	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each
½	1¾	1¾	⅞ or 22	$2.30	$3.00
¾	1¾	1¾	⅞ or 22	2.30	3.00
1	1¾	1¾	⅞ or 22	2.60	3.10
1¼	1⅞	2	⅞ or 22	2.80	3.30
1½	2	2⅛	⅞ or 22	3.00	3.50
1¾	2	2⅛	⅞ or 22	3.20	3.75
2	2⅛	2¼	⅞ or 22	3.60	4.25
2¼	2¼	2⅜	⅞ or 22	3.80	4.50
2½	2¼	2⅜	⅞ or 22	4.00	5.00
2¾	2¾	2¾	1 or 27	4.20	5.50
3	2⅞	2⅞	1 or 27	4.40	6.00
3¼	2⅞	2⅞	1 or 27	4.40	6.00
3½	2⅞	2⅞	1 or 27	4.60	7.00
3¾	2⅞	2⅞	1 or 27	4.60	7.00
4	3	3⅛	1 or 27	4.80	8.00
4¼	3	3⅛	1 or 27	4.80	8.00
4½	3⅝	3¾	1¼ or 32	5.50	9.00
4¾	3⅝	3¾	1¼ or 32	5.50	9.00
5	3⅝	3¾	1¼ or 32	5.50	10.00
5¼	3⅝	3¾	1¼ or 32	5.50	10.00
5½	3¾	4	1¼ or 32	6.00	11.00
5¾	3¾	4	1¼ or 32	6.00	11.00
6	3⅞	4¼	1¼ or 32	6.50	12.00
7	4⅛	4½	1¼ or 32	7.25	14.00
8	4⅜	4¾	1¼ or 32	8.50	18.00
9	5⅛	5½	1½ or 40	10.50	20.00
10	5½	5¾	1½ or 40	11.50	23.00
11	5¾	5¾	1½ or 40	13.50	28.00
12	5¾	5¾	1½ or 40	16.50	35.00

Module MM.	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each
¾	2¼	2¼	1 or 27	$2.55	$3.30
1	2¼	2¼	1 or 27	2.85	3.45
1¼	2⅜	2⅜	1 or 27	3.05	3.65
1½	2½	2½	1 or 27	3.25	3.85
1¾	2½	2½	1 or 27	3.45	4.15
2	2⅝	2⅝	1 or 27	3.85	4.70
2¼	2⅝	2⅝	1 or 27	4.00	4.95
2½	2¾	2¾	1 or 27	4.10	5.30
3	2⅞	2⅞	1 or 27	4.40	6.00
3½	2⅞	2⅞	1 or 27	4.60	7.00
4	3	3⅛	1 or 27	4.80	8.00
4½	3⅛	3¼	1 or 27	5.00	9.00
5	3¼	3⅜	1 or 27	5.25	10.00
5½	3⅜	3½	1 or 27	5.50	11.00
6	3½	3⅝	1 or 27	6.00	12.00

For use on No. 4 Automatic Gear Cutting Machines

Module MM.	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each
1¼	2¾	2¾	1¼ or 32	$3.30	$4.00
1½	2⅞	2⅞	1¼ or 32	3.50	4.20
1¾	2⅞	2⅞	1¼ or 32	3.70	4.50
2	2⅞	2⅞	1¼ or 32	4.10	5.10
2¼	2⅞	2⅞	1¼ or 32	4.30	5.40
2½	3	3	1¼ or 32	4.50	6.00
3	3¼	3¼	1¼ or 32	4.90	7.30
3½	3⅜	3⅜	1¼ or 32	5.10	8.00
4	3½	3½	1¼ or 32	5.30	8.40
4½	3⅝	3¾	1¼ or 32	5.50	9.00
5	3⅝	3¾	1¼ or 32	5.50	10.00
5½	3¾	4	1¼ or 32	6.00	11.00
6	3⅞	4¼	1¼ or 32	6.50	12.00
7	4⅛	4½	1¼ or 32	7.25	14.00
8	4⅜	4¾	1¼ or 32	8.50	18.00

Eight Cutters made for each pitch, page 131. For Standard Keyways and suggestions see page 139. Keep Cutters sharp

Metric Involute Cutters

For Teeth of Gear Wheels

Brown & Sharpe

(Continued from lower part of preceding page, which see for explanation and data)

For use on No. 5 Automatic Gear Cutting Machines

Module MM.	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each
2½	3½	3½	1½ or 40	$5.20	$6.50
3	3½	3½	1½ or 40	5.40	7.50
3½	3⅝	3⅝	1½ or 40	5.60	8.25
4	3¾	3⅞	1½ or 40	5.80	9.00
4½	3⅞	4⅛	1½ or 40	6.00	10.00
5	4	4¼	1½ or 40	6.00	11.00
5½	4⅛	4⅜	1½ or 40	6.50	12.10
6	4¼	4½	1½ or 40	7.00	13.20
7	4⅝	4⅞	1½ or 40	8.00	15.40
8	5	5¼	1½ or 40	9.50	19.00
9	5⅛	5½	1½ or 40	10.50	20.00
10	5½	5¾	1½ or 40	11.50	23.00
11	5¾	5¾	1½ or 40	13.50	28.00
12	5¾	5¾	1½ or 40	16.50	35.00

For use on No. 6 Automatic Gear Cutting Machines

Module MM.	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole In. or MM.	Carbon Steel Each	High Speed Steel Each
3	4	4	1¾ or 45	$5.90	$7.80
3½	4⅛	4⅛	1¾ or 45	6.10	9.10
4	4¼	4¼	1¾ or 45	6.30	10.40
4½	4⅜	4⅜	1¾ or 45	6.50	10.80
5	4⅜	4⅜	1¾ or 45	6.50	12.00
5½	4½	4⅝	1¾ or 45	7.00	13.20
6	4⅝	4¾	1¾ or 45	7.50	14.40
7	5	5¼	1¾ or 45	8.25	16.80
8	5⅜	5⅝	1¾ or 45	10.00	22.00
9	5⅝	5⅞	1¾ or 45	11.00	23.00
10	5⅞	6⅛	1¾ or 45	12.00	26.00
11	6¼	6½	1¾ or 45	14.00	33.60
12	6½	6½	1¾ or 45	17.50	42.00

Formulas for Determining the Dimensions of Gears by Metric Pitch

Module is the pitch diameter in mm. divided by the number of teeth in the gear.

Pitch diameter in mm. is the module multiplied by the number of teeth in the gear.

M = Module.
D′ = The pitch diameter of gear in mm.
D = The whole diameter of gear in mm.
N = The number of teeth in gear.
D″ = The working depth of teeth.
t = Thickness of teeth on pitch line.
f = Amount added to depth for clearance.

Then

$$M = \frac{D'}{N} \text{ or } \frac{D}{N+2}$$

$$D' = N\ M.$$

$$D = (N+2)\ M.$$

$$N = \frac{D'}{M} \text{ or } \frac{D}{M} - 2$$

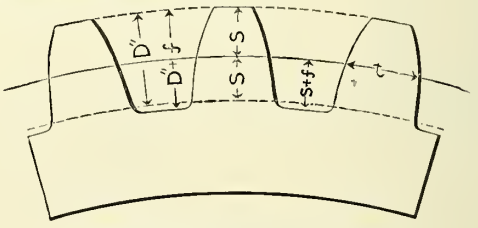
$$D'' = 2\ M.$$

$$t = M\ 1.5708.$$

$$f = \frac{M\ 1.5708}{10} = .157\ M.$$

The Module is equal to the part marked "S" in cut, measured in mm. and parts of mm.

Eight Cutters made for each pitch, page 131. For Standard Keyways and suggestions see page 139. Keep Cutters sharp.



Pitches Commonly Used

Module in Millimeters

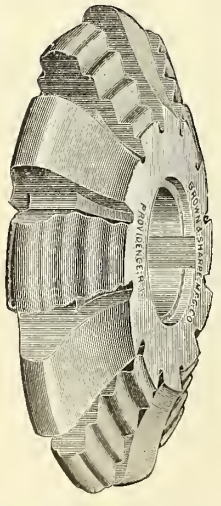
Module MM.	Corresponding English Diametral Pitch	Module MM.	Corresponding English Diametral Pitch
½	50.800	5	5.080
¾	33.867	5.5	4.618
1	25.400	6	4.233
1.25	20.320	7	3.628
1.5	16.933	8	3.175
1.75	14.514	9	2.822
2	12.700	10	2.540
2.25	11.288	11	2.309
2.5	10.160	12	2.117
2.75	9.236	13	1.954
3	8.466	14	1.814
3.5	7.257	15	1.693
4	6.350	16	1.587
4.5	5.644		

Improved Stocking Cutters

For Involute Gears

Brown & Sharpe

By the use of these Cutters, heavy cuts at fast speeds and coarse feeds can be taken because of the easier cutting action produced. The greater part of the cutting is performed by the plain teeth, the stepped teeth projecting beyond the outline of the plain teeth only enough to break up the chips. Because of the smooth and easy cutting action a minimum amount of power is consumed in driving the machine.



Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
*1	8½	8½	2	$45.00	$85.00
*1¼	7¾	7¾	2	38.00	70.00
*1½	7	7	1¾	32.00	55.00
1¾	6½	6½	1¾	24.00	45.00
2	5¾	5¾	1½	16.00	35.00
*2¼	5¾	5¾	1½	13.00	28.00
2½	5½	5¾	1½	11.00	23.00
*2¾	5⅛	5½	1½	10.00	20.00
3	4⅜	4¾	1¼	8.00	18.00
*3¼	4¼	4⅝	1¼	7.00	16.00
*3½	4⅛	4½	1¼	6.75	14.00
*3¾	4	4⅜	1¼	6.50	13.00
4	3⅞	4¼	1¼	6.00	12.00
*4½	3¾	4	1¼	5.50	11.00
5	3⅝	3¾	1¼	5.00	10.00
*5½	3⅝	3¾	1¼	5.00	9.00
6	3	3⅛	1	4.30	8.00
7	2⅞	2⅞	1	4.10	7.00
8	2⅞	2⅞	1	3.90	6.00

For other Stocking Cutters, see following page

Cutters marked * are made to order only

Improved Stocking Cutters

For Involute Gears—Brown & Sharpe

By the use of these Cutters, heavy cuts at fast speeds and coarse feeds can be taken because of the easier cutting action produced. The greater part of the cutting is performed by the plain teeth, the stepped teeth projecting beyond the outline of the plain teeth only enough to break up the chips. Because of the smooth and easy cutting action a minimum amount of power is consumed in driving the machine

For use on No. 3 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
4	3½	3⅝	1	$5.50	$12.00
*4½	3⅜	3½	1	5.00	11.00
5	3¼	3⅜	1	4.75	10.00
*5½	3⅛	3¼	1	4.50	9.00
6	3	3⅛	1	4.30	8.00
7	2⅞	2⅞	1	4.10	7.00
8	2⅞	2⅞	1	3.90	6.00

For use on No. 4 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3	4⅜	4¾	1¼	$8.00	$18.00
*3½	4⅛	4½	1¼	6.75	14.00
4	3⅞	4¼	1¼	6.00	12.00
*4½	3¾	4	1¼	5.50	11.00
5	3⅝	3¾	1¼	5.00	10.00
*5½	3⅝	3¾	1¼	5.00	9.00
6	3½	3½	1¼	4.80	8.40
7	3⅜	3⅜	1¼	4.60	8.00
8	3¼	3¼	1¼	4.40	7.30

For use on No. 5 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
2	5¾	5¾	1½	$16.00	$35.00
*2¼	5¾	5¾	1½	13.00	28.00
2½	5½	5¾	1½	11.00	23.00
*2¾	5⅛	5½	1½	10.00	20.00
3	5	5¼	1½	9.00	19.00
*3¼	4¾	5	1½	8.00	17.80
*3½	4⅝	4⅞	1½	7.50	15.40
*3¾	4⅜	4⅝	1½	7.00	14.30
4	4¼	4½	1½	6.50	13.20
*4½	4⅛	4⅜	1½	6.00	12.10
5	4	4¼	1½	5.50	11.00
*5½	3⅞	4⅛	1½	5.50	10.00
6	3¾	3⅞	1½	5.30	9.00
7	3⅝	3⅝	1½	5.10	8.25
8	3½	3½	1½	4.90	7.50

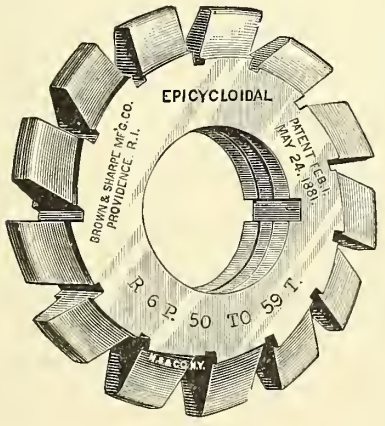
For use on No. 6 Automatic Gear Cutting Machines

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
1¾	6½	6½	1¾	$24.00	$45.00
2	6½	6½	1¾	17.00	42.00
*2¼	6¼	6½	1¾	13.50	33.60
2½	5⅞	6⅛	1¾	11.50	26.00
*2¾	5⅝	5⅞	1¾	10.50	23.00
3	5⅜	5⅝	1¾	9.50	22.00
*3¼	5¼	5½	1¾	8.50	20.00
*3½	5	5¼	1¾	7.75	16.80
*3¾	4¾	5	1¾	7.50	15.60
4	4⅝	4¾	1¾	7.00	14.40
*4½	4½	4⅝	1¾	6.50	13.20
5	4⅜	4⅜	1¾	6.00	12.00
*5½	4⅜	4⅜	1¾	6.00	10.80
6	4¼	4¼	1¾	5.80	10.40
*7	4⅛	4⅛	1¾	5.60	9.10
*8	4	4	1¾	5.40	7.80

Cutters marked * are made to order only

Patent Epicycloidal Cutters

For Teeth of Gear Wheels—Brown & Sharpe



Diametral Pitch	Diameter of Cutter Inches	Hole Inches	Carbon Steel Each
*2	5	1¼	$15.50
*2¼	4½	1¼	14.00
*2½	4¼	1¼	13.00
*2¾	4	1¼	11.75
3	3 13/16	1¼	10.75
*3½	3 9/16	1¼	9.75
4	3⅜	1¼	6.60
5	3 1/16	1¼	5.65
6	2¾	1 1/16	4.65
*7	2 9/16	1 1/16	4.40
8	2½	1 1/16	3.90
*9	2⅜	1 1/16	3.65
10	2⅛	⅞	3.40
*12	2	⅞	3.20
*14	2	⅞	3.00
*16	1 15/16	⅞	2.80

Cutters marked * are made to order only

Cutters are Marked with Letters

24 Cutters in Each Set

Cutter A cuts	12 teeth	Cutter M cuts	27 to 29 teeth
Cutter B cuts	13 teeth	Cutter N cuts	30 to 33 teeth
Cutter C cuts	14 teeth	Cutter O cuts	34 to 37 teeth
Cutter D cuts	15 teeth	Cutter P cuts	38 to 42 teeth
Cutter E cuts	16 teeth	Cutter Q cuts	43 to 49 teeth
Cutter F cuts	17 teeth	Cutter R cuts	50 to 59 teeth
Cutter G cuts	18 teeth	Cutter S cuts	60 to 74 teeth
Cutter H cuts	19 teeth	Cutter T cuts	75 to 99 teeth
Cutter I cuts	20 teeth	Cutter U cuts	100 to 149 teeth
Cutter J cuts	21 to 22 teeth	Cutter V cuts	150 to 249 teeth
Cutter K cuts	23 to 24 teeth	Cutter W cuts	250 or more
Cutter L cuts	25 to 26 teeth	Cutter X cuts	Rack

In ordering, give the letter on Cutter and the pitch required

We furnish Cutters of epicycloidal form, which are sharpened upon the face the same as the Involute Cutters. As gears of this form of teeth to run well must be cut accurately to the proper depth that the pitch lines may coincide, we make the Cutters with a shoulder (see cut above) which determines the exact depth that the tooth should be cut. Care taken in sizing the blanks obviates the necessity of any measurements in cutting the teeth. The Cutters are made for either diametral or circular pitches and the same rules apply in finding the diameters of blanks as in our system of involute teeth, i. e., 2 pitches added to the diameter at pitch line. See formulas, page 139 and tables showing corresponding circular and diametral pitches, page 138.

These Cutters will cut gears that will interchange.

The white line on edge of the two left hand upper teeth of cut represents a center line on the cutter teeth, which may be a convenience in setting the Cutter central.

All gears of same pitch cut with these Cutters are interchangeable.

They can be sharpened by grinding without changing their form.

For Standard Keyways and suggestions see page 139

Involute Gear Cutters

Circular Pitch



We furnish, at short notice, Cutters for cutting the teeth of gear wheels according to circular pitch made either from Carbon Steel or High Speed Steel.

Brown & Sharpe or Morse

If Morse is desired order Style No. 131N

Circular Pitch Inches	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
1/8	1 3/4	1 3/4	7/8	$2.60	$3.10
3/16	2	2 1/8	7/8	3.00	3.50
1/4	2 1/8	2 1/4	7/8	3.60	4.25
5/16	2 1/4	2 3/8	7/8	4.00	5.00
3/8	2 7/8	2 7/8	1	4.40	6.00
7/16	2 7/8	2 7/8	1	4.60	7.00
1/2	3	3 1/8	1	4.80	8.00
9/16	3 5/8	3 3/4	1 1/4	5.50	9.00
5/8	3 5/8	3 3/4	1 1/4	5.50	10.00
11/16	3 3/4	4	1 1/4	6.00	11.00
3/4	3 7/8	4 1/4	1 1/4	6.50	12.00
13/16	4	4 3/8	1 1/4	7.00	13.00
7/8	4 1/8	4 1/2	1 1/4	7.25	14.00
15/16	4 1/4	4 5/8	1 1/4	7.50	16.00
1	4 3/8	4 3/4	1 1/4	8.50	18.00
1 1/8	5 1/8	5 1/2	1 1/2	10.50	20.00
1 1/4	5 1/2	5 3/4	1 1/2	11.50	23.00
1 3/8	5 3/4	5 3/4	1 1/2	13.50	28.00
1 1/2	5 3/4	5 3/4	1 1/2	16.50	35.00
1 3/4	6 1/2	6 1/2	1 3/4	24.50	45.00
2	7	7	1 3/4	32.50	55.00
2 1/4	7 1/2	7 1/2	1 3/4	35.00	65.00
2 1/2	7 3/4	7 3/4	2	38.50	70.00
2 3/4	8 1/2	8 1/2	2	42.00	80.00
3	8 1/2	8 1/2	2	45.50	85.00

Brown & Sharpe or Morse

Morse Style No. 131P
For use on No. 3 Automatic Gear Cutting Machines

Circular Pitch Inch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
1/8	2 1/4	2 1/4	1	$2.85	$3.45
3/16	2 1/2	2 1/2	1	3.25	3.85
1/4	2 5/8	2 5/8	1	3.85	4.70
5/16	2 3/4	2 3/4	1	4.10	5.30
3/8	2 7/8	2 7/8	1	4.40	6.00
7/16	2 7/8	2 7/8	1	4.60	7.00
1/2	3	3 1/8	1	4.80	8.00
9/16	3 1/8	3 1/4	1	5.00	9.00
5/8	3 1/4	3 3/8	1	5.25	10.00
11/16	3 3/8	3 1/2	1	5.50	11.00
3/4	3 1/2	3 5/8	1	6.00	12.00

Brown & Sharpe or Morse

Morse Style No. 131R
For use on No. 4 Automatic Gear Cutting Machines

Circular Pitch Inch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3/16	2 7/8	2 7/8	1 1/4	$3.50	$4.20
1/4	2 7/8	2 7/8	1 1/4	4.10	5.10
5/16	3	3	1 1/4	4.50	6.00
3/8	3 1/4	3 1/4	1 1/4	4.90	7.30
7/16	3 3/8	3 3/8	1 1/4	5.10	8.00
1/2	3 1/2	3 1/2	1 1/4	5.30	8.40
9/16	3 5/8	3 3/4	1 1/4	5.50	9.00
5/8	3 5/8	3 3/4	1 1/4	5.50	10.00
11/16	3 3/4	4	1 1/4	6.00	11.00
3/4	3 7/8	4 1/4	1 1/4	6.50	12.00
13/16	4	4 3/8	1 1/4	7.00	13.00
7/8	4 1/8	4 1/2	1 1/4	7.25	14.00
15/16	4 1/4	4 5/8	1 1/4	7.50	16.00
1	4 3/8	4 3/4	1 1/4	8.50	18.00

Brown & Sharpe or Morse

Morse Style No. 131S
For use on No. 5 Automatic Gear Cutting Machines

Circular Pitch Inches	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
5/16	3 1/2	3 1/2	1 1/2	$5.20	$6.50
3/8	3 1/2	3 1/2	1 1/2	5.40	7.50
7/16	3 5/8	3 5/8	1 1/2	5.60	8.25
1/2	3 3/4	3 7/8	1 1/2	5.80	9.00
9/16	3 7/8	4 1/8	1 1/2	6.00	10.00
5/8	4	4 1/4	1 1/2	6.00	11.00
11/16	4 1/8	4 3/8	1 1/2	6.50	12.10
3/4	4 1/4	4 1/2	1 1/2	7.00	13.00
13/16	4 3/8	4 5/8	1 1/2	7.05	14.30
7/8	4 5/8	4 7/8	1 1/2	8.00	15.40
15/16	4 3/4	5	1 1/2	8.50	17.80
1	5	5 1/4	1 1/2	9.50	19.00
1 1/8	5 1/8	5 1/2	1 1/2	10.50	20.00
1 1/4	5 1/2	5 3/4	1 1/2	11.50	23.00
1 3/8	5 3/4	5 3/4	1 1/2	13.50	28.00
1 1/2	5 3/4	5 3/4	1 1/2	16.50	35.00

Brown & Sharpe or Morse

Morse Style No. 131T
For use on No. 6 Automatic Gear Cutting Machines

Circular Pitch Inches	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3/8	4	4	1 3/4	$5.90	$7.80
7/16	4 1/8	4 1/8	1 3/4	6.10	9.10
1/2	4 1/4	4 1/4	1 3/4	6.30	10.40
9/16	4 3/8	4 3/8	1 3/4	6.50	10.80
5/8	4 3/8	4 3/8	1 3/4	6.50	12.00
11/16	4 1/2	4 5/8	1 3/4	7.00	13.20
3/4	4 5/8	4 3/4	1 3/4	7.50	14.40
13/16	4 3/4	5	1 3/4	8.00	15.60
7/8	5	5 1/4	1 3/4	8.25	16.80
15/16	5 1/4	5 1/2	1 3/4	9.00	20.00
1	5 3/8	5 5/8	1 3/4	10.00	22.00
1 1/8	5 5/8	5 7/8	1 3/4	11.00	23.00
1 1/4	5 7/8	6 1/8	1 3/4	12.00	26.00
1 3/8	6 1/4	6 1/2	1 3/4	14.00	33.60
1 1/2	6 1/2	6 1/2	1 3/4	17.50	42.00
1 5/8	6 1/2	6 1/2	1 3/4	20.00	43.00
1 3/4	6 1/2	6 1/2	1 3/4	24.50	45.00

For Standard Keyways and suggestions see page 139

Cutters for Mitre and Bevel Gears

These Cutters are thin enough to cut any bevel gear whose tooth face is not longer than one-third the distance from its outer end to the point where the shaft center lines meet. This makes the tooth thickness at the inner end not less than two-thirds that at the outer end.

In ordering Cutters for bevel gears, if the number of teeth in each gear, the pitch and length of face are given, also the angle of the shafts, if different from a right angle, we can select the proper Cutter to send.

When an extra length of face is wanted, requiring an especially thin Cutter, this length should be specified in the order.

Eight Cutters are made for each pitch and numbered from 1 to 8.

As the number of teeth in the bevel gears to be cut with each Cutter will not always agree with the list on page 131, the number of Cutter must be found for each pair of gears to be cut according to the following formula:

Brown & Sharpe or Morse

If Morse is desired order Style No. 131C

Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inches	Carbon Steel Each	High Speed Steel Each
3	4	4	1¼	$7.50	$15.00
4	3½	3⅝	1¼	5.50	12.00
5	3¼	3⅜	1¼	4.75	10.00
6	3	3⅛	1	4.30	8.00
7	2⅞	2⅞	1	4.10	7.00
8	2⅞	2⅞	1	3.90	6.00
10	2¼	2⅜	⅞	3.50	5.00
12	2⅛	2¼	⅞	3.10	4.25
14	2	2⅛	⅞	2.70	3.75
16	2	2⅛	⅞	2.50	3.50
20	1⅞	2	⅞	2.30	3.30
24	1¾	1¾	⅞	2.10	3.10

Brown & Sharpe

For use on No. 13 Automatic Gear Cutting Machines

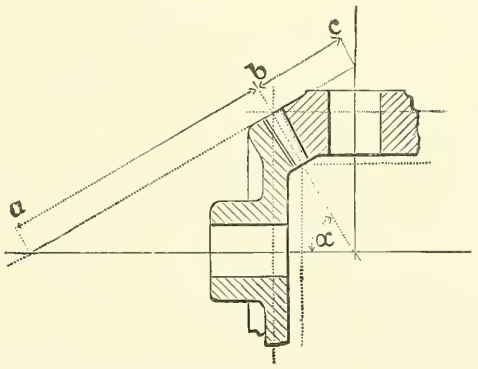
Diametral Pitch	Diameter of Cutter Carbon Steel Inches	Diameter of Cutter High Speed Steel Inches	Hole Inch	Carbon Steel Each	High Speed Steel Each
4	3⅜	3½	⅞	$5.50	$12.00
5	3⅛	3¼	⅞	4.75	10.00
6	3	3⅛	⅞	4.30	8.00
7	2¾	2⅞	⅞	4.10	7.00
8	2¾	2⅞	⅞	3.90	6.00
10	2⅝	2⅝	⅞	3.60	5.30
12	2½	2½	⅞	3.35	4.70
14	2⅜	2⅜	⅞	2.95	4.15
16	2⅜	2⅜	⅞	2.75	3.85
20	2¼	2¼	⅞	2.55	3.65
24	2¼	2¼	⅞	2.35	3.45

Eight Cutters made for each pitch, see page 131.

3 pitch and coarser in cast iron and 4 pitch and coarser in steel require two cuts to insure accuracy.

Cutters for pitches not given in the above list will be made to order.

Formula



Na = Number of teeth in gear
Nb = Number of teeth in pinion
a = Center angle of gear

Measure the back cone radius $a\ b$ for the gear, or $b\ c$ for the pinion. This is equal to the radius of a spur gear, the number of teeth in which would determine the Cutter to use. Hence twice $a\ b$ times the diametral pitch equals the number of teeth for which the Cutter should be selected for the gear. By referring to upper list on left, the proper number for the Cutter can be found.

Thus, let the back cone radius $a\ b$ be 4 inches and the diametral pitch be 8. Twice 4 is 8 and 8 x 8 is 64, from which it can be seen that the Cutter must be of shape No. 2, as 64 is between 55 and 134, the range covered by a No. 2 Cutter.

The number of teeth for which the Cutter should be selected can also be found by the following formula:

$$\text{Tan. } a = \frac{\text{Na}}{\text{Nb}}$$

$$\text{Number of teeth to select Cutter for gear} = \frac{\text{Na}}{\text{Cos. } a}$$

$$\text{Number of teeth to select Cutter for pinion} = \frac{\text{Nb}}{\text{Sin. } a}$$

If the gears are mitres or are alike, only one Cutter is needed; if one gear is larger than the other, two may be needed.

High Speed Steel

High Speed Steels vary with almost every manufacturer, but are generally an alloy of iron either with tungsten, tungsten and molybdenum, or molybdenum and chromium. Approximately ¼ of 1 per cent of vanadium is fused with the alloy by the crucible method.

To secure complete fusion and hardness, a white heat of about 2100 degrees F. is necessary. Rough forged tools are commonly cooled by use of compressed air blast, while oil is usually employed to cool the better finished tools.

As the component parts of High Speed Steel actually produce extreme hardness, it is not necessary to temper tools made therefrom, although they may be tempered if desired.

The better grade of High Speed Steel tools will retain their cutting edges without breaking until a red heat is attained, although naturally it is better to not use them to this excess.

High Speed Steel tools will average from 100 to 250 per cent greater in cutting efficiency than the better grades of Carbon Steel, but to secure the full value of this service, special machines with the necessary driving power will be required.

For Standard Keyways and suggestions see page 139

The Sizing and Cutting of Gear Wheels

Diameter, when applied to gears, is always understood to mean the pitch diameter.

Diametral Pitch is the number of teeth to each inch of the pitch diameter.

Example. If a gear has 40 teeth and the pitch diameter is 4 inches, there are 10 teeth to each inch of the pitch diameter and the diametral pitch is 10, or, in other words, the gear is 10 diametral pitch.

Diametral Pitch required, circular pitch given. Divide 3.1416 by the circular pitch.

Example. If the circular pitch is 2 inches, divide 3.1416 by 2 and the quotient, 1.5708, is the diametral pitch.

Diametral Pitch required, number of teeth and outside diameter given. Add 2 to the number of teeth and divide by the outside diameter.

Example. If the number of teeth is 40, the diameter of the blank is 10½ inches, add 2 to the number of teeth, making 42, and divide by 10½; the quotient, 4, is the diametral pitch.

Circular Pitch is the distance from the center of one tooth to the center of the next, measured along the pitch line.

Example. If the distance from the center of one tooth to the center of the next tooth, measured along the pitch circle is ½ inch, the gear is ½ inch circular pitch.

Circular Pitch required, diametral pitch given. Divide 3.1416 by the diametral pitch.

Example. If the diametral pitch is 4, divide 3.1416 by 4 and the quotient, .7854 inch, is the circular pitch.

Number of Teeth required, pitch diameter and diametral pitch given. Multiply the pitch diameter by the diametral pitch.

Example. If the diameter of the pitch circle is 10 inches and the diametral pitch is 4, multiply 10 by 4 and the product, 40, will be the number of teeth in the gear.

Number of Teeth required, outside diameter and diametral pitch given. Multiply the outside diameter by the diametral pitch and subtract 2.

Example. If the whole diameter is 10½ and the diametral pitch is 4, multiply 10½ by 4 and the product, 42 less 2, or 40, is the number of teeth.

Pitch Diameter required, number of teeth and diametral pitch given. Divide the number of teeth by the diametral pitch.

Example. If the number of teeth is 40 and the diametral pitch is 4, divide 40 by 4 and the quotient, 10, is the pitch diameter.

Outside Diameter or size of gear blank required, number of teeth and diametral pitch given. Add 2 to the number of teeth and divide by the diametral pitch.

Example. If the number of teeth is 40 and the diametral pitch is 4, add 2 to the 40, making 42, and divide by 4; the quotient, 10½, is the whole diameter of the gear or blank.

Thickness of Tooth at Pitch Line required. Divide the circular pitch by 2, or 1.57 by the diametral pitch.

Example. If the circular pitch is 1.047 inch, or the diametral pitch is 3, divide 1.047 by 2, or 1.57 by 3, and the quotient, .523 inch, is the thickness of tooth.

Whole Depth of Tooth required. Divide 2.157 by the diametral pitch.

Example. If the diametral pitch of a gear is 6, the whole depth is 2.157 divided by 6, which equals .3595.

Whole Depth of Tooth is about $\frac{11}{16}$ or exactly .6866 of the circular pitch.

Example. If the circular pitch is 2, the whole depth of tooth is about $\frac{11}{16}$ of 2 inches or 1⅜ inches nearly.

Distance between Centers of two gears required. Add the number of teeth together and divide one half the sum by the diametral pitch.

Example. If two gears have 50 and 30 teeth, respectively, and are 5 pitch, add 50 and 30, making 80, divide by 2 and then divide the quotient, 40, by the diametral pitch, 5, and the result, 8 inches, is the center distance.

To Facilitate the Measurement of wheels to be sized according to diametral pitch, either of the following steel rules described can be used: No. 377, Style 1, is a 12-inch rule containing four lines of graduations upon each side, one each as follows: 18ths, 20ths, 22ds, 24ths, 26ths, 28ths, 30ths, and 32nds. Each line of graduations is figured the whole length of the rule, 10, 20, 30, etc. Suppose a wheel of 60 teeth of 20 pitch is to be sized, then find 60 on the line of 20ths and that is the pitch diameter of the required wheel; then add two of the divisions to make the outside diameter which is sixty-two twentieths. No. 377, Style 2, is also a 12-inch rule having one inch only of graduations on each end as follows: 6ths, 7ths, 8ths, 9ths, 10ths, 11ths, 12ths, 14ths, 16ths, 18ths, 20ths, 22ds, 24ths, 26ths, 28ths, 30ths, 32ds, 34ths, 36ths 38ths. The intermediate ten inches are blank, except that the inch lines are made clear across the rule. Suppose a wheel of 83 teeth of 10 pitch is to be sized, then take 8 of the blank inches and three of the 10th graduations and that gives the pitch diameter of the required wheel, add two of the tenths which gives the outside diameter which is eight and five-tenths inches.

These rules furnish graduations for a large variety of pitches and are the best adapted for the use for which they are designed. For prices on these rules see index.

In addition to the foregoing are made 12 and 24-inch rules with No. 5 graduation, as follows:

1st corner, 11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25.
2nd corner, 16, 32, 64.
3rd corner, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38.
4th corner, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100.

On page 139, formulas and examples are given for all calculations required in connection with size and pitch of wheels.

No. 1 table shows the diametral pitches with the corresponding circular pitches.

No. 2 table shows the circular pitches with the corresponding diametral pitches.

Table No. 1		Table No. 2	
Diametral Pitch	Circular Pitch Inches	Circular Pitch Inches	Diametral Pitch
1¼	2.5133	2	1.571
1½	2.0944	1⅞	1.676
1¾	1.7952	1¾	1.795
2	1.571	1⅝	1.933
2¼	1.396	1½	2.094
2½	1.257	1 7/16	2.185
2¾	1.142	1⅜	2.285
3	1.047	1 5/16	2.394
3½	.898	1¼	2.513
4	.785	1 3/16	2.646
5	.628	1⅛	2.793
6	.524	1 1/16	2.957
7	.449	1	3.142
8	.393	15/16	3.351
9	.349	⅞	3.590
10	.314	13/16	3.867
11	.286	¾	4.189
12	.262	11/16	4.570
14	.224	⅝	5.027
16	.196	9/16	5.585
18	.175	½	6.283
20	.157	7/16	7.181
22	.143	⅜	8.378
24	.131	5/16	10.053
26	.121	¼	12.566
28	.112	3/16	16.755
30	.105	⅛	25.133
32	.098	1/16	50.266
36	.087		
40	.079		
48	.065		

According to the system adopted by the Brown & Sharpe Mfg. Co., any wheel of one pitch will gear into any other wheel or into a rack of the same pitch. Eight Cutters are required for each pitch. These eight Cutters are adapted to cut from a pinion of twelve teeth to a rack, and are numbered respectively, 1, 2, 3, etc. The number of teeth and the pitch for which a Cutter is adapted is also marked on each.

No. 1 will cut wheels from 135 teeth to a rack.
No. 2 will cut wheels from 55 teeth to 134 teeth.
No. 3 will cut wheels from 35 teeth to 54 teeth.
No. 4 will cut wheels from 26 teeth to 34 teeth.
No. 5 will cut wheels from 21 teeth to 25 teeth.
No. 6 will cut wheels from 17 teeth to 20 teeth.
No. 7 will cut wheels from 14 teeth to 16 teeth.
No. 8 will cut wheels from 12 teeth to 13 teeth.

If a Cutter is wanted for a wheel of 40 teeth of 8 pitch, then the Cutter required would be No. 3 of 8 pitch, inasmuch as a No. 3 Cutter will cut all wheels containing from 35 to 54 teeth inclusive, and 40 occurring between those numbers, that is the one desired. It should be borne in mind that eight different Cutters are required in order to cut all the wheels of any given pitch. See page 131 for directions for use of these Cutters. Special attention is called to the clause in relation to depth of space.

As these Cutters allow of being ground when dull, it is important that they be kept sharp. By paying particular attention to this, cutting will be greatly facilitated, beside being much better done.

It is desirable in applying gearing of any kind, to avoid having wheels or pinions with a small number of teeth. Pinions of twelve teeth will work very well, but a less number of teeth should not be used.

Few mechanics are familiar with the minutiae of gearing and the necessity of exact sizing of wheels, as to diameter, is often overlooked. Special care is required also to know that the distance of the centers of two wheels running together is correct relatively to the diameters.

For Standard Keyways and suggestions see page 139

Formulas

For Determining the Dimensions of Gears by Diametral Pitch

Let P denote the diametral pitch, or the number of teeth to one inch of diameter of pitch circle.
Let D′ denote the diameter of pitch circle.
Let D denote the whole diameter.
Let N denote the number of teeth.
Let V denote the velocity.
(Larger Wheel — These wheels run together)
Let d′ denote the diameter of pitch circle.
Let d denote the whole diameter.
Let n denote the number of teeth.
Let v denote the velocity.
(Smaller Wheel — These wheels run together)

Let a denote the distance between the centers of the two wheels.
Let b denote the number of teeth in both wheels.
Let t denote the thickness of tooth or cutter on pitched circle.
Let D″ denote the working depth of tooth.
Let f denote the amount added to depth of tooth for rounding the corners and for clearance.
Let D″+f denote the whole depth of tooth.
Let π denote the constant 3.1416.
Let P′ denote the circular pitch or the distance from the center of one tooth to the center of the next on the pitch circle.

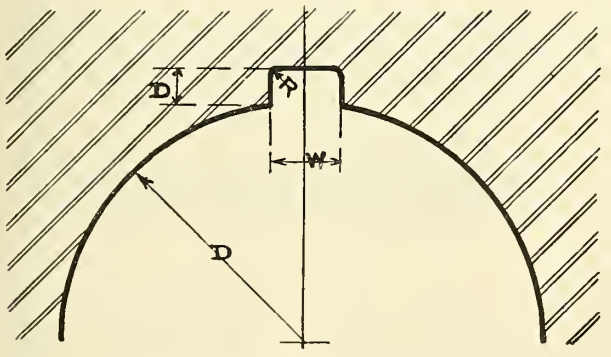
The examples placed opposite the formulas below, are for a single wheel of 12 pitch, 6.166 inches or $6\frac{2}{12}$ inches diameter, etc., and in the case of the two wheels the larger has the same dimensions. The velocities are respectively 1 and 2.

For a Single Wheel

Formulas	Examples	
$P=\frac{N+2}{D}=\frac{72+2}{6.166}$, or $\frac{72+2}{6\,2\text{-}12}$		1.
$P=\frac{N}{D'}=\frac{72}{6}$	$=12.$	2.
$D'=\frac{D\times N}{N+2}=\frac{6.166\times 72}{72+2}$	$=6.$	3.
$D'=\frac{N}{P}=\frac{72}{12}$	$=6.$	4.
$N=P\,D'=12\times 6$	$=72.$	5.
$N=P\,D-2=12\times 6.166-2$, or $12\times 6\,2\text{-}12-2$	$=72.$	6.
$D=\frac{N+2}{P}=\frac{72+2}{12}$	$=6.166$, or $6\,2\text{-}12.$	7.
$D=D'+\frac{2}{P}=6+\frac{2}{12}$, or $6+.166$	$=6.166.$	8.
$t=\frac{1.57}{P}\quad\frac{1.57}{12}$	$=.130$	9.
$D''=\frac{2}{P}=\frac{2}{12}$	$=.166$, or $2\text{-}12.$	10.
$f=\frac{t}{10}=\frac{.130}{10}$	$=.013.$	11.
$D''+f=.166+.013$	$=.179$	12.
$P'=\frac{\pi}{P}=\frac{3.1416}{12}$	$=.262.$	13.
$P=\frac{\pi}{P'}=\frac{3.1416}{.262}$	$=12.$	14.

For a Pair of Wheels

Formulas	Examples	
$b=2\,aP=2\times 4.5\times 12$	$=108.$	15.
$n=\frac{b\,V}{v+V}=\frac{108\times 1}{3}$	$=36.$	16.
$N=\frac{nv}{V}=\frac{36\times 2}{1}$	$=72.$	17.
$n=\frac{NV}{v}=\frac{72\times 1}{2}$	$=36.$	18.
$N=\frac{bv}{v+V}=\frac{108\times 2}{3}$	$=72.$	19.
$n=\frac{P\,D'\,V}{v}=\frac{12\times 6\times 1}{2}$	$=36.$	20.
$V=\frac{nv}{N}=\frac{36\times 2}{72}$	$=1.$	21.
$v=\frac{NV}{n}=\frac{72\times 1}{36}$	$=2.$	22.
$v=\frac{P\,D'\,V}{n}=\frac{12\times 6\times 1}{36}$	$=2.$	23.
$D=\frac{2a\,(n+2)}{b}=\frac{2\times 4.5\times\,(72+2)}{108}$	$=6.166.$	24.
$b=\frac{2a\,(n+2)}{b}=\frac{2\times 4.5\times\,(36+2)}{108}$	$=3.166.$	25.
$a=\frac{b}{2P}=\frac{108}{2+12}$	$=4.5.$	26.
$D'\frac{2aV}{v+V}=\frac{2\times 4.5\times 2}{3}$	$=6.$	27.
$d'=\frac{2av}{v+V}=\frac{2\times 4.5\times 1}{3}$	$=3.$	28.
$a=\frac{D'+d'}{2}=\frac{6+3}{2}$	$=4.5$	29.



Standard Keyways for Milling Cutters

Diameter (D) of Hole Inches	Width (W) of Keyway Inch	Depth (D) of Keyway Inch	Radius (R) Inch
$\frac{3}{8}$ to $\frac{9}{16}$	$\frac{3}{32}$	$\frac{3}{64}$	.020
$\frac{5}{8}$ to $\frac{7}{8}$	$\frac{1}{8}$	$\frac{1}{16}$	.030
$\frac{15}{16}$ to $1\frac{1}{8}$	$\frac{5}{32}$	$\frac{5}{64}$	.035
$1\frac{3}{16}$ to $1\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{32}$	.040
$1\frac{7}{16}$ to $1\frac{3}{4}$*	$\frac{1}{4}$	$\frac{1}{8}$	.050
$1\frac{13}{16}$ to 2*	$\frac{5}{16}$	$\frac{5}{32}$	.060
$2\frac{1}{16}$ to $2\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{16}$	.060
$2\frac{9}{16}$ to 3	$\frac{7}{16}$	$\frac{3}{16}$	.060

*$1\frac{1}{2}$, $1\frac{3}{4}$, and 2 inches. For all Gear Cutters of these diameters, use $\frac{5}{16}$, $\frac{3}{8}$ and $\frac{1}{2}$-inch keys respectively.
Gear Cutters with $1\frac{1}{2}$-inch hole can also be furnished with $\frac{3}{8}$-inch keyway.

Suggestions for Ordering Cutters

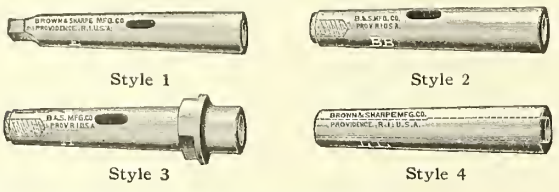
REGULAR CUTTERS—Always order by catalogue number, giving diameter, face and size of hole.
SPECIAL MILLING CUTTERS—Give diameter, face, size of hole and keyway and refer to catalogue number for style. When End Mills, Angular Mills, Facing Mills and T Slot Cutters are desired, be particular to state whether RIGHT OR LEFT HAND.
FORMED CUTTERS—Sketches showing form and all dimensions, or template showing form together with all dimensions, should be furnished when ordering Formed Cutters. Also state whether Cutter is "coming" or "going" at the bottom. Formed Cutters are adapted for work where uniformity is required, and are sharpened by grinding the faces of the teeth.
GEAR CUTTERS—Give number of cutter and diametral pitch when ordering. Diametral pitch means the number of teeth to the inch in diameter in pitch circle of any wheel. These cutters are sharpened by grinding the faces of the teeth. To get best results be sure Cutters are KEPT SHARP.

Collets and Arbors

Collets

For use on Milling, Grinding, Gear Cutting Machines, Etc.

Brown & Sharpe



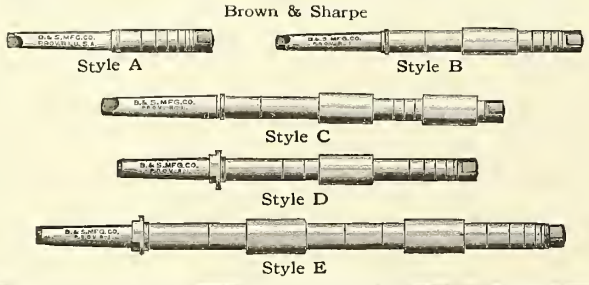
Style 1 Style 2 Style 3 Style 4

Style 2A. Similar to Style 2, but no threaded hole
Style 3A. Similar to Style 3, but no threaded hole
Style 4A. Straight hole through; front end 60-degree taper

Mark	Outside Taper	Inside Taper	Style	Collet to Spindle Inches	Diameter of Threaded Hole Inches	Each
LL	6	2	4	3/4	.....	$1.50
A	7	4	1	1 9/16	.....	2.00
J	7	4	2	5/16	3/8, 16, L. H.	2.00
N	7	5	1	2 1/16	.....	2.00
R	7	5	2	3/4	3/8, 16, L. H.	2.00
C	9	5	1	2 1/8	.....	3.00
D	9	5	1	3/8	.....	2.75
K	9	5	2	3/8	7/16, 14, L. H.	2.75
B	9	7	1	2 1/8	.....	3.25
EE	10	5	1	2 1/8	.....	3.50
MM	10	6	4A	3/4	.....	3.50
DD	10	7	1	2 5/8	.....	$3.50
E	10	7	1	1 5/8	.....	3.50
BB	10	7	2	1 1/4	1/2, 14, L. H.	3.50
Z	10	7	2A	1/2	.....	4.00
F	10	9	1	1	.....	4.00
FF	10	9	2	1 1/4	.....	3.50
Q	11	7	1	1 3/4	.....	4.50
G	11	9	1	2 3/8	.....	5.00
O	11	9	2	1/4	3/4, 12, L. H.	5.25
H	11	9	3	1 5/8	3/4, 12, L. H.	6.00
GG	11	10	3A	1/2	.....	6.00
SS	12	9	2	7/16	3/4, 12, L. H.	6.00
T	12	9	3A	1 11/16	.....	6.50
V	12	10	2	7/8	3/4, 12, R. H.	6.50
P	11	10	1	1 3/8	.....	6.50
PP	12	10	3A	1 11/16	.....	6.50
VV	12	11	2	1 7/8	3/4, 12, R. H.	6.50
TT	12	11	3A	1 11/16	.....	6.50
UU	12	9	3	1 11/16	3/4, 12, L. H.	6.75
WW	14	10	2	7/8	3/4, 12, R. H.	8.00
W	14	11	2	7/8	3/4, 12, R. H.	8.00
XX	16	11	2	7/8	7/8, 10, R. H.	10.00
X	16	12	2	7/8	7/8, 10. R. H.	10.00
YY	18	11	2	7/8	1, 10, R. H.	11.50
Y	18	14	2	7/8	1, 10, R. H.	13.00

Milling Machine Cutter Arbors

Brown & Sharpe



Style A Style B Style C Style D Style E

Number of Arbor	Number of Taper Shank	Diameter of Arbor Inches	Length Shoulder to Nut Inches	Diameter Hardened Sleeve Inches	Style	Each
04	7	1/2	1	...	A	$3.50
05	7	1/2	3	...	A	4.00
07	9	5/8	4	...	A	4.50
08	9	7/8	5 1/4	...	A	5.00
09	9	1	5 1/4	...	A	5.00
010	9	5/8	8	...	A	6.50
011	9	7/8	8	...	A	6.50
012	9	1	8	...	A	6.50
1	10	5/8	4	...	A	5.00
6	10	7/8	5 1/4	...	A	6.00
7	10	1	5 1/4	...	A	6.00
8	10	1 1/16	5 1/4	...	A	6.00
9	10	1 1/4	5 1/4	...	A	6.00
10	10	7/8	8	...	A	7.50
11	10	1	8	...	A	7.50
12	10	1 1/16	8	...	A	7.50
13	10	1 1/4	8	...	A	7.50
40	10	7/8	12	1 13/16	B	11.50
41	10	1	12	1 13/16	B	11.50
42	10	1 1/16	12	1 13/16	B	11.50
43	10	1 1/4	12	1 13/16	B	11.50
44	10	7/8	17	1 13/16	B	12.50
45	10	1	17	1 13/16	B	12.50
46	10	1 1/16	17	1 13/16	B	12.50
47	10	1 1/4	17	1 13/16	B	12.50
53	10	1	14 1/2	1 13/16	D	13.00
55	10	1 1/4	14 1/2	1 13/16	D	13.00
15	11	7/8	10 1/4	...	A	9.00
16	11	1	10 1/4	...	A	9.00
17	11	1 1/16	10 1/4	...	A	9.00
18	11	1 1/4	10 1/4	...	A	9.00
48	11	7/8	16 1/4	2 1/16	B	13.50
49	11	1	17 3/4	2 1/16	B	13.50
50	11	1 1/16	17 3/4	2 1/16	B	13.50
51	11	1 1/4	20 1/4	2 1/16	B	15.00
52	11	1 1/2	20 1/4	2 1/16	B	15.00
48-A	11	7/8	16 1/4	2 1/16	C	$15.50
49-A	11	1	17 3/4	2 1/16	C	15.50
50-A	11	1 1/16	17 3/4	2 1/16	C	15.50
51-A	11	1 1/4	20 1/4	2 1/16	C	17.00
52-A	11	1 1/2	20 1/4	2 1/16	C	17.00
35	11	7/8	16	2 1/16	D	15.00
36	11	1	16	2 1/16	D	15.00
37	11	1 1/16	16	2 1/16	D	15.00
38	11	1 1/4	19 1/2	2 1/16	D	16.00
39	11	1 1/2	19 1/2	2 1/16	D	16.00
35-A	11	7/8	16	2 1/16	E	17.00
36-A	11	1	16	2 1/16	E	17.00
37-A	11	1 1/16	16	2 1/16	E	17.00
38-A	11	1 1/4	19 1/2	2 1/16	E	18.00
39-A	11	1 1/2	19 1/2	2 1/16	E	18.00
65	11	1	22	2 5/16	D	16.50
66	11	1 1/4	26 3/4	2 5/16	D	17.50
67	11	1 1/2	26 3/4	2 5/16	D	17.50
68	11	1 3/4	26 3/4	2 5/16	D	17.50
19-A	11	7/8	20	2 1/16	E	18.00
20-A	11	1	22	2 1/16	E	18.50
21-A	11	1 1/16	22	2 1/16	E	18.50
22-A	11	1 1/4	24	2 1/16	E	19.00
23-A	11	1 1/2	24	2 1/16	E	19.00
*19-B	11	7/8	20	2 1/16	E	18.50
*20-B	11	1	22	2 1/16	E	18.50
*21-B	11	1 1/16	22	2 1/16	E	19.00
*22-B	11	1 1/4	24	2 1/16	E	19.00
*23-B	11	1 1/2	24	2 1/16	E	19.00
65-A	11	1	22	2 5/16	E	18.50
66-A	11	1 1/4	26 3/4	2 5/16	E	19.50
67-A	11	1 1/2	26 3/4	2 5/16	E	19.50
68-A	11	1 3/4	26 3/4	2 5/16	E	19.50
69	12	1	25	2 9/16	D	17.00
70	12	1 1/4	29	2 9/16	D	18.00
71	12	1 1/2	29	2 9/16	D	18.00
71 1/2	12	1 3/4	29	2 9/16	D	18.00
72	12	2	29	2 9/16	D	18.00
69-A	12	1	25	2 9/16	E	19.50
70-A	12	1 1/4	29	2 9/16	E	20.50
71-A	12	1 1/2	29	2 9/16	E	20.50
71 1/2-A	12	1 3/4	29	2 9/16	E	20.50
72-A	12	2	29	2 9/16	E	20.50
75-A	12	1	30	2 9/16	E	21.00
76-A	12	1 1/4	35	2 9/16	E	22.00
77-A	12	1 1/2	35	2 9/16	E	22.00
78-A	12	1 3/4	35	2 9/16	E	22.00
79-A	12	2	35	2 9/16	E	22.00

For Standard Tapers and Taper Holes, see Index

Arbors and Lathe Centers

Arbors for Shell End Mills, with B. & S. Taper Shanks



Style A



Style B

Brown & Sharpe or Morse

Morse Style No. 125½ B

Number of Arbor	Number of Taper	Diameter of Arbor Inch	Diameter Mills Arbor will take Inches	Style	Each
89	7	½	1¼ to 1½	A	$4.50
90	9	¾	1 9/16 to 2 3/16	A	4.50
91	9	1	2¼ to 3	A	4.75
92	9	½	1¼ to 1½	B	4.50
93	9	½	1¼ to 1½	A	4.50
96	9	¾	1 9/16 to 2 3/16	B	4.50
105	9	1	2¼ to 3	B	4.75
94	10	¾	1 9/16 to 2 3/16	A	5.25
95	10	1	2¼ to 3	A	5.50
97	10	¾	1 9/16 to 2 3/16	B	5.25
98	10	1	2¼ to 3	B	5.50
99	11	¾	1 9/16 to 2 3/16	A	5.50
100	11	1	2¼ to 3	A	5.75
101	11	¾	1 9/16 to 2 3/16	B	5.50
102	11	1	2¼ to 3	B	5.75
103	12	¾	1 9/16 to 2 3/16	B	6.00
104	12	1	2¼ to 3	B	6.25

In ordering state whether Arbor is for Right or Left Hand Mill



Morse No. 125B, with Morse Taper Shanks

Number	Each	Fitting Sizes, Inches	Number of Taper
1	$3.75	1¼ to 1½	3
2	4.00	1 9/16 to 2 3/16	4
3	4.00	2¼ to 3	4

State whether Arbors are desired for Right or Left Hand Mills

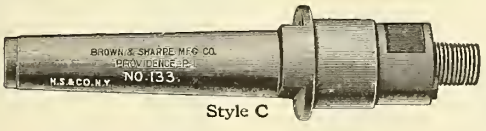
Milling Machine Screw Arbors



Style A



Style B

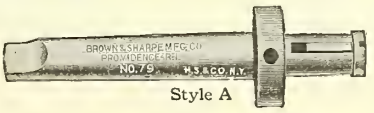


Style C

Brown & Sharpe

Number of Arbor	Number of Taper	Diameter of Arbor Inch	Thread	Style	Each
120	7	⅜	20, L.	A	$2.00
122	9	½	16, L.	A	3.00
128	10	1	10, L.	B	5.50
130	11	1	10, L.	B	6.00
133	11	1	10, L.	C	7.00
135	12	1	10, L.	C	7.50

Arbors for Face Milling Cutters, with Inserted Teeth



Style A



Style B



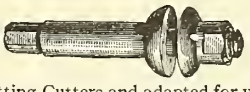
Style C

Style D similar to Style C, but no threaded hole

Brown & Sharpe

Number of Arbor	Number of Taper of Shank	Number of Taper for Mill	Style	Each
79	10	10	A	$8.00
82	11	12	A	10.00
81	11	12	B	10.00
80	11	10	C	12.00
83	11	12	C	12.00
87	12	12	C	12.00
84	11	12	D	12.00
85	12	12	D	12.00
86	12	10	C	12.00

Screw Slotting Cutter Arbors



For use with Screw Slotting Cutters and adapted for use on Centers. In following sizes: ⅜, ½, ⅝, ¾, ⅞ and 1 inch. Each, $3.50.

Fly Cutter Arbors



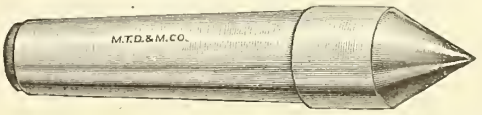
For Milling Machines
The hole in the head is ¾ inch square

Brown & Sharpe

Number of Arbor	Number of Taper	Each
110	10	$6.50
112	11	8.00
113	12	9.00

Price includes tool with ⅛-inch radius

Lathe Centers



Morse No. 100L, with Morse Taper Shanks

Taper Shank Number	Each	Whole Length Inches	Length Body Inches
0	$ .50	2⅞	¾
1	.60	3 5/16	1
2	.75	4 3/16	1 7/16
3	1.25	5¼	1⅞
4	1.75	6¾	2 7/16
5	3.50	8½	3 1/16

These Lathe Centers are made from tool steel, both ends being hardened. Included angle of point is 60 degree and ground true. Other Tapers made to order.

For Standard Tapers and Taper Holes see Index

Taper Mandrels with Expanding Sleeves



Morse No. 123A

The entire Mandrel is hardened and the taper ground. The taper is such that it will hold the Sleeve and the work rigid. The Sleeve is of crucible steel, not hardened, and has several longitudinal slots giving the Sleeve greater flexibility. One of the slots is cut through, allowing the Sleeve to expand or contract.

Diameter Sleeve Inches	Each Sleeve without Mandrel	Length of Sleeve Inches	Fitting Taper Mandrel Number	Each Mandrel without Sleeve	Whole Length Inches
1/2	$ .95	1 1/2	4	$1.85	5
17/32	.95	1 1/2	4	1.85	5
9/16	1.05	1 5/8	6	2.00	5 1/4
19/32	1.05	1 5/8	6	2.00	5 1/4
5/8	1.15	1 3/4	8	2.15	5 1/2
21/32	1.15	1 3/4	8	2.15	5 1/2
11/16	1.25	1 7/8	10	2.30	5 3/4
23/32	1.25	1 7/8	10	2.30	5 3/4
3/4	1.35	2	12	2.50	6
25/32	1.35	2	12	2.50	6
13/16	1.45	2 1/8	14	2.70	6 1/2
27/32	1.45	2 1/8	14	2.70	6 1/2
7/8	1.55	2 1/4	14	2.70	6 1/2
29/32	1.55	2 1/4	14	2.70	6 1/2
15/16	1.80	2 3/8	16	3.00	7 1/2
31/32	1.80	2 3/8	16	3.00	7 1/2
1	1.95	2 3/8	16	3.00	7 1/2
1 1/32	1.95	2 1/2	16	3.00	7 1/2
1 1/16	2.10	2 1/2	16	3.00	7 1/2
1 3/32	2.10	2 1/2	16	3.00	7 1/2
1 1/8	2.40	2 5/8	18	4.15	8 1/2
1 5/32	2.40	2 5/8	18	4.15	8 1/2
1 9/16	2.50	2 5/8	18	4.15	8 1/2
1 7/32	2.50	2 5/8	18	4.15	8 1/2
1 1/4	2.60	2 3/4	18	4.15	8 1/2
1 9/32	2.60	2 3/4	18	4.15	8 1/2
1 5/16	2.70	2 3/4	18	4.15	8 1/2
1 11/32	2.70	2 3/4	18	4.15	8 1/2
1 3/8	3.10	3	20	5.30	9 1/2
1 13/32	3.10	3	20	5.30	9 1/2
1 7/16	3.20	3	20	5.30	9 1/2
1 15/32	3.20	3	20	5.30	9 1/2
1 1/2	3.30	3 1/4	20	5.30	9 1/2
1 17/32	3.30	3 1/4	20	5.30	9 1/2
1 9/16	3.40	3 1/4	20	5.30	9 1/2
1 19/32	3.40	3 1/4	20	5.30	9 1/2
1 5/8	3.70	3 3/8	22	6.50	10 1/2
1 21/32	3.70	3 3/8	22	6.50	10 1/2
1 11/16	3.80	3 3/8	22	6.50	10 1/2
1 23/32	3.80	3 3/8	22	6.50	10 1/2
1 3/4	3.90	3 3/8	22	6.50	10 1/2
1 25/32	3.90	3 1/2	22	6.50	10 1/2
1 13/16	4.00	3 1/2	22	6.50	10 1/2
1 27/32	4.00	3 1/2	22	6.50	10 1/2
1 7/8	4.10	3 1/2	22	6.50	10 1/2
1 29/32	4.10	3 1/2	22	6.50	10 1/2
1 15/16	4.40	3 3/4	24	7.75	11 1/2
1 31/32	4.40	3 3/4	24	7.75	11 1/2
2	4.50	3 3/4	24	7.75	11 1/2
2 1/32	4.50	3 3/4	24	7.75	11 1/2
2 1/16	4.60	3 3/4	24	7.75	11 1/2
2 3/32	4.60	3 7/8	24	7.75	11 1/2
2 1/8	4.70	3 7/8	24	7.75	11 1/2
2 5/32	4.70	3 7/8	24	7.75	11 1/2
2 3/16	4.80	3 7/8	24	7.75	11 1/2
2 7/32	4.80	3 7/8	24	7.75	11 1/2
2 1/4	5.10	4	26	9.00	12 1/2
2 9/32	$5.10	4	26	$9.00	12 1/2
2 5/16	5.20	4	26	9.00	12 1/2
2 11/32	5.20	4	26	9.00	12 1/2
2 3/8	5.30	4	26	9.00	12 1/2
2 13/32	5.30	4 1/4	26	9.00	12 1/2
2 7/16	5.40	4 1/4	26	9.00	12 1/2
2 15/32	5.40	4 1/4	26	9.00	12 1/2
2 1/2	5.50	4 1/4	26	9.00	12 1/2
2 17/32	5.50	4 1/4	26	9.00	12 1/2
2 9/16	5.90	4 1/2	28	12.10	13 1/2
2 19/32	5.90	4 1/2	28	12.10	13 1/2
2 5/8	6.00	4 1/2	28	12.10	13 1/2
2 21/32	6.00	4 1/2	28	12.10	13 1/2
2 11/16	6.10	4 1/2	28	12.10	13 1/2
2 23/32	6.10	4 1/2	28	12.10	13 1/2
2 3/4	6.20	4 3/4	28	12.10	13 1/2
2 25/32	6.20	4 3/4	28	12.10	13 1/2
2 13/16	6.30	4 3/4	28	12.10	13 1/2
2 27/32	6.30	4 3/4	28	12.10	13 1/2
2 7/8	6.40	4 3/4	28	12.10	13 1/2
2 29/32	6.40	4 3/4	28	12.10	13 1/2
2 15/16	6.80	5	30	15.50	14 1/2
2 31/32	6.80	5	30	15.50	14 1/2
3	6.90	5	30	15.50	14 1/2
3 1/32	6.90	5	30	15.50	14 1/2
3 1/16	7.10	5	30	15.50	14 1/2
3 3/32	7.10	5	30	15.50	14 1/2
3 1/8	7.30	5 1/4	30	15.50	14 1/2
3 5/32	7.30	5 1/4	30	15.50	14 1/2
3 3/16	7.50	5 1/4	30	15.50	14 1/2
3 7/32	7.50	5 1/4	30	15.50	14 1/2
3 1/4	7.70	5 1/4	30	15.50	14 1/2
3 9/32	7.70	5 1/4	30	15.50	14 1/2
3 5/16	7.90	5 1/2	32	19.50	15 1/2
3 11/32	7.90	5 1/2	32	19.50	15 1/2
3 3/8	8.10	5 1/2	32	19.50	15 1/2
3 13/32	8.10	5 1/2	32	19.50	15 1/2
3 7/16	8.30	5 1/2	32	19.50	15 1/2
3 15/32	8.30	5 1/2	32	19.50	15 1/2
3 1/2	8.50	5 1/2	32	19.50	15 1/2
3 17/32	8.50	5 3/4	32	19.50	15 1/2
3 9/16	8.70	5 3/4	32	19.50	15 1/2
3 19/32	8.70	5 3/4	32	19.50	15 1/2
3 5/8	8.90	5 3/4	32	19.50	15 1/2
3 21/32	8.90	5 3/4	32	19.50	15 1/2
3 11/16	9.10	5 3/4	32	19.50	15 1/2
3 23/32	9.10	5 3/4	32	19.50	15 1/2
3 3/4	9.30	6	34	24.00	16 1/2
3 25/32	9.30	6	34	24.00	16 1/2
3 13/16	9.50	6	34	24.00	16 1/2
3 27/32	9.50	6	34	24.00	16 1/2
3 7/8	9.70	6	34	24.00	16 1/2
3 29/32	9.70	6	34	24.00	16 1/2
3 15/16	9.90	6	34	24.00	16 1/2
3 31/32	9.90	6	34	24.00	16 1/2
4	10.10	6	34	24.00	16 1/2

Mandrels

Hardened and Ground Steel



Morse No. 123

These Mandrels are made of tool steel, hardened and accurately ground. They are tapered .0005 to 1 inch. They correspond in size to our Reamers and will fit holes reamed by them.

Other tapers per foot can be furnished at special prices.

Size of Mandrel stamped on large end.

Diameter Inches	Each	Whole Length Inches	Diameter Inches	Each	Whole Length Inches
1/4	$ .65	3 3/4	2 3/16	$6.00	12
5/16	.75	4	2 1/4	6.50	12
3/8	.85	4 1/4	2 5/16	6.90	12
7/16	.95	4 1/2	2 3/8	7.40	12
1/2	1.05	5	2 7/16	7.90	12 1/2
9/16	1.15	5 1/4	2 1/2	8.40	12 1/2
5/8	1.25	5 1/2	2 9/16	8.90	12 1/2
11/16	1.35	5 3/4	2 5/8	9.40	12 1/2
3/4	1.45	6	2 11/16	9.90	13
13/16	1.55	6 1/4	2 3/4	10.50	13
7/8	1.70	6 1/2	2 13/16	11.00	13
15/16	1.85	6 3/4	2 7/8	11.50	13
1	2.00	7	2 15/16	12.00	13
1 1/16	2.10	7 1/4	3	12.50	13
1 1/8	2.20	7 1/2	3 1/16	13.00	14
1 3/16	2.30	7 3/4	3 1/8	13.40	14
1 1/4	2.45	8	3 3/16	13.80	14
1 5/16	2.60	8 1/4	3 1/4	14.10	14
1 3/8	2.75	8 1/2	3 5/16	14.40	15
1 7/16	2.90	8 3/4	3 3/8	14.70	15
1 1/2	3.10	9	3 7/16	15.00	15
1 9/16	3.30	9 1/4	3 1/2	15.30	15
1 5/8	3.50	9 1/2	3 9/16	15.60	16
1 11/16	3.70	9 3/4	3 5/8	15.90	16
1 3/4	3.90	10	3 11/16	16.20	16
1 13/16	4.10	10 1/4	3 3/4	16.50	16
1 7/8	4.35	10 1/2	3 13/16	16.80	17
1 15/16	4.60	10 3/4	3 7/8	17.20	17
2	4.80	11	3 15/16	17.60	17
2 1/16	5.15	11 1/2	4	18.00	17
2 1/8	5.60	11 1/2			

Taper



Brown & Sharpe

Number	Whole Length Inches	Diameter at Small End, Inch	Each	Number	Whole Length Inches	Diameter at Small End, Inches	Each
3	3 11/16	.3125	$1.40	9	7 3/16	.90	$2.60
4	4 1/16	.35	1.50	10	7 3/4	1.05	3.00
5	4 1/2	.45	1.65	11	8 3/8	1.25	3.50
6	5 1/8	.50	1.80	12	9	1.50	4.00
7	5 15/16	.60	2.00	13	9 5/8	1.75	4.75
8	6 9/16	.75	2.25				

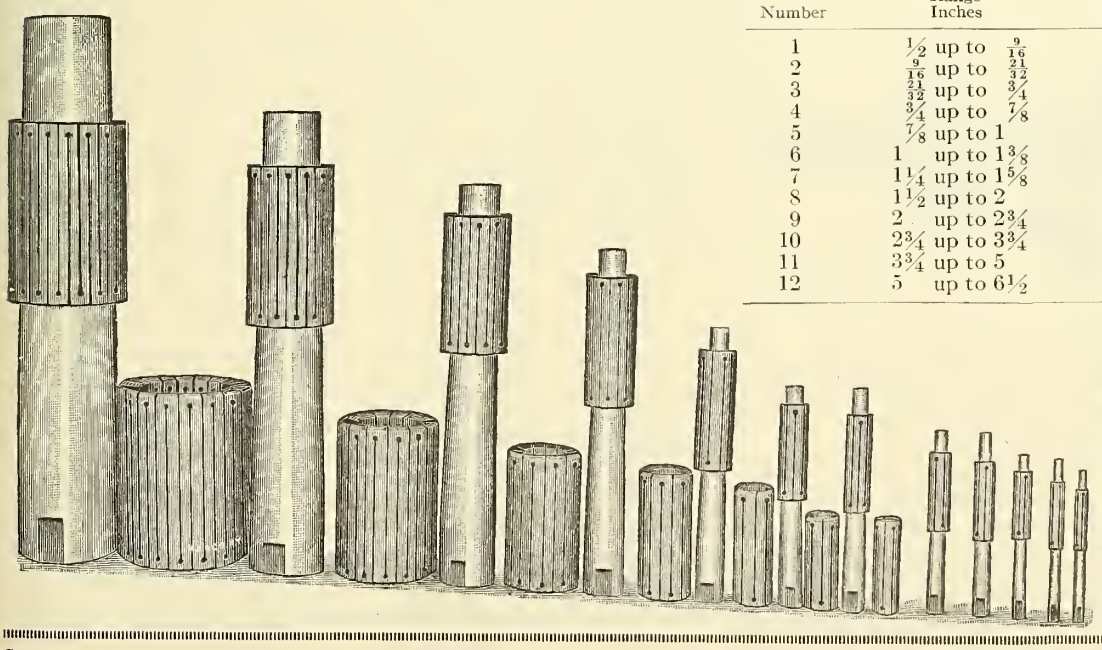
Mandrels take Bushings as follows: No. 3, 2 sizes; Nos. 4, 5, 6, 7 and 8, 3 sizes; Nos. 9, 10, 11, 12 and 13, 6 sizes.

Expansion Bushings

Outside Diameter of Bushing Inches	Length Inches	For Mandrel Number	Each	Outside Diameter of Bushing Inches	Length Inches	For Mandrel Number	Each
1/2	1 1/2	3	$ .55	2	4	10	$2.00
9/16	1 5/8	3	.55	2 1/16	4 1/8	10	2.00
5/8	1 3/4	4	.65	2 1/8	4 1/8	10	2.00
11/16	1 7/8	4	.65	2 3/16	4 1/4	10	2.00
3/4	2	4	.65	2 1/4	4 1/4	10	2.00
13/16	2 1/8	5	.80	2 5/16	4 3/8	11	2.40
7/8	2 1/4	5	.80	2 3/8	4 3/8	11	2.40
15/16	2 3/8	5	.80	2 7/16	4 1/2	11	2.40
1	2 1/2	6	.95	2 1/2	4 1/2	11	2.40
1 1/16	2 5/8	6	.95	2 9/16	4 5/8	11	2.40
1 1/8	2 3/4	6	.95	2 5/8	4 5/8	11	2.40
1 3/16	2 7/8	7	1.15	2 11/16	4 3/4	12	2.80
1 1/4	3	7	1.15	2 3/4	4 3/4	12	2.80
1 5/16	3 1/8	7	1.15	2 13/16	4 7/8	12	2.80
1 3/8	3 1/4	8	1.40	2 7/8	4 7/8	12	2.80
1 7/16	3 3/8	8	1.40	2 15/16	5	12	2.80
1 1/2	3 1/2	8	1.40	3	5	12	2.80
1 9/16	3 5/8	9	1.70	3 1/16	5 1/8	13	3.20
1 5/8	3 5/8	9	1.70	3 1/8	5 1/8	13	3.20
1 11/16	3 3/4	9	1.70	3 3/16	5 1/4	13	3.20
1 3/4	3 3/4	9	1.70	3 1/4	5 1/4	13	3.20
1 13/16	3 7/8	9	1.70	3 5/16	5 3/8	13	3.20
1 7/8	3 7/8	9	1.70	3 3/8	5 3/8	13	3.20
1 15/16	4	10	2.00				

Champion Expanding

Expansion of this set, 1/2 to 6 1/2 inches. Positively the only Expanding Mandrel which completely fills a hole. Fully guaranteed



Number	Range Inches	Length of Arbor Inches	Length of Sleeve Inches	Each
1	1/2 up to 9/16	5 1/2	2 1/2	$5.00
2	9/16 up to 21/32	6 1/2	2 3/4	5.50
3	21/32 up to 3/4	6 1/2	2 3/4	6.00
4	3/4 up to 7/8	7 1/2	3 1/4	6.50
5	7/8 up to 1	7 1/2	3 1/4	7.50
6	1 up to 1 3/8	9 1/4	4	13.50
7	1 1/4 up to 1 5/8	9 1/4	4	15.50
8	1 1/2 up to 2	11 1/2	5	17.50
9	2 up to 2 3/4	14 1/2	5 1/2	26.50
10	2 3/4 up to 3 3/4	17	6	37.50
11	3 3/4 up to 5	20	7	52.00
12	5 up to 6 1/2	24	8	68.50

All sizes from No. 1 to No. 5 inclusive have one flexible sleeve only. Price of sleeves two-thirds of price shown.

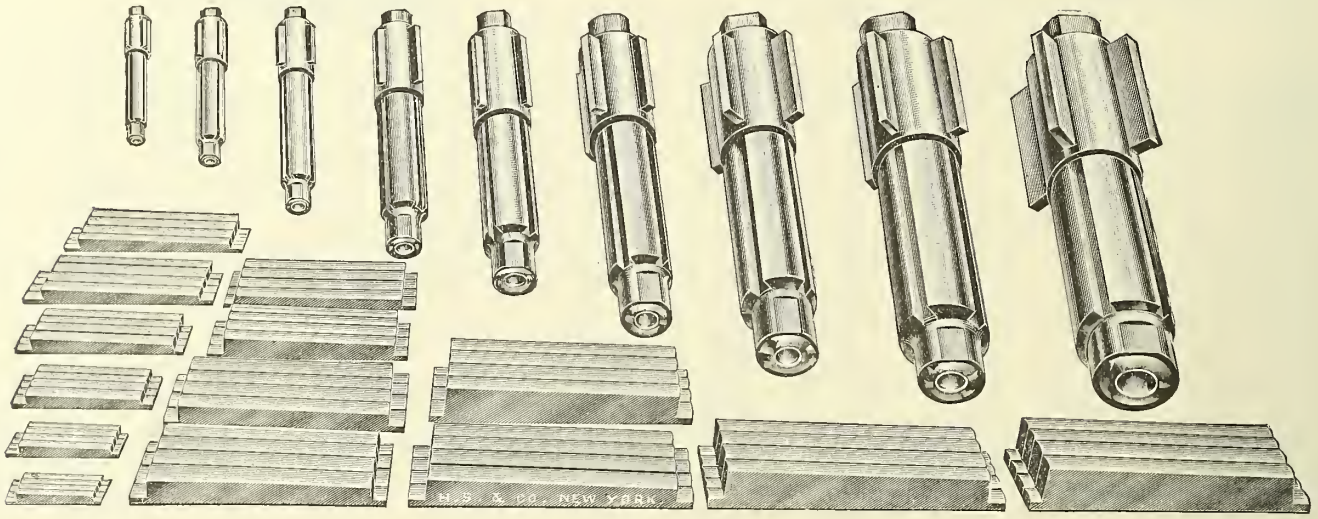
All sizes from No. 6 upwards have two flexible sleeves to obtain maximum expansion. Price of sleeves, each, one-half of prices shown.

Packed in neat individual boxes.

Complete Set, $250.00

Expanding Mandrels

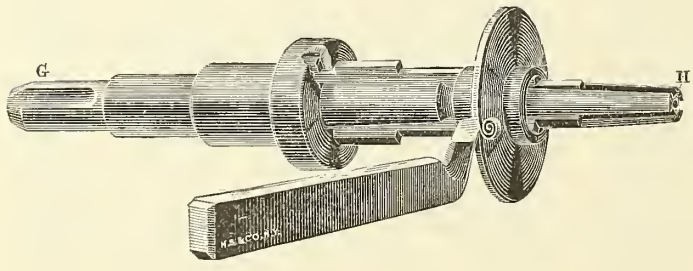
Nicholson



Number	A Jaws Expansion Inches	B Jaws Expansion Inches	C Jaws Expansion Inches	Length of Arbor, Inches	Length of Jaw Bearing, Inches	Each
00	3/4 to 7/8	.....	.....	8 1/4	2	$7.00
0	7/8 to 1	.....	.....	8 1/4	2	7.00
1	1 to 1 1/8	1 1/8 to 1 1/4	.....	10	2 1/2	9.00
2	1 1/4 to 1 13/32	1 13/32 to 1 9/16	.....	11 3/4	3	10.50
3	1 9/16 to 1 25/32	1 25/32 to 2	.....	14 3/4	4	14.50
4	2 to 2 1/4	2 1/4 to 2 1/2	.....	17 1/4	5	20.00
5	2 1/2 to 2 3/4	2 3/4 to 3	3 to 3 1/4	18 3/4	5 3/4	32.00
6	3 1/4 to 3 1/2	3 1/2 to 3 3/4	3 3/4 to 4	21	6	39.00
7	4 to 4 11/32	4 11/32 to 4 11/16	4 11/16 to 5	23 1/4	7	40.00
8	5 to 5 11/32	5 11/32 to 5 11/16	5 11/16 to 6	25	8	41.25
9	6 to 6 11/32	6 11/32 to 6 11/16	6 11/16 to 7 1/32	25	9	43.75

The No. 00 and the No. 0 Mandrels each have but one set of jaws; Nos. 1, 2, 3 and 4 each have two sets, and Nos. 5, 6, 7, 8 and 9 each have three sets, marked A, B and C, respectively.

Le Count



	Each
Amateur Size, 3/8 to 1 inch	$5.00
Machinists Size No. 1, 1/2 to 1 inch	10.00
Machinists Size No. 2, 1 to 1 1/2 inches	14.00
Machinists Size No. 3, 1 1/2 to 2 inches	18.00
Machinists Size No. 4, 2 to 3 inches	32.00
Machinists Size No. 5, 3 to 4 inches	44.00

To tighten the work, drive with a copper hammer or a piece of soft iron or brass, on the large end, G, not too hard; to loosen, on small end, H. A good cut can be made by driving with a 1-ounce copper or brass hammer, not too hard.

The tool is steel, well made, simple, substantial and useful.

Nos. 4 and 5, owing to their weight, are made with a screw instead of a sleeve.

Extra Keys for No. 5

	Set
Machinists Size, 4 to 4 1/2 inches	$10.00
Machinists Size, 4 1/2 to 5 inches	10.00
Machinists Size, 5 to 5 1/2 inches	13.00
Machinists Size, 5 1/2 to 6 inches	13.00
Machinists Size, 6 to 6 1/2 inches	16.00
Machinists Size, 6 1/2 to 7 inches	16.00

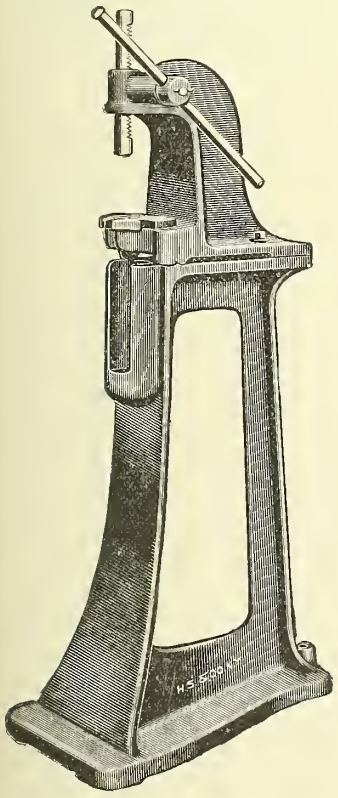
Arbor Presses

Greenerd

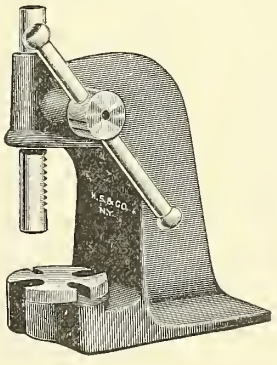
These Presses are powerful and can be easily moved close to workmen for convenience. Arbors or Mandrels can be put in and taken out without removing lathe dog, thereby saving much time. They prevent injury, not only to the work but to the Mandrels and leave centers perfectly clean. Can also be used for broaching, pressing in pins and bushings, bending (with dies) punching and many other purposes.

Pinions and rams are made of special steel with well-proportioned teeth, having angular pressure of 22½ degrees. Pressure is direct by lever on end of pinion shaft on small presses; large ones are provided with pawl and ratchet, as shown, so lever can be used where most effective.

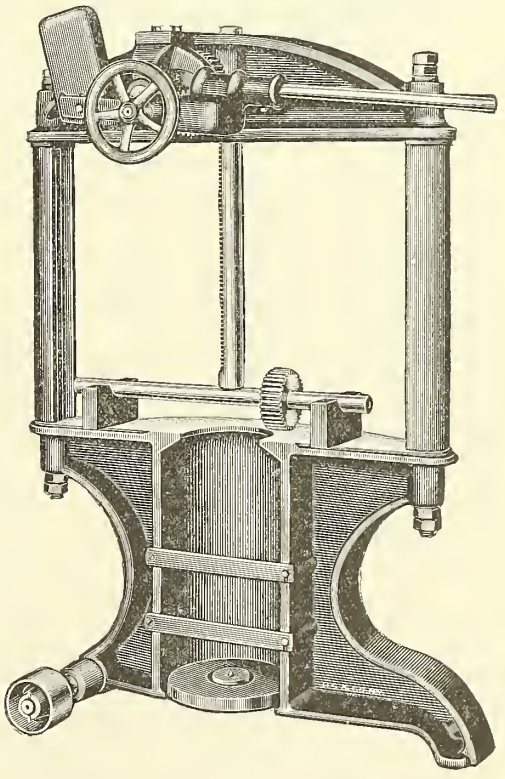
The frames are designed to withstand heavy strains. Some sizes can be furnished for use on lathe shears, bench, or mounted on suitable stands having sufficiently large base to require no floor fastenings.



No. 2 on stand



No. 1



No. 15

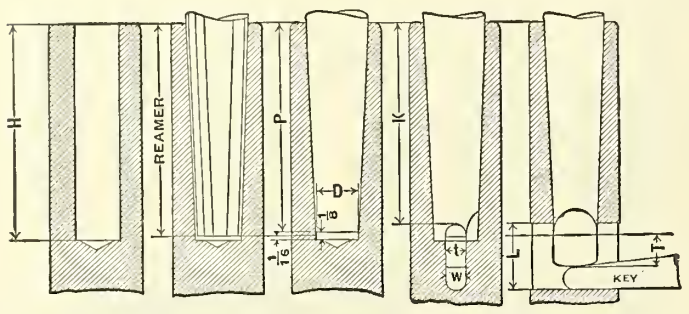
Number	Diameter of work Inches	Largest Arbor Inches	Height Over Plate Inches	Length and Diameter of Rack or Ram Inches	Leverage	Total Height Inches	Weight Pounds	Number	Presses Each	Weight Stands Pounds	Stands Each
1	3½	⅞	4½	7x⅞	25-1	8	15	1	$ 8.00		
2	8	1	7	12x1 3/16	35-1	14	70	2	13.00	200	$12.00
3	12	1½	11	17x1¾	45-1	17	125	3	17.00	250	13.50
3-A	24	1½	11	17x1¾	45-1	24	235	3-A	28.00		
3½	19	3	15	19x2 3/16	55-1	28	395	3½	37.00	300	20.00
3¾	22	3	21	24x2 7/16	55-1	36	475	3¾	45.00	300	20.00
4	19	3	27	19x2 3/16	55-1	57	900	4	75.00		
5	26	4	31	24x2 7/16	135-1	65	1,450	5	125.00		
7	36	5	34	30x3 7/16	250-1	75	2,550	7	210.00		
8	36	7	35	54x4x4	250-1	76	2,200	8	300.00		
9	48	7	35	54x4x4	250-1	76	2,850	9	380.00		
13	30	1½	11	17x1¾	45-1	55	360	13	32.00		
14	36	3	26	34x2 7/16	55-1	65	900	14	75.00		
15	36	4	26	34x2 7/16	135-1	66	1,000	15	100.00		
17	36	4	27	40x3 7/16	250-1	70	1,950	17	165.00		

How to Obtain the Pressure Exerted from the Leverage Given

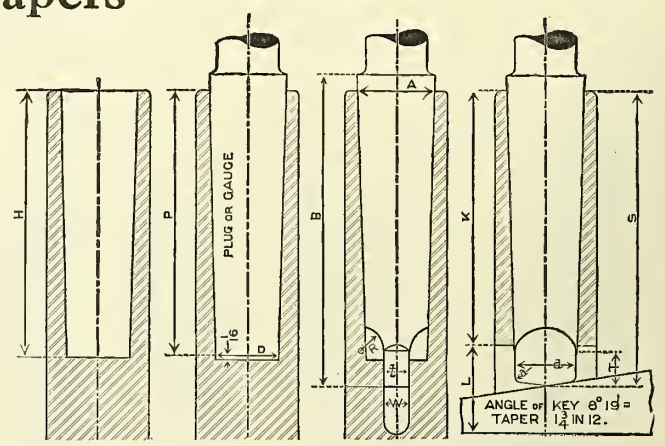
Multiply the power exerted upon the end of the lever by the leverage, and subtract 10 per cent for friction. Thus a No. 3 Press, 100 pounds, upon the lever end by leverage 45—10 per cent. = 100 x 45 = 4500—10 per cent. $\frac{4500}{450}$ = 4050 pounds power exerted.

Standard Tapers

Brown & Sharpe



Morse



Brown & Sharpe

Number of Taper	Diameter of Plug at Small End Inches	Plug Depth Inches	Depth of Hole Inches	Keyway from End of Spindle Inches	Length of Keyway Inches	Width of Keyway Inch	Length of Arbor Tongue Inch	Thickness of Arbor Tongue Inch	Taper per Foot
	D	P	H	K	L	W	T	t	
1	.20	15/16	1 1/16	15/16	3/8	.135	3/16	1/8	.500
2	.25	1 3/16	1 5/16	1 11/64	1/2	.166	1/4	5/32	.500
3	.312	2	2 1/8	1 31/32	5/8	.197	5/16	3/16	.500
4	.35	1 1/4	1 3/8	1 13/64	11/16	.228	11/32	7/32	.500
5	.45	1 3/4	1 7/8	1 11/16	3/4	.260	3/8	1/4	.500
6	.50	2 3/8	2 1/2	2 19/64	7/8	.291	7/16	9/32	.500
7	.60	3	3 1/8	2 29/32	15/16	.322	15/32	5/16	.500
8	.75	3 9/16	3 11/16	3 29/64	1	.353	1/2	11/32	.500
9	.90	4	4 1/8	3 7/8	1 1/8	.385	9/16	3/8	.500
9	.90	4 1/4	4 3/8	4 1/8	1 1/8	.385	9/16	3/8	.500
10	1.0446	5	5 1/8	4 27/32	1 5/16	.447	21/32	7/16	.5161
10	1.0446	5 11/16	5 13/16	5 17/32	1 5/16	.447	21/32	7/16	.5161
11	1.25	6 3/4	6 7/8	6 19/32	1 5/16	.447	21/32	7/16	.500
12	1.50	7 1/8	7 1/4	6 15/16	1 1/2	.510	3/4	1/2	.500
13	1.75	7 3/4	7 7/8	7 9/16	1 1/2	.510	3/4	1/2	.500
14	2	8 1/4	8 3/8	8 1/32	1 11/16	.572	27/32	9/16	.500
15	2.25	8 3/4	8 7/8	8 17/32	1 11/16	.572	27/32	9/16	.500
16	2.50	9 1/4	9 3/8	9	1 7/8	.635	15/16	5/8	.500
17	2.75	9 3/4	9 7/8	...	...	...	....	...	.500
18	3.00	10 1/4	10 3/8	...	...	...	...	...	.500

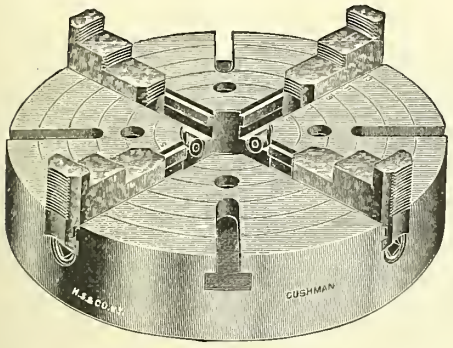
Morse Regular Shanks

Number of Taper	Diameter of Plug at Small End Inches	Diameter at End of Socket Inches	Shank: Whole Length of Shank Inches	Shank: Shank Depth Inches	Depth of Hole Inches	Standard Plug Depth Inches	Tongue: Thickness of Tongue Inches	Tongue: Length of Tongue Inches	Tongue: Radius of Mill for Tongue Inch	Tongue: Diameter of Tongue Inches	Tongue: Radius of Tongue Inch	Keyway: Width of Keyway Inches	Keyway: Length of Keyway Inches	End of Socket to Keyway Inches	Taper Per Foot	Taper Per Inch
	D	A	B	S	H	P	t	T	R	d	a	W	L	K		
0	.252	.3561	2 11/32	2 7/32	2 1/32	2	5/32	1/4	5/32	.235	.04	.160	9/16	1 15/16	.625	.05208
1	.369	.475	2 9/16	2 7/16	2 3/16	2 1/8	13/64	3/8	3/16	.343	.05	.213	3/4	2 1/16	.600	.05
2	.572	.700	3 1/8	2 15/16	2 5/8	2 9/16	1/4	7/16	1/4	17/32	.06	.260	7/8	2 1/2	.602	.05016
3	.778	.938	3 7/8	3 11/16	3 1/4	3 3/16	5/16	9/16	9/32	23/32	.08	.322	1 3/16	3 1/16	.602	.05016
4	1.020	1.231	4 7/8	4 5/8	4 1/8	4 1/16	15/32	5/8	5/16	31/32	.10	.478	1 1/4	3 7/8	.623	.05191
5	1.475	1.748	6 1/8	5 7/8	5 1/4	5 3/16	5/8	3/4	3/8	1 13/32	.12	.635	1 1/2	4 15/16	.630	.0525
6	2.116	2.494	8 9/16	8 1/4	7 3/8	7 1/4	3/4	1 1/8	1/2	2	.15	.760	1 3/4	7	.626	.05216
7	2.750	3.270	11 5/8	11 1/4	10 1/8	10	1 1/8	1 3/8	3/4	2 5/8	.18	1.135	2 5/8	9 1/2	.625	.05208

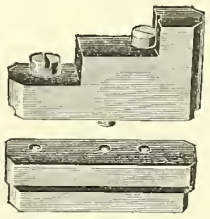
Morse Short Shanks

Number of Taper	Diameter of Plug at Small End Inches	Diameter at End of Socket Inches	Shank: Whole Length of Shank Inches	Shank: Shank Depth Inches	Depth of Hole Inches	Standard Plug Depth Inches	Tongue: Thickness of Tongue Inches	Tongue: Length of Tongue Inches	Tongue: Radius of Mill for Tongue Inch	Tongue: Diameter of Tongue Inches	Tongue: Radius of Tongue Inch	Keyway: Width of Keyway Inches	Keyway: Length of Keyway Inches	End of Socket to Keyway Inches	Taper Per Foot	Taper Per Inch
	D	A	B	S	H	P	t	T	R	d	a	W	L	K		
							.186					.193				
0	.271	.356	1 31/32	1 27/32	1 21/32	1 5/8	.188	1/4	3/16	.258	3/64	.196	5/8	1 17/32	.625	.05208
							.249					.260				
1	.388	.475	2 3/16	2	1 13/16	1 3/4	.251	5/16	1/4	.371	1/16	.263	13/16	1 21/32	.600	.05
							.374					.385				
2	.600	.700	2 9/16	2 3/8	2 1/16	2	.376	7/16	9/32	.575	1/16	.388	1 3/16	1 27/32	.602	.05016
							.499					.512				
3	.816	.938	3 1/8	2 15/16	2 1/2	2 7/16	.501	9/16	5/16	.783	3/32	.516	1 5/16	2 7/32	.602	.05016
							.624					.637				
4	1.062	1.231	4 1/16	3 13/16	3 5/16	3 1/4	.626	5/8	3/8	1.023	3/32	.641	1 1/2	2 31/32	.623	.05191
							.999					1.012				
5	1.532	1.748	5 1/16	4 13/16	4 3/16	4 1/8	1.001	3/4	1/2	1.483	1/8	1.016	2	3 21/32	.630	.0525
							1.248					1.263				
6	2.201	2.494	7 1/16	6 3/4	5 3/4	5 5/8	1.251	1 1/8	5/8	2.128	1/8	1.268	2 3/4	5 1/16	.626	.05216
							1.623					1.639				
7	2.857	3.270	9 11/16	9 5/16	8 1/16	7 15/16	1.627	1 1/2	3/4	2.769	3/16	1.644	3 5/8	7 1/8	.625	.05208

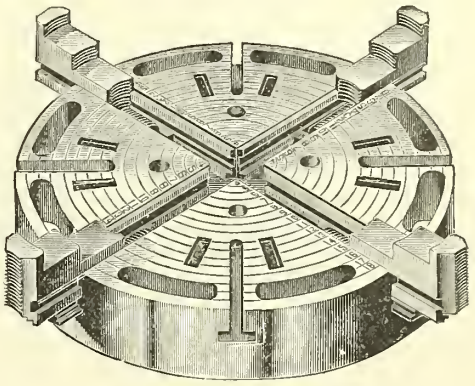
Independent Lathe Chucks



Cushman



Westcott Sectional Lathe Chuck Jaw



Westcott IXL

No. 12, Iron Body. No. 212, Steel Body

Both of these styles are strongly and heavily made—No. 12 from a superior quality of grey iron; No. 212 from cast steel with great tensile strength, the latter serving in all cases where extraordinary strength is needed.

The illustration shows style of 12, 14, 15 and 16-inch, with T slots; 8-inch and under have solid faces; 9 and 10-inch have openings in face; the 18-inch and over have both openings and slots.

The jaws are made from open hearth steel and they are carefully fitted to the body and case hardened. They are made in one piece and can be quickly reversed by running them out of the body and turning them end for end.

The screws are made of steel with heavy square threads, and none of the threaded portion is used for the bearing. The thread extends to the outer end of screw which allows the jaw to be opened very wide. These screws are equipped with hardened steel thrust bearings.

These Chucks are to be fitted to machine by means of an intermediate flange plate or adapter, the body being recessed for the purpose, and provided with bolt holes. With every Chuck we furnish bolts for attaching.

The capacity of these Chucks is as great as any chuck made of this type, but when a Chuck jaw is extended to hold larger than the diameter of Chuck body, many of the jaw teeth become disengaged with the screw threads, and the wider the Chuck is opened the fewer jaw teeth and screw threads are left to withstand all the strain from holding the extra large work. The safe capacity of this type of Chuck is as listed.

A powerful steel wrench for operating the jaws is furnished with each chuck.

Size Inches	Safe Capacity Inches	Diameter of Hole Inches	Recess for Face Plate Inches	Iron Body No. 12 Each	Steel Body No. 212 Each
4½	5	1	4⅛	$14.00	
6	7	1 9/16	5⅝	18.00	
8	9	1¾	4¾	22.00	$35.00
9	11	1¾	4¾	24.00	
10	12	2	5⅝	26.00	40.00
12	14	2¾	6 11/16	30.00	45.00
14	16	3	6 11/16	34.00	51.00
15	18	3	7 13/16	35.00	
16	19	3	7 13/16	38.00	60.00
18	21	4	9½	44.00	66.00
20	23	4	9½	50.00	75.00
22	25	5	11	57.00	85.00
24	27	5	11	65.00	100.00
26	29	5	12	80.00	120.00
28	31	5	13	100.00	150.00
30	34	5	15	120.00	180.00
32	36	5	15	150.00	
34	38	6	17¾	180.00	
36	40	6	17¾	210.00	

The surfaces, after hardening, are ground to a perfect fit, and a good bearing secured

This Chuck is exceptionally strong, due to the fact that the end thrust and strain come upon the body where it is strongest. It does not come at one weak point, as in other Independent Chucks, but is distributed so as not to spring or break the chuck body. The screw carriers are adjustable, which is a distinctly new feature of great consequence.

When the Chuck is required to hold work larger than its diameter, remove the set-screws (two set-screws in each hole), and drive the screw carriers outward, together with the jaws and their adjusting screws, thereby retaining the full thread bearing between screw and jaw, the screw-carrier still supporting jaw; thus the desired capacity is secured without injury to Chuck. Another, and perhaps easier method of manipulation, is to screw the jaws against a block of wood or a piece of iron, thus forcing the screw-carriers, together with the screws, outward to the desired point, then drawing jaws out by turning screws the other way. As a result, this Chuck has a much greater capacity than any other Independent Chuck of the same size.

The jaws are made of steel and case hardened; they are reversible, have deep shoulders, and are turned so as to get a firm bite on the work.

Screws are made of steel best suited to the purpose; they are squared on both ends and square ends are tempered.

We are prepared to furnish the Chuck with either three or four solid jaws, which are always furnished unless otherwise specified.

Westcott sectional jaw, illustrated above, supplied if desired. This style of jaw is especially adapted to the attachment of special jaws. The upper part of jaw can be taken off and special jaw fitted to bottom part; this is the cheapest and easiest way ever contrived for attaching special jaws to a Chuck.

This Chuck is also suitable to be used as a cutting-off Chuck.

Screw heads do not project beyond diameter.

Face-plate seats can be enlarged to within 1 inch of the outside diameter of the Chuck, at no extra cost, if so ordered.

Diameter Inches	Capacity Inches	Diameter of Center Hole Inches	Diameter of Recess for Face Plate Inches	With 3 or 4 Jaws Each	Unfinished Face Plate Castings Each
4 9/16	5½	1	3½	$14.00	$ .50
6	6¾	1¾	5 9/16	18.00	1.00
8	9	2¼	5	22.00	1.00
10⅛	12	2¼	6	26.00	1.25
12	15	2½	6½	30.00	1.25
13¼	17	3	6½	32.00	1.50
14	18	3	7 1/16	34.00	1.50
16	20	3¼	7 9/16	38.00	2.00
18½	23	4	9 5/16	44.00	2.50
21¼	26	4	9 5/16	55.00	3.50
24	30	4¾	10	65.00	4.00
27	33	5	12⅞	95.00	4.50
30	36	5	12⅞	120.00	5.00
36	43	6	15	210.00	6.00

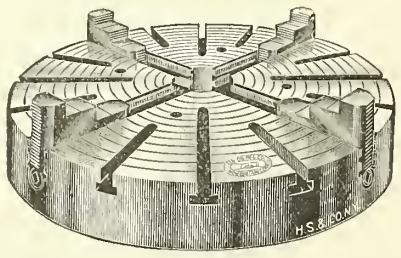
Three-jaw IXL Independent Chucks above 18½ inches in diameter are made to order only.

When ordering unfinished Face-plates for all Lathe Chucks, give the diameter of Lathe Spindle.

For Lathes and machines requiring larger Chucks than above, see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special jaws at special prices. With special jaws, steel chucks are excellent for projectile work and are widely used for that purpose.

Independent Lathe Chucks

Four Reversible Jaws



Union

No. 118, Iron Body. No. 64, Steel Body

Both of these Chucks are strongly and heavily made—No. 118 from a superior quality of grey iron; No. 64 from cast steel, with tensile strength of 70,000 pounds, the latter serving in all cases where extraordinary strength is required.

10-inch size and under have solid faces.

12, 14, 16-inch have one T-slot between the jaws.

18 to 30-inch inclusive have two T-slots.

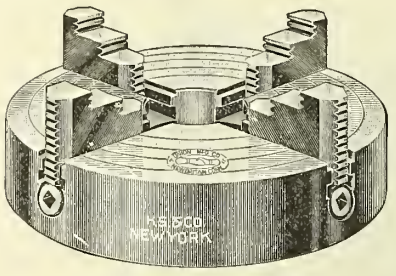
32-inch and larger have three T-slots. (See cut.)

This Chuck has socket screws, which give a longer bearing of the screw in the jaw, and also hardened steel thrust bearings, which take the thrust of the screw. In the 12-inch sizes and larger the jaws have a double bearing rib, on which the jaw slides.

Jaws are extra wide, and the screw is increased in size, giving a greater bearing than ordinarily found.

Size Inches	Iron Body, No. 118 Diameter of Hole Inches	Iron Body, No. 118 Recess for Face Plate Inches	Iron Body, No. 118 Each	Steel Body, No. 64 Diameter of Hole Inches	Steel Body, No. 64 Recess for Face Plate Inches	Steel Body, No. 64 Each
4	1⅛	3 11/16	$14.00			
5	1⅛	3 11/16	16.00			
6	1¾	5	18.00			
8	2	5	22.00	2⅛	4⅞	$35.00
9	2	5	24.00			
10	2	5	26.00	2½	5 1/32	40.00
12	3	7	30.00	3⅛	7 1/16	45.00
14	3	8	34.00	3⅛	7 1/16	51.00
15	3	8	35.00	3⅛	8	55.00
16	3	8	38.00	3⅛	7 1/16	60.00
18	4¾	10	44.00	4	8	66.00
20	4¾	10	50.00	4¼	10	75.00
22	4¾	10	57.00	5	10	85.00
24	4¾	12	65.00	5	10	100.00
26	5½	12	80.00	5	12	120.00
28	5½	12	100.00	5½	12	150.00
30	5½	12	120.00	5½	16⅛	180.00
32	5½	17¾	150.00	5½	16⅛	225.00
34	5½	17¾	180.00	5½	17¾	270.00
36	5½	17¾	210.00	5½	17¾	315.00
38	6	20	240.00			
40	6	20	270.00			
42	6	20	300.00			
44	6	20	350.00			
46	6	20	420.00			
48	6	20	500.00			

Three or Four Reversible Jaws



Union Light Pattern No. 19

For use on Light Lathes and for amateur work, sufficiently strong for work usually placed on the smaller sizes of Independent Chucks.

The jaws and screws are of steel and closely fitted. The screw heads are provided with square recesses for key, and are flush with the outside rim of the Chuck. A hardened steel collar takes the thrust of the screw, saving wear, and adds to the durability.

Diameter or Size Inches	Diameter of Hole Inches	Diameter of Recess Inches	Approximate Weight Pounds	3 Jaw Each	4 Jaw Each
3	⅝	2 11/16	2½	$8.50	$10.00
4	1	3½	4¼	10.00	12.00
5	1	3½	6½	12.00	14.00
6	1⅝	3¾	9	14.00	16.00
7½	1⅝	3¾	12½	16.00	18.00
9	1⅝	3¾	18	18.00	20.00
10	1⅝	5	24	20.00	22.00

Definition of Terms Used in Describing Chucks

A Universal Chuck is one in which all the jaws are operated by the application of the wrench at one pinion. This style of Chuck has a common center at all times, and none of the jaws can be operated independently of the others.

An Independent Chuck is one in which each jaw is moved to or from the center separately. In an Independent Chuck but one jaw can be moved at a time.

A Combination Chuck is one in which the jaws can be operated together, as in a Universal Chuck, or, by releasing the gearing, singly, as in an Independent Chuck. In other words, a Combination Chuck is a combination of both the Universal and Independent styles. One advantage of the Combination Chuck over the Universal lies in the fact that, to remove the jaws from a Chuck of this style, it is only necessary to set the Chuck as an Independent, and then run each jaw separately to the center. In a Universal Chuck, it is necessary to take the Chuck apart to remove the jaws.

Geared Scroll Chucks are always Universal in style, excepting the Scroll Combination, which is a Combination Chuck.

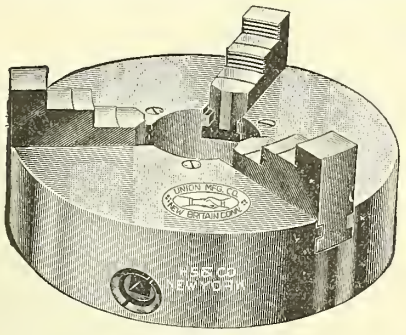
For Lathes and machines requiring larger Chucks than above, see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special jaws at special prices. With special jaws steel Chucks are excellent for projectile work, and are widely used for that purpose.

Geared Scroll Chucks

Union Universal

All Union Steel Shells are made in one piece of cast steel, and are designed for the heaviest work. The iron shells are also made in one piece and are very solid and substantial

With Three or Four Outside Jaws

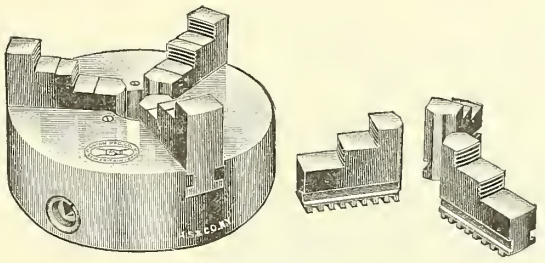


Nos. 133 and 93

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	Iron Body 3-Jaw No. 133 Each	Iron Body 4-Jaw No. 134 Each	Steel Body 3-Jaw No. 93 Each	Steel Body 4-Jaw No. 94 Each
2½	9/16	1 15/16	$7.50	.....	$12.00	
3	5/8	2 7/8	10.00	$11.00	15.00	$17.00
4	3/4	3	12.00	13.20	18.00	20.00
5	7/8	3 11/16	15.00	16.50	23.00	25.00
6	1 9/16	4 3/4	18.00	19.80	27.00	30.00
7½	2	4 3/4	20.00	22.00	30.00	33.00
9	2½	5 3/4	24.00	26.40	36.00	40.00
10½	3	5 3/4	27.00	29.70	41.00	45.00
12	3	7	30.00	33.00	45.00	50.00
15	3¼	8	40.00	44.00	60.00	66.00
18	3½	10	55.00	62.00	83.00	93.00
21	4½	11	80.00	90.00	120.00	135.00

With Three or Four Outside and Inside Jaws

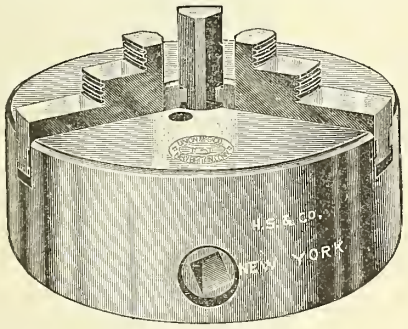
Two sets with each Chuck



Nos. 153 and 123

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	Iron Body 3-Jaw No. 153 Each	Iron Body 4-Jaw No. 154 Each	Steel Body 3-Jaw No. 123 Each	Steel Body 4-Jaw No. 124 Each
2½	9/16	1 15/16	$9.00	....	$14.00	
3	5/8	2 7/8	12.00	$13.60	18.00	$20.00
4	3/4	3	14.40	16.40	22.00	25.00
5	7/8	3 11/16	18.00	20.50	27.00	31.00
6	1 9/16	4 3/4	21.60	24.60	32.00	37.00
7½	2	4 3/4	24.00	27.30	36.00	41.00
9	2½	5 3/4	28.80	32.80	43.00	49.00
10½	3	5 3/4	32.40	37.00	49.00	56.00
12	3	7	36.00	41.00	54.00	62.00
15	3¼	8	48.00	54.60	72.00	81.90
18	3½	10	66.00	77.00	99.00	115.50
21	4½	11	96.00	110.00	144.00	165.00

With Three or Four Inside Jaws

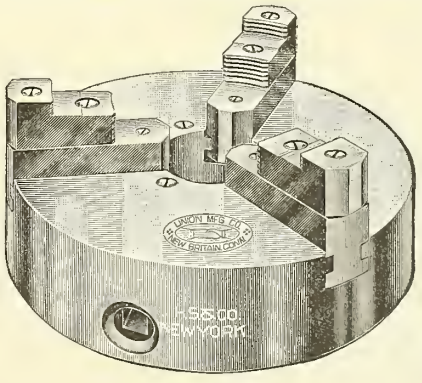


Nos. 143 and 113

Nos. 143 (3-jaw) and 144 (4-jaw) with iron body and inside jaws, take the same list and have the same dimensions as Nos. 133 and 134, respectively, in above table.

Nos. 113 (3-jaw) and 114 (4-jaw) with steel body and inside jaws, take the same list and have the same dimensions as Nos. 93 and 94, respectively, in above table.

With Three or Four Reversible Jaws

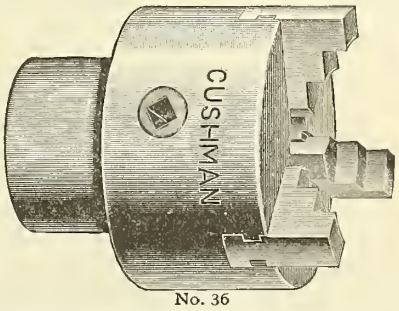


No. 163

Nos. 163 (3-jaw) and 164 (4-jaw) with iron body and reversible jaws, take the same list and have the same dimensions as Nos. 133 and 134, at top of this page.

Cushman Universal, with Hubs for Taper Arbor

With Three Outside or Inside Jaws, or Both



No. 36

Designed to be fitted to machine by means of a taper arbor. They are provided with hubs as shown, in which is a taper hole adapted for taper arbors.

These Chucks have one pinion gear only.

Style No. 36 has one set of outside jaws. Will hold pieces as large as the diameter of body.

Style No. 37 has one set of inside jaws holding bars, rods or drills.

Style No. 39 has two sets of jaws, one set outside and one set inside.

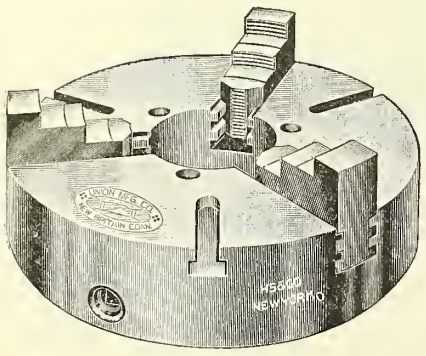
Nominal size	2 inches	2½ inches
Diameter of body	2 inches	2½ inches
Diameter of hub	1 5/16 inches	1⅝ inches
Length over all	2⅝ inches	3 inches
Hole through body	½ inch	⅝ inch
Weight No. 36 and No. 37	1¼ pounds	2¼ pounds
Weight No. 39	1½ pounds	2½ pounds
No. 36 and No. 37	$6.50	$7.50
No. 39	8.00	9.00

For Lathes and machines requiring larger Chucks than above see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special jaws at special prices. With special jaws, steel Chucks are excellent for projectile work and are widely used for that purpose.

Universal Geared Scroll Chucks

Union—Extra Heavy

With Three or Four Outside or Inside Jaws, or Both



No. 79

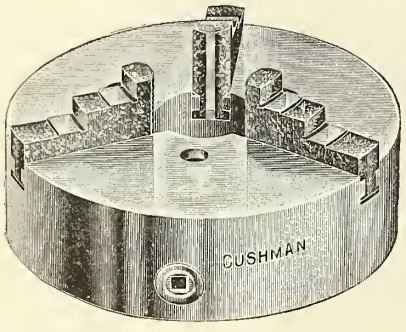
Size Inches		Diameter of Hole Inches	Recess for Face Plate Inches	No. 79 With Outside Jaws Each	No. 80 With Inside Jaws Each	No. 81 With Two Sets Jaws Each
4	3 jaw	3/4	3	$16.00	$16.00	$20.00
	4 jaw			18.00	18.00	23.50
5	3 jaw	7/8	3 11/16	20.00	20.00	24.00
	4 jaw			22.00	22.00	27.50
6	3 jaw	1 9/16	4 3/4	24.00	24.00	30.00
	4 jaw			27.00	27.00	35.00
7 1/2	3 jaw	2	4 3/4	28.00	28.00	36.00
	4 jaw			32.00	32.00	42.50
9	3 jaw	2 1/2	5 3/4	35.00	35.00	45.00
	4 jaw			40.00	40.00	53.50
12	3 jaw	3	7	45.00	45.00	60.00
	4 jaw			52.50	52.50	72.50
15	3 jaw	3 1/4	8	65.00	65.00	83.00
	4 jaw			74.00	74.00	98.00
18	3 jaw	4 1/4	10	90.00	90.00	110.00
	4 jaw			100.00	100.00	127.00
21	3 jaw	4 1/4	11	120.00	120.00	142.00
	4 jaw			131.00	131.00	160.00
24	3 jaw	4 1/2	14	150.00	150.00	175.00
	4 jaw			162.50	162.50	196.00
28	3 jaw	5	14	200.00	200.00	230.00
	4 jaw			215.00	215.00	255.00
30	3 jaw	6	16	238.00	238.00	272.00
	4 jaw			255.00	255.00	300.00
32	3 jaw	6	16	275.00	275.00	315.00
	4 jaw			295.00	295.00	350.00

The changes that have been made in high-grade machine tools in the last few years have necessitated corresponding changes in the smaller tools used with them. These improvements, together with the general use of high speed steel in lathe tools, have called for a heavier and stronger Scroll Chuck than previously made. That demand is met by the Union Extra Heavy Geared Scroll Chuck, listed herewith.

All parts are extra heavy and of carefully selected material. The jaws operate in double grooves in the shell, thus bringing them deeper into the shell, increasing the strength.

In addition to the usual outside and inside jaws we furnish for these Chucks a number of soft blank jaws, designed to be shaped to the character of the work to be held.

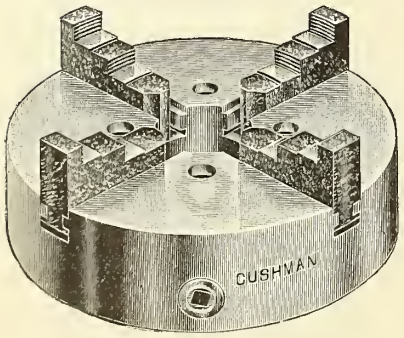
Cushman, with Three Outside or Inside Jaws, or Both



No. 32

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	No. 31 With Outside Jaws Each	No. 32 With Inside Jaws Each	No. 34 With Two Sets Jaws Each
2	1/2	1 1/2	$6.50	$6.50	$8.00
2 1/2	5/8	1 7/8	7.50	7.50	9.00
3	5/8	2 7/8	10.00	10.00	12.00
4	1	3 1/16	12.00	12.00	14.40
5	1 1/4	3 3/4	15.00	15.00	18.00
6	1 9/16	4 3/4	18.00	18.00	21.60
7 1/2	2	4 3/4	20.00	20.00	24.00
9	2 1/2	5 5/8	24.00	24.00	28.80
10 1/2	3	5 5/8	27.00	27.00	32.40
12	3	7	30.00	30.00	36.00
15	3 1/4	7	40.00	40.00	48.00
18	3 1/4	9 1/2	55.00	55.00	66.00
21	3 1/4	9 1/2	80.00	80.00	96.00

Cushman, with Four Outside or Inside Jaws, or Both



No. 41

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	No. 41 With Outside Jaws Each	No. 42 With Inside Jaws Each	No. 44 With Two Sets Jaws Each
3	5/8	2 7/8	$10.75	$10.75	$13.35
4	1	3 1/16	13.00	13.00	16.20
5	1 1/4	3 3/4	16.20	16.20	20.20
6	1 9/16	4 3/4	19.50	19.50	24.30
7 1/2	2	4 3/4	22.00	22.00	27.30
9	2 1/2	5 5/8	26.00	26.00	32.40
10 1/2	3	5 5/8	29.10	29.10	36.40
12	3	7	32.40	32.40	40.40
15	3 1/4	7	43.30	43.30	53.90
18	3 1/4	9 1/2	62.00	62.00	77.00
21	3 1/4	9 1/2	90.00	90.00	110.00

Nos. 31 and 41 have outside jaws of the type most generally used for ordinary lathe work, as may be noted in cut. With this type jaw pieces as large as the Chuck itself may be held. Nos. 32 and 42 have inside jaws, adapted for holding bars, rods, drills, and special tools. The steps on the outside are for holding rings, etc.

Nos. 34 and 44 have two sets of jaws, one each inside and outside, which can be changed easily and quickly. Having both sets, these Chucks are adapted for any kind of work and are generally the most useful.

For Lathes and machines requiring larger Chucks than above, see face plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special Jaws at special prices. With special jaws, steel Chucks are excellent for projectile work, and are widely used for that purpose.

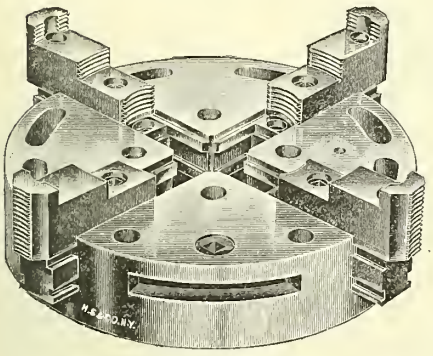
Geared Scroll Chucks

Westcott Spur Universal or Combination

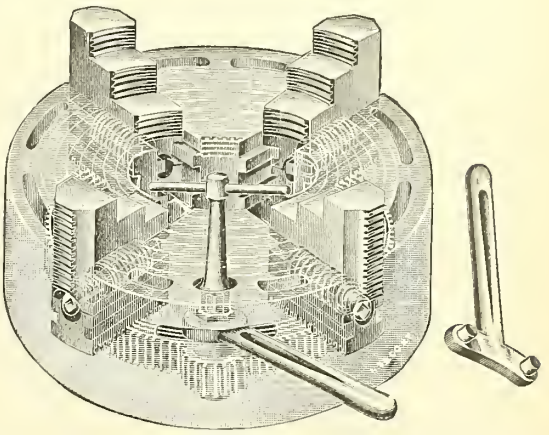
With Three or Four Reversible Jaws

Diameter Over All Inches	Will Hold Inside of Jaw Inches	Diameter of Recess for Face Plate Inches	Three Jaws Each	Four Jaws Each	Unfinished Face Plates Each
6	6½	..	$25.00	$31.00	$ .75
8	8½	3½	26.00	32.00	.50
10⅛	12	5	34.00	42.00	1.00
13¼	15	6	44.00	56.00	1.25
16	18	7 9/16	52.00	64.00	1.50
18½	21½	9 5/16	62.00	75.00	2.00
21¼	26	9 5/16	80.00	95.00	2.50
24	30	10	100.00	120.00	4.00
27	33	12⅞	135.00	160.00	4.50
30	36	12⅞	170.00	200.00	5.00
36	43	15	230.00	285.00	6.00

When ordering unfinished Face Plates for all Lathe Chucks, give the diameter of Lathe Spindle.



Universal



Combination

The Spur pinion is operated by a drop forged open-end wrench, which enters through an opening in the edge of the Chuck, and engages with hexagon pinion shaft.

The scroll may be rapidly manipulated by a lever and increased gripping power then gained by applying the open-end wrench to the Spur pinion—a grip much stronger than any bevel gear Chuck.

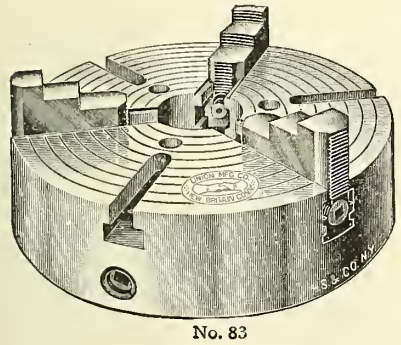
The increased grip is due not only to the Spur Gear, but also to the open-end wrench, to which a man may apply as much power as he pleases without danger of breaking the gears.

The mechanism by which the universal movement of the jaws is produced may be operated from the face and edge of Chuck, as well as from the rear. Screw heads do not project beyond body.

Union Combination

With Three or Four Reversible Jaws

Diameter Inches	Diameter of Hole Inches	Recess for Face Plate Inches	No. 83 Three Jaws Each	No. 84 Four Jaws Each
4	¾	3	$20.00	$26.00
5	⅞	3 11/16	22.00	28.00
6	1 9/16	4¾	24.00	30.00
7½	2	4¾	26.00	32.00
9	2½	5¾	34.00	42.00
10½	3	5¾	40.00	50.00
12	3	7	44.00	56.00
15	3¼	8	52.00	64.00
18	3½	10	62.00	75.00
21	4½	11	80.00	95.00
24	4½	14	100.00	120.00



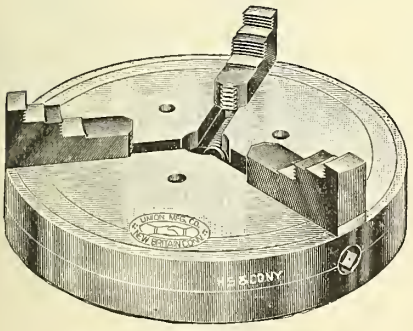
No. 83

Lathe Chucks

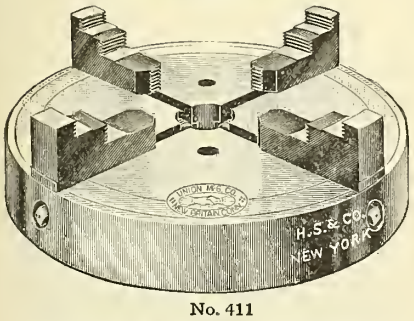
Union Combination

With Three or Four Outside, Inside or Reversible Jaws

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	With Outside Jaws No. 1 3-Jaw Each	With Outside Jaws No. 401 4-Jaw Each	With Inside Jaws No. 2 3-Jaw Each	With Inside Jaws No. 402 4-Jaw Each	With Reversible Jaws No. 21 3-Jaw Each	With Reversible Jaws No. 421 4-Jaw Each
3	...	....	$18.00	.....	$18.00			
4	...	....	22.00	$26.00	22.00	$26.00		
5	1¼	3 11/16	25.00	30.00	25.00	30.00	$25.00	$30.00
6	1¼	3 11/16	26.00	32.00	26.00	32.00	26.00	32.00
8	1½	5 1/32	30.00	38.00	30.00	38.00	30.00	38.00
9	1½	5 1/32	34.00	42.00	34.00	42.00	34.00	42.00
12	1⅝	6⅜	44.00	56.00	44.00	56.00	44.00	56.00
15	2	7 1/16	52.00	64.00	52.00	64.00	52.00	64.00
18	2⅜	8	62.00	75.00	62.00	75.00	62.00	75.00
21	2¾	9 21/32	80.00	95.00	80.00	95.00	80.00	95.00
24	2¾	10	100.00	120.00	100.00	120.00	100.00	120.00
26	3¼	12	130.00	160.00	130.00	160.00	130.00	160.00
30	3½	16 1/16	170.00	200.00	170.00	200.00	170.00	200.00
36	4	17¾	230.00	285.00	230.00	285.00	230.00	285.00
42	...	....	270.00	325.00	270.00	325.00	270.00	325.00



No. 1



No. 411

Union Universal

With Three or Four Outside, Inside or Reversible Jaws

Nos. 11 (3-Jaw) and 411 (4-Jaw) with outside jaws, take the same list and have the same dimensions as Nos. 1 and 401, respectively, in above table.

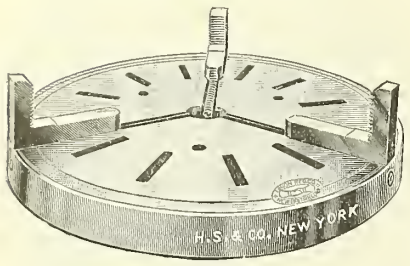
Nos. 12 (3-jaw) and 412 (4-jaw) with inside jaws, take the same list and have the same dimensions as Nos. 2 and 402, respectively, in above table.

Nos. 42 (3-jaw) and 442 (4-jaw) with reversible jaws take the same list and have the same dimensions as Nos. 21 and 421, respectively, in above table.

For Lathes and machines requiring larger Chucks than above, see face-plate jaws on page 152. To secure the most satisfactory results from any Chuck it should be occasionally taken apart, cleaned and oiled, and if any rough surfaces are found they should be smoothed. No wrench should be used except that which is supplied with the Chuck. Special Jaws at special prices. With special Jaws steel Chucks are excellent for projectile work, and are widely used for that purpose.

Car Wheel Chucks

No. 24



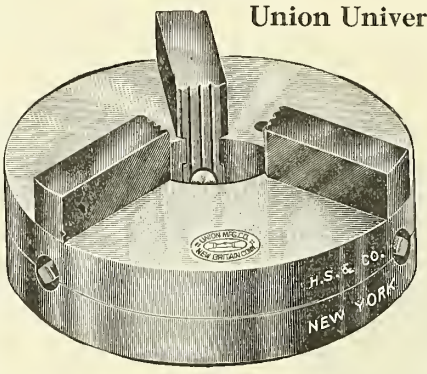
Union Universal

Size Inches	Jaw	Each
24	3	$115.00
26	3	145.00
28	3	175.00
30	3	185.00
32	3	225.00
36	3	250.00
42	3	300.00
42	6 (No. 25)	400.00

These Chucks can be supplied with five, six or eight jaws at special prices.

Cutting-Off Chucks

Union Universal, Extra Heavy



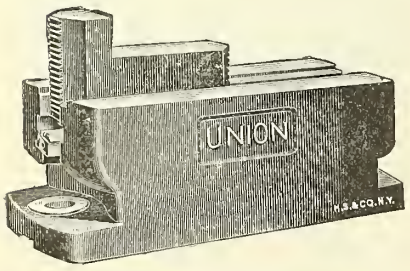
No. 27

Size Inches	Diameter of Hole Inches	Recess for Face Plate Inches	Each
9	2⅛	5	$40.00
11	3⅛	7¼	50.00
14	4⅛	8 17/32	60.00
17	5⅛	11	70.00

Made expressly for heavy and rough work. Will hold bars of any length from 1⅛ inches up to the size of the center hole.

Face Plate Jaws

Union



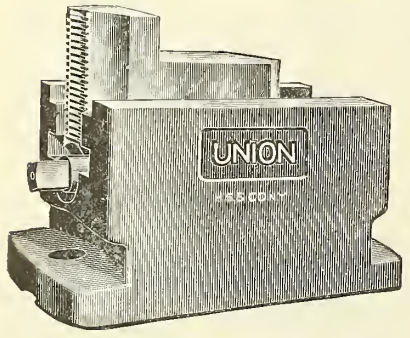
No. 48—Iron Body. No. 72—Steel Body

No. 48—With Iron Bodies

Size Inches	Set of Three	Set of Four
6	$35.00	$50.00
8	45.00	60.00
10	60.00	80.00
12	90.00	120.00
14	120.00	160.00

No. 72—With Steel Bodies

Size Inches	Set of Three	Set of Four
8	$70.00	$90.00
10	90.00	120.00
12	135.00	180.00
14	180.00	240.00



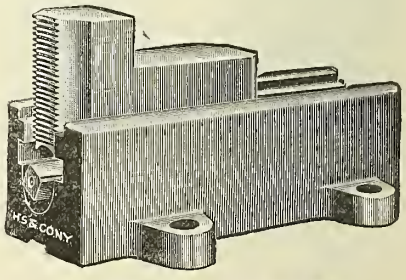
No. 50—Extra Heavy Iron Body

No. 50—With Extra Heavy Iron Body

Size Inches	Set of Three	Set of Four
10	$80.00	$105.00
12	120.00	160.00
18	200.00	260.00

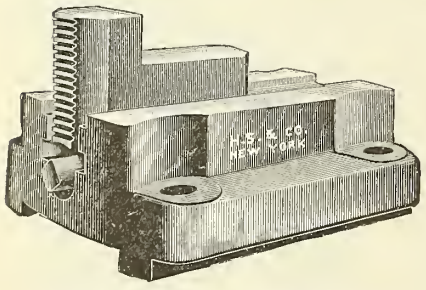
No. 70—With Steel Body with Side Ears

Size Inches	Set of Three	Set of Four
8	$70.00	$90.00
10	90.00	120.00
12	135.00	180.00
14	180.00	240.00



No. 70—Steel Body with Side Ears

For Parallel Slots



No. 86—Iron Body. No. 88—Steel Body

No. 86—With Iron Bodies

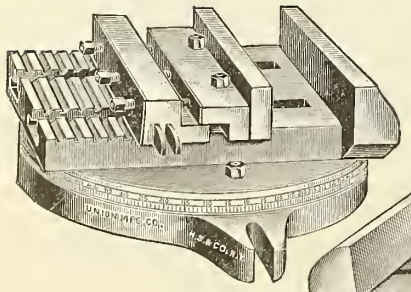
Size Inches	Set of Three	Set of Four
6	$47.00	$67.00
8	60.00	80.00
10	80.00	107.00
12	120.00	160.00
14	160.00	214.00

No. 88—With Steel Bodies

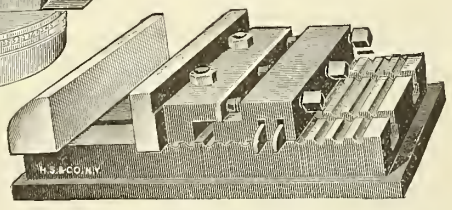
Size Inches	Set of Three	Set of Four
6	$80.00	$105.00
8	100.00	130.00
10	125.00	170.00
12	190.00	250.00
14	255.00	340.00

Planer Chucks

Union



Round Base, No. 76



Square Base, No. 78

Size Inches	Length of Jaw Inches	Depth of Jaw Inches	Jaws Open Inches	Dimension of Space Required Inches	Round Base, No. 76 Each	Square Base, No. 78 Dimensions of Space Required Inches	Square Base, No. 78 Each
6	7	1½	3½	10	$25.00	7¼x11	$20.00
8	9	1⅞	5	12½	30.00	9x12½	25.00
10	11	2⅜	6	14½	36.00	11 x15	30.00
12	13	2⅜	8	16¾	40.00	13 x17	35.00
15	15½	2½	9½	20	50.00	15½x21	45.00
18	18½	2¾	11¼	23	60.00	18½x24	55.00
24	24¼	2¾	16	27	90.00	24¼x28	75.00
30	30¼	2¾	21½	34	140.00	30¼x34	120.00

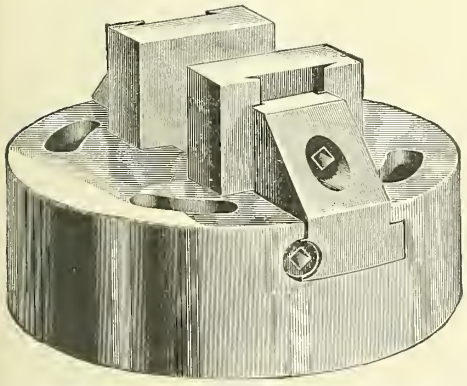
SEE DISCOUNT SHEET

Two-Jaw Chucks

Two-jaw Chucks are designed for work where three or four-jaw Chucks are impracticable. Their strength is very great in comparison with their size and they are adapted for manufacturing purposes and for hard service generally. Slip Jaws (sometimes called false Jaws) are furnished blank and soft to be slipped on the Jaws in Chuck and turned to suit requirements. Slip Jaws are specially suitable for brass work and for holding soft metal pieces and special shapes. A key wrench is furnished with every Chuck, and with those to be fitted by means of flange plate, necessary bolts or screws are furnished.

Unless otherwise specified, two-jaw Chucks will be supplied with Universal Jaws.

Westcott I. X. L. Universal or Independent, with Slip Jaws



Cut shows 10⅛-inch size with connected (Universal) screw placed at one side of jaws

Diameter Inches	Capacity Inches	Diameter of Recess for Face Plate Inches	Including Two Blank Iron Slip Jaws	Extra Iron Slip Jaws Per Set	Extra Steel Slip Jaws Per Set	Unfinished Face Plate Castings
4 9/16	2	3½	$16.00	$1.00	$2.00	$ .50
6	3	5 9/16	20.00	1.00	2.00	1.00
8	4	4 7/16	24.00	1.00	2.00	1.00
10⅛	5	5½	30.00	1.25	3.00	1.25
12	6	5 9/16	33.00	1.25	3.50	1.25
13¼	7	6½	36.00	1.25	4.00	1.50
14	8	6½	40.00	1.25	4.00	1.50
16	9	7 9/16	42.00	1.25	5.00	2.00

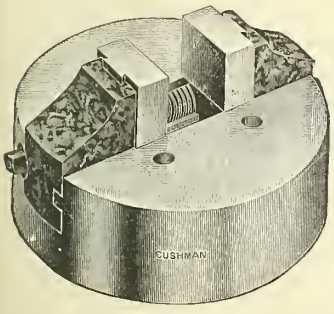
The screw-carriers furnish steel bearings for the screws.

Should jaw screw cut from need of oil, or become clogged with chips and dirt, the set-screw should be removed and screw-carrier driven out, together with jaw-screw and jaw, which can be done without injury to any of the parts. The screw-carrier, which makes the above possible, is a feature possessed by no other Two-jawed Chuck.

In ordering state whether wanted with connected (Universal) screw or with independent screws. Unless ordered otherwise, the Universal type, with screw in center of jaw, will be supplied.

When wanted to handle bars, rods, etc., the screw at side should be specified, as that type has opening clear through Chuck.

Cushman Universal or Independent, with Slip Jaws



No. 22
Jaws work Universally with each other

Nominal size, inches.....	4½	6	7	9	12
Nos. 22 and 24.....	$16.00	$20.00	$24.00	$30.00	$36.00
Chucks having tool steel slips instead of machinery steel	17.00	21.00	25.00	31.75	38.75
Extra slips, per pair.....	1.00	1.00	1.00	1.25	1.25
Extra tool steel slips, per pair....	2.00	2.00	2.00	3.00	4.00

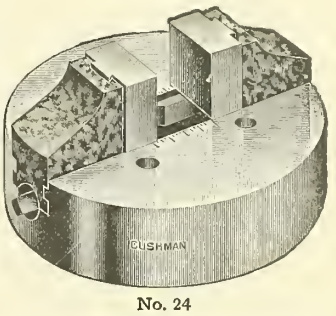
The jaws are large and are carefully fitted and hardened and are dovetailed for slips.

One pair machinery steel slips furnished with each chuck, but tool steel slips may be substituted or added. See price list.

No. 21 (Universal) and No. 23 (Independent) with solid jaws having a V-groove (sometimes called "V jaws") for use on screw machines, and for holding bars, rods, drills, square shank tools, etc., are supplied at regular prices, except the 4½-inch size, which is listed at $14.00 each.

The screws which are of large diameter with strong square threads are beneath the jaws but do not cross nor obstruct the hole through body.

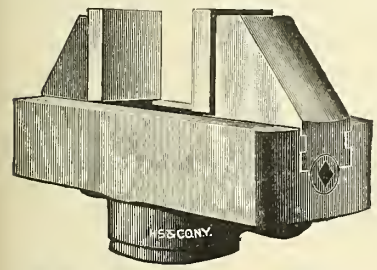
Recess in back for flange plate.



No. 24
Jaws work Independently of each other

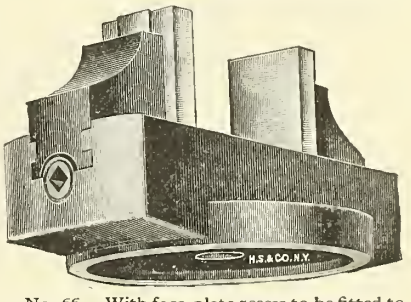
Union Universal or Independent, with Slip Jaws

Nos. 26 and 66



No. 26. With hub to be threaded to fit spindle of lathe

Size, Inches	Recess for Face Plates For No. 66 Inches	Each
7	3 11/16	$24.00
9	5 1/32	30.00
12	5 1/32	36.00
15	7	42.00
18	7½	60.00



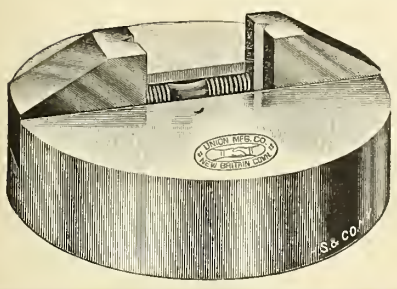
No. 66. With face-plate recess to be fitted to face-plate. For most work, this Chuck is preferable to that with threaded hub.

Slip Jaws

Inches.....	4½	6	7	9	12	15	18
Iron and machinery steel, per pair....	$1.00	$1.00	$1.00	$1.25	$1.25	$1.50	$2.00
Tool steel, per pair.....	2.00	2.00	2.00	3.00	4.00	5.00	7.50

Union Universal or Independent, with V-Groove Jaws

No. 38



Diameter Inches	Diameter of Hole Inches	Each	Diameter Inches	Diameter of Hole Inches	Each
4½	1	$12.00	9	2	$30.00
6	1¼	18.00	12	2⅜	36.00
7	1½	24.00	15	3½	42.00

A round body Chuck with operating screw on side of jaw. Unobstructed hole through center of Chuck. Especially adapted for holding pipe, tube, and so forth.

No. 40, with slip jaws, at same list as No. 38, except 4½ and 6-inch sizes, which list at $16.00 and $20.00 each, respectively.

Drill Chucks

Westcott "Little Giant" Auxiliary Screw

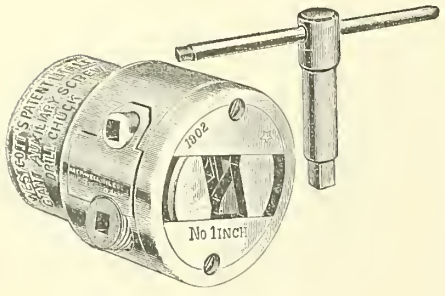


Figure 1—½ to 1¼ Inches

Size Number Inches	Approximate Diameter Inches	Capacity Inches	Diameter of Recess for Face Plate Inches	Each	Extra V Blocks Per Set	Unfinished Face Plate Castings Each
½	2¼	0 to ½	....	$8.00		
¾	3	0 to ¾	....	9.00		
1	3½	0 to 1	....	10.00		
1¼	4⅞	⅛ to 1¼	....	15.00		
1½	6	¼ to 1½	5⅛	18.00	$2.00	$1.00
2	6½	⅜ to 2	5 9/16	20.00	3.00	1.00
2⅝	7¼	½ to 2⅝	6½	30.00	4.00	1.25
3	9	⅝ to 3	8	35.00	4.00	2.50
3⅝	11	¾ to 3⅝	10	50.00	5.00	3.50
4	13¼	⅞ to 4	10	60.00	5.00	3.50

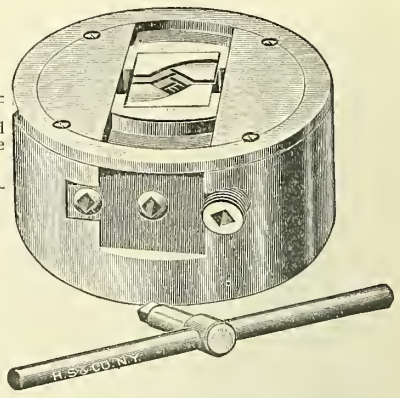


Figure 2—1½ to 4 Inches

In all Drill Chucks with side screws, the inner, or gripping, part of the jaws has a tendency to crowd away from the right and left hand screws, while the outer end has a tendency to draw towards the right and left hand screws.

The auxiliary screw (in this new "Little Giant" Auxiliary Screw Drill Chuck) entirely overcomes said tendencies.

After closing jaws on drill in the usual manner (by turning right and left hand screws) then tighten the auxiliary screw. This greatly increases the gripping power of the Chuck. The effect of the auxiliary screw is similar to that of a bolt, as it virtually bolts the two jaws together. The ½-inch, ¾-inch, 1-inch and 1¼-inch sizes are made of pattern shown in Figure 1. The hole in the hub is made to fit the Morse taper but can be bored out and threaded to suit the customer's templet at special price. We can also furnish these Chucks made with straight bodies, which are especially adapted to Hollow Spindle Lathes, for holding rods, round or square, which are to be turned or cut off. When a Chuck is wanted for holding square shank, it should be so stated in order. Square V jaws will not hold down to nothing.

The 1½-inch and larger sizes are made of pattern shown in Figure 2. These six sizes are designed for Hollow Spindle Lathes, Screw Machines, Turret Head Lathes, and Cutting-off Machines taking the place of the more costly lathe chucks which have been used for cutting-off chucks.

They are made with straight bodies only, and can be attached only by means of a face plate.

Can furnish 1¼-inch made with recess for face plate, with diameter of recess for face plate 4 7/16-inch.

When the lathe spindle is light and it is important that the Chuck should not overhang, the center hole can be bored out so as to admit of reversing the face plate, bringing the hub inside the Chuck.

In sizes 1½ inches to 4 inches, inclusive, of our regular Auxiliary Screw Chucks, the V blocks in jaws hold round, square and hexagon shanks.

Arbors for "Little Giant"



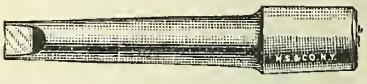
Style 1

Fitted to any size "Little Giant" Chuck
Each, $ .50



Style 2
Arbor with Nut

Fitted to any size "Little Giant" Chuck
Each, $1.25

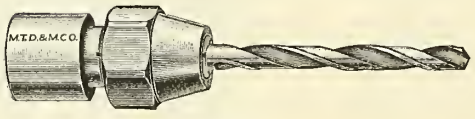


Style 3

With Morse Taper Shank, fitted to any size "Little Giant" Chuck.

Number	1	2	3	4	5
Each	$1.00	1.00	1.25	1.50	2.00

Morse Center



No. 124

Center Drill Chucks are made of steel, have hardened jaws, and are made in two sizes. Each Chuck will hold but one size of drill—that for which it is especially made. Always specify diameter of drill to be used.

No. 1 Chuck can be made to hold any one size drill from 1/16 to 3/16 inch. Outside diameter of Chuck is 7/8 inch, whole length 2 1/16 inches.

No. 2 Chuck can be made to hold any one size drill from 3/16 to 5/16 inch. Outside diameter of Chuck is 1⅛ inches, whole length 2⅛ inches.

	Each
No. 1 Chuck	$2.50
No. 2 Chuck	2.50

Trump



Numbers	1	2	3
Chucks, each	$1.50	$2.50	$4.50
Shanks, each	.40	.85	1.00
Jaws, each	.50	.50	.75
Shells, each	.50	.50	1.00
Wrench, each	.10	.15	.50

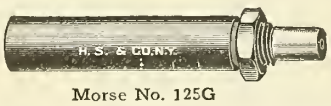
No. 1 has 1 jaw, holds from 0 to ⅛ inch, standard shank 2 inches long, 13/32 inch diameter.

No. 2 has 2 jaws, holds from 0 to ¼ inch, standard shank 2¾ inches long, 13/16 inch diameter.

No. 3 has 3 jaws, holds from 0 to ⅜ inch, standard shank 6 inches long, 15/16 inch diameter.

Arbors

For Morse Center No. 124



Morse No. 125G

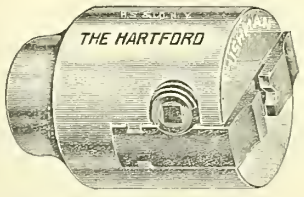
With one end blank to be fitted to lathe spindle.

Whole Length Inches	Length of Shank Inches	Diameter of Shank Inch	Each
4¾	3½	13/16	$ .80

Shanks of special length, diameter or taper at special prices

Drill Chucks

Cushman



The Hartford

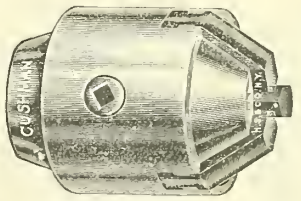
Number	Diameter Inches	Length Inches	Capacity Inch	Each
0	1¾	2½	0 to ⅜	$6.00
1	2⅛	2¾	0 to ½	7.00
2	2⅞	3¼	0 to ¾	8.00
3	3 9/16	4¼	1/16 to 1	10.00

Two jaws operated by right and left screw.

Taper hole in back for arbor.

These Chucks are designed for the hardest service that a chuck can be put to. There are but four pieces in its construction, and they are of such shape as not to be easily broken, even through misuse. The body is very solid and does not require a cap on the face to hold it together. The jaws interlock, as shown in cut, and they will firmly hold drills without damage to their shanks. The screw is large in diameter, and will firmly hold the jaws in position without breaking. A taper hole in the hub or back of Chuck enables it to be easily attached to machine.

These Chucks may be used for a great variety of work, holding drills, rods, taps, reamers, etc., and while designed for heavy work, they are no less adapted for fine accurate drilling and turning.



Nos. 306 and 307

Key Drill

Number	Diameter Inches	Length Inches	Capacity Inch	Each
306	2	2⅞	0 to ½	$6.50
307	2½	3⅛	1/64 to ⅝	8.00

A Three-Jaw Geared Scroll Drill Chuck, designed for drilling and for general work. Holds firmly and true, running either forward or backward, and can be used for all kinds of turning.

The jaws, which have a long bearing on drill, are strongly supported and cannot easily wear loose or get out of true. The jaws are ground true after being hardened.

The Chucks are operated by means of a key. The pinion gears have mortised heads and are practically flush with chuck body.

These Chucks operate quickly, hold firmly and release easily.

Arbors for Cushman



Blank with Hexagon Section

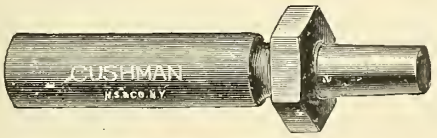
One end fitted to Chuck, the other left blank for fitting machine spindle

	Each
No. 122 fits Drill Chucks No. 0, 1, 304, 306; 2-inch Lathe Chucks Nos. 36, 37, 39	$ .80
No. 123 fits Drill Chucks Nos. 2, 307; 2½-inch Lathe Chucks Nos. 36, 37, 39	1.00
No. 124 fits Drill Chuck No. 3	1.25



With Finished Straight Shanks

		Each
No. 142, Shank ½-inch No. 143, Shank 41/64-inch	fits Chucks Nos. 0, 1, 306; 2-inch Lathe Chucks Nos. 36, 37, 39	$ .50
No. 144, Shank ½-inch No. 145, Shank 41/64-inch	fits Chucks Nos. 2, 307; 2½-inch Lathe Chucks Nos. 36, 37, 39	.80
No. 146, Shank ½-inch No. 147, Shank 41/64-inch	fits Drill Chuck No. 3	1.50



Blank with Nut

These Arbors are left with one end blank for fitting to machine, and with the other end already fitted to our Chucks. By turning the nut the Chuck may be easily forced off the Arbor or the Arbor drawn from the spindle.

	Each
No. 132 fits Drill Chucks Nos. 0, 1, 306; 2-inch Lathe Chucks Nos. 36, 37, 39	$1.00
No. 133 fits Drill Chucks Nos. 2, 307; 2½-inch Lathe Chucks Nos. 36, 37, 39	1.25
No. 134 fits Drill Chuck No. 3	1.50



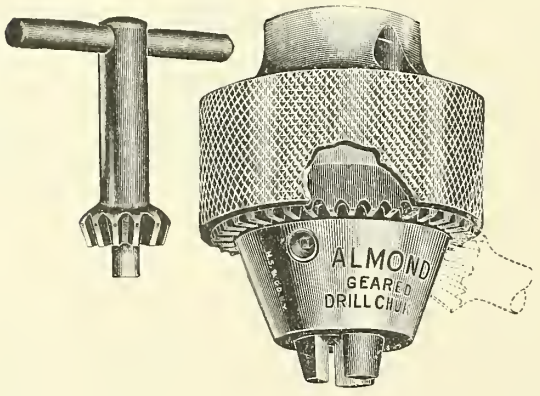
With Finished Morse Taper Shanks

		Each
No. 151, No. 1 Taper No. 152, No. 2 Taper No. 153, No. 3 Taper	fits Drills Chucks Nos. 0, 1, 306; 2-inch Lathe Chucks Nos. 36, 37, 39	$1.50 1.50 2.00
No. 154, No. 1 Taper No. 155, No. 2 Taper No. 156, No. 3 Taper	fits Drill Chucks Nos. 2, 307, 2½-inch Lathe Chucks Nos. 36, 37, 39	1.50 1.50 2.00
No. 157, No. 1 Taper No. 158, No. 2 Taper No. 159, No. 3 Taper	fits Drill Chuck No. 3	1.50 1.50 2.00

Drill Chucks

Almond

Geared



When using Chucks operated by spanner one hand must be used to prevent spindle from turning, but with this Chuck both hands are free to insert drill and tighten Chuck. To economically produce a Chuck it is necessary to make the body of mild steel, easily machined. This stock is not sufficiently hard to give satisfactory wearing qualities to the keyhole.

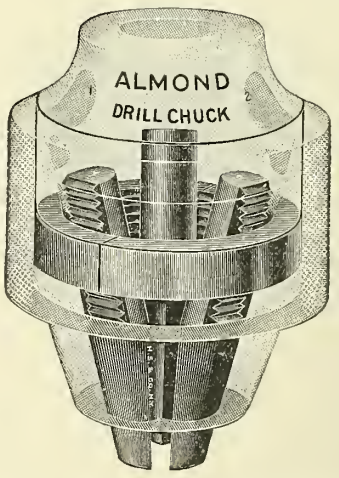
Each keyhole is fortified with a hardened steel bushing, preventing it from becoming large or out of round and maintaining alignment of the pinion with the gear. The gear teeth are cut on the split nut made of hardened, tool steel, far superior in every respect to the ordinary mild steel, case hardened, necessarily used in other chucks with teeth cut on the knurled sleeve. The key acts on the geared nut which operates the jaws; the operation of tightening is thereby performed with little effort and great speed. Because of the direct application every ounce of applied force is put to immediate advantage.

The two-fold area of the thrust bearing—which takes the pressure when jaws are forced out to take a tool—permits great pressure on this surface and the retention of the lubricant for a long period; the resultant advantage being greater gripping power and greater force applied to the jaws.

The key furnished with this Chuck is made from high-grade tool steel, insuring long life and dependable wearing quality. All broken keys returned to us will be replaced free of charge.

Keys used on the $\frac{5}{16}$ inch and $\frac{1}{2}$ inch Chucks are the same size. When using both sizes on a drill press only one key is necessary to operate both and this may be chained to the press the same as a key for forcing out arbors.

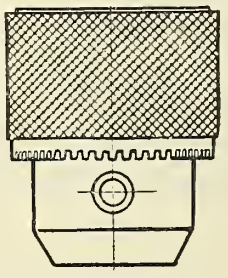
Standard



The standard is the same general construction as the new geared Chuck, except that it is operated with a spanner.

The jaw holes are opened at the rear so that finer finished holes can be bored, with diameters uniform from end to end, giving perfect fit and bearing to the jaws and to facilitate proper lubrication. The chuck has a taper on the front end, which is an advantage when using short drills.

Flat Back Geared



Designed and adapted for work where it is necessary to use Chucks of lighter weight and smaller diameter, but having the same capacity as the regular Almond Chucks. They are used extensively on pneumatic, electric and flexible shaft drills. The back end of the Chucks may be used as a thrust-bearing.

	Standard			Geared			Flat Back Geared			
Number	1	2	3	1	2	3	5	6	7	8
Capacity, inch	0–$\frac{3}{16}$	0–$\frac{5}{16}$	0–$\frac{1}{2}$	0–$\frac{3}{16}$	0–$\frac{5}{16}$	0–$\frac{1}{2}$	0–$\frac{3}{16}$	0–$\frac{1}{4}$	0–$\frac{3}{8}$	0–$\frac{1}{2}$
Length jaws receded, inches	$1\frac{1}{2}$	$2\frac{1}{8}$	3	$1\frac{1}{4}$	$2\frac{1}{8}$	3	$1\frac{1}{4}$	$1\frac{5}{16}$	$1\frac{15}{16}$	$2\frac{1}{2}$
Diameter, inches	$1\frac{1}{8}$	$1\frac{5}{8}$	$2\frac{5}{16}$	$1\frac{1}{8}$	$2\frac{1}{16}$	$2\frac{11}{16}$	$1\frac{1}{8}$	$1\frac{7}{32}$	$1\frac{5}{8}$	$1\frac{15}{16}$
Each	$5.50	5.50	9.00	5.50	5.50	9.00	5.50	5.50	5.50	9.00

Parts

Ferrules, all sizes	$ .50
Nuts, all sizes	.50
Spanners for Standard Chuck:	
No. 2	.12
No. 3	.18
Jaws for Nos. 1, 2, 5, 6 and 7	.50
Jaws for Nos. 3 and 8	.90
Nos. 1 and 2 Keys, each	$1.00

No. 1 Key operates No. 1 Geared Nut and Nos. 5 and 6 Flat Back.

No. 2 Key operates Nos. 2 and 3 Geared Nut and Nos. 7 and 8 Flat Back Chucks.

In ordering Jaws give the number found on back end of jaw.

Arbors

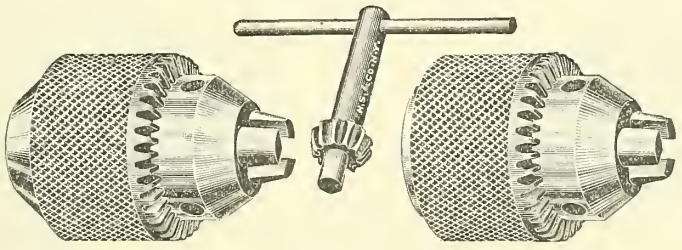
All Arbors accurately ground to Standard Sizes

For Nos. 1, 2, 5, 6 and 7 Chuck	$1.50
For Nos. 3 and 8	2.00

One end Almond Taper; other end either blank or No. 1, 2 or 3 Morse Taper.

Drill Chucks

Jacobs Improved



Regular Key Flat Back

Prior to 1902 there were many different makes and styles of Drill Chucks in use, practically all of which may be classed under two titles, namely: the two-jawed key chuck, and the three-jawed spanner sleeve chuck. None of these chucks, however, possessed convenience, efficiency, accuracy and durability, the four important elements necessary in a first-class Drill Chuck.

The two-jawed key adjusting chuck was slow to adjust, because it could only be adjusted by the use of the key. It was clumsy and unshapely in form. It would not retain its accuracy, neither was it efficient.

The three-jawed spanner sleeve chuck was compact and shapely in form. It retained its accuracy to a remarkable degree. A large range of adjustment could be easily and quickly made without the use of a spanner, but when the spanner was required to forcibly revolve the sleeve for the initial or final adjustment, it proved inefficient and most annoying, because the action of the spanner was inclined to revolve the whole chuck, making it necessary to grasp the belt with one hand to prevent the lathe or drill press spindle from revolving, and this action would often twist the chuck off its shank, or the shank out of its spindle.

In general form and structure, the Jacobs Improved Drill Chuck is similar to old, well-known spanner sleeve chucks, but the patented device (the toothed sleeve and key) makes it superior to all others as, by the action of the key, the initial, or final adjustment may be easily and effectively performed with one hand only, leaving the other hand free to adjust or remove the drill.

Regular

No. 1. Adapted for use where extreme lightness and small diameter is required, but where these factors are not essential, the use of a larger size chuck is more satisfactory.

No. 2. Adapted for use on sensitive and high speed drill presses, lathes, tapping machines, and for other purposes where a light, compact, convenient, efficient, accurate and durable Drill Chuck is required.

No. 3. Designed to meet the demand for a convenient, efficient, accurate and durable Drill Chuck having $\frac{17}{32}$ inch capacity, and is not only especially adapted and extensively used as a Drill Chuck, but is a most convenient tool for use in a lathe and, as a hole may be bored through the chuck and spindle the size of its full capacity, it is most convenient to use for holding rod stock, etc.

No. 4. Same as No. 3, except capacity to $\frac{3}{4}$ inch.

No. 5. Same as Nos. 3 and 4, except capacity to 1 inch.

No. 6. Designed to meet the demand for a very light weight, convenient, efficient, accurate and durable Drill Chuck, having $\frac{1}{2}$ inch capacity, to be used on portable drills where extreme light weight is most essential.

Flat Back

These chucks are made without the chamfered portion at the back end of body, making them shorter than the regular chucks, and giving them their name. The flat back end is sometimes used as a thrust bearing. While the regular chucks are more shapely for general purposes, the flat back may be used if preferred.

No. 1A. Designed to meet the demand for a light, convenient, efficient, accurate and durable chuck for portable drills, having $\frac{1}{4}$ inch capacity. Extensively used on many of the best known electric and pneumatic drills.

No. 2A. Same as No. 1A, except capacity to $\frac{3}{8}$ inch.

No. 3A. Same as Nos. 1A and 2A, except capacity to $\frac{17}{32}$ inch.

No. 6A. Designed to meet the demand for a very light weight, convenient, efficient, accurate and durable Drill Chuck having $\frac{1}{2}$ inch capacity, to be used on portable drills where extreme light weight is most essential.

	Regular						Flat Back			
Numbers	1	2	3	4	5	6	1A	2A	3A	6A
Capacity, inch	0 to $\frac{13}{64}$	0 to $\frac{21}{64}$	0 to $\frac{17}{32}$	$\frac{1}{16}$ to $\frac{3}{4}$	$\frac{3}{8}$ to 1	0 to $\frac{1}{2}$	0 to $\frac{1}{4}$	0 to $\frac{3}{8}$	0 to $\frac{17}{32}$	0 to $\frac{1}{2}$
Length, jaws extended, inches	$1\frac{15}{16}$	$2\frac{3}{4}$	$3\frac{15}{16}$	$4\frac{15}{16}$	$5\frac{5}{16}$	$3\frac{9}{16}$	$1\frac{13}{16}$	$2\frac{9}{16}$	$3\frac{5}{8}$	$3\frac{3}{8}$
Length, jaws receded, inches	$1\frac{1}{2}$	$2\frac{3}{16}$	3	$3\frac{11}{16}$	4	$2\frac{11}{16}$	$1\frac{3}{8}$	2	$2\frac{11}{16}$	$2\frac{1}{2}$
Outside diameter, inches	$1\frac{3}{16}$	$1\frac{11}{16}$	$2\frac{5}{16}$	$2\frac{7}{8}$	$3\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{3}{16}$	$1\frac{11}{16}$	$2\frac{5}{16}$	$1\frac{7}{8}$
Each	$5.50	$5.50	$9.00	$18.00	$25.00	$9.00	$5.50	$5.50	$9.00	$9.00

Arbors

Numbers	1 and 1A	2 and 2A	3 and 3A	4	5	6 and 6A
No. 1 Morse Taper	$1.25	$1.25	$1.75	$2.25	$3.00	$1.75
No. 2 Morse Taper	1.40	1.40	2.00	2.75	3.25	2.00
No. 3 Morse Taper	2.00	2.00	2.25	3.00	3.75	2.25
No. 4 Morse Taper	3.50	3.50	4.00	4.50	4.50	4.00
$\frac{1}{2}$-inch Straight Shank	1.00	1.00	1.00	1.50	2.00	1.00
$\frac{11}{64}$-inch Straight Shank	1.00	1.00	1.00	1.50	2.00	1.00

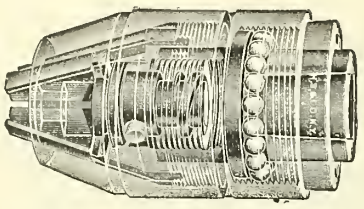
Parts

	Key	Jaws (per set)	Nut	Sleeve
Nos. 1 and 1A	$ .30	$1.65	$ .55	$ .55
Nos. 2 and 2A	.30	1.65	.55	.55
Nos. 3 and 3A	.45	2.70	.90	.90
No. 4	.75	4.50	1.50	1.50
No. 5	1.25	6.75	2.25	2.25
Nos. 6 and 6A	.45	2.70	.90	.90

SEE DISCOUNT SHEET

Drill Chucks

Horton-Morrow



Number	Capacity Inch	Each	Extra Jaws, Sets
1	0 to 1/4	$7.00	$1.75
2	0 to 3/8	7.50	1.75
3	0 to 1/2	9.00	2.00
4	1/4 to 3/4	18.00	2.25
5	1/2 to 1	25.00	2.25

Designed to meet the requirements of high speed tools, etc. Also adapted for operations on screw machines, automatics, and all turret machinery, milling machines or for other tools where hard work is required.

A hand-operated chuck without the use of key, spanner or wrench. Perfect alignment of parts on plain bearings. Large ball-bearing to take end thrust. Automatic positive grip that never slips. Quick unresisting release by hand.

No exposed threads to catch waste or collect grit. Jaws crucible steel hardened and ground. All bearings hardened and ground.

Hoods hardened and ground.

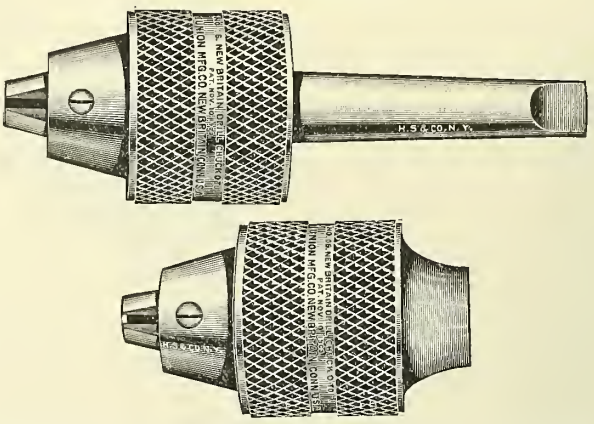
Drills run true from shank to point.

The combination in this construction is almost perfect. The ball bearing reduces friction to the minimum; the hood is hardened and ground and on this surface the jaws advance and retract; the pressure from drill automatically tightens the jaws which are easily released by hand through a differential screw arrangement.

Arbors, with Morse Taper Fitted to Any Size Chuck

	Each
No. 1 Morse Taper	$1.00
No. 2 Morse Taper	1.00
No. 3 Morse Taper	1.25
No. 4 Morse Taper	1.50
No. 5 Morse Taper	2.00

New Britain



Hand-operated, ball-bearing. No exposed gears or threads. Chuck is self tightening. The sizes Nos. 5 to 9 have the arbor incorporated as part of the Chuck. This feature will be appreciated by all who have used the separate arbors.

*With Arbors		The following List applies to Chucks with and without Arbors			Without Arbors			
Number	Morse Taper Arbor	Capacity	Outside Diameter	Each	Number	Depth of Taper	Diameter Large End	Taper per Foot
5	No. 1	0 to 13/64	1 1/8	$ 5.50	05	5/8	.386	7/8
6	No. 2	0 to 11/32	1 15/16	5.50	06	7/8	.563	7/8
7	No. 2	0 to 17/32	2 9/16	9.00	07	1 13/32	.682	5/8
8	No. 3	0 to 3/4	3 1/8	18.00	08	1 3/4	.855	5/8
9	No. 4	0 to 1	4 1/8	25.00	09	1 3/4	1.153	5/8

*Can be furnished with any Taper desired

Taper Arbors

For Nos. 05 to 09 inclusive	Each
No. 1 Morse Taper Shanks	$1.50
No. 2 Morse Taper Shanks	1.50
No. 3 Morse Taper Shanks	2.00
No. 4 Morse Taper Shanks	2.00
No. 5 Morse Taper Shanks	3.00

B-M Co.



With Bit Stock Shank

No. 45. Holds drills to 3/16 inch. Holds taps to 1/4 inch, each $1.00

Star



Nos. 5, 6 and 7, with Round Shanks

Handsomely nickeled, substantial chucks.

Three jaws carefully adjusted in a socket, opening with a spring and closing with pressure from spindle.

Grip tenaciously, and center accurately, round shanks.

Numbers	5	6	7
Capacity, inch	0 to 1/4	0 to 3/8	0 to 1/2
Outside diameter of chuck, inches	1	1 1/4	1 1/2
Dimensions of shank, inches	1 1/2 x 1/2	3 3/8 x 1/2	4 1/2 x 1/2
Weight, ounces	7	12	20
Each	$1.25	$2.00	$2.50

Packed 1 in a pasteboard box

Chucks Furnished to Order with Shanks as Follows without Extra Charge

Numbers	5	6	7
Diameter of shank, inch	41/64	41/64	41/64 or 7/8

Special shanks, straight or taper, at additional charge of 50 cents each.
When ordering taper shanks, take care to state exact taper wanted.

Nos. 15, 16 and 17, with Bit Stock Shanks

The same as Nos. 5, 6 and 7, except that shanks are of the bit stock pattern, permitting chucks to be used in bit braces, breast drills, and other tools.

Numbers	15	16	17
Capacity, inch	0 to 1/4	0 to 3/8	0 to 1/2
Outside diameter of chuck, inches	1	1 1/4	1 1/2
Length of shank, inches	2	2 1/4	2 1/4
Weight, ounces	6	10	17
Each	$2.00	$2.50	$3.00

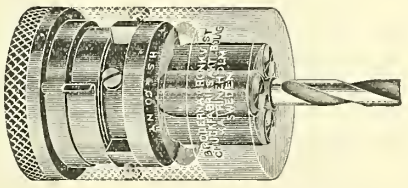
Packed 1 in a pasteboard box

Automatic Drill Chucks

For Straight and Taper Shank Drills

Drills may be changed while the spindle is running at full speed, without the use of wrench or key. Straight Shank Drills are cheaper than taper shank and there are no tangs to break

Grönkvist



Perfect centering and unlimited holding power. Three hardened rollers bearing upon eccentric hardened curves. The harder the strain the tighter the hold.

For Straight Shanks

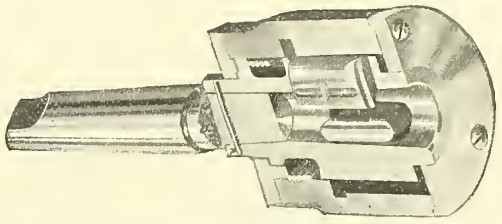
Number	Capacity Inch	Diameter Inches	Length Inches	Each
0	$\frac{1}{32}$ to $\frac{5}{64}$	$\frac{25}{32}$	$1\frac{1}{2}$	$6.00
1	$\frac{5}{64}$ to $\frac{11}{64}$	$1\frac{1}{4}$	2	7.50
2	$\frac{11}{64}$ to $\frac{5}{16}$	$1\frac{5}{8}$	$2\frac{1}{2}$	9.00
3	$\frac{5}{16}$ to $\frac{1}{2}$	$2\frac{1}{2}$	3	11.00
4	$\frac{1}{2}$ to $\frac{3}{4}$	$2\frac{3}{4}$	$3\frac{3}{4}$	13.00

Arbors with Morse Tapers Nos. 1, 2 and 3 fitted to any size chuck. Each $1.25.

GUARANTY

If the Drill does not run true in the "Grönkvist" it slips, and if it does, the guaranty of the maker entitles the user to a new chuck.

Wahlstrom



All tools changed without stopping the spindle. No interlocking jaws to chew up the drill shanks. Absolutely no slipping. Perfect centering assured by gripping surfaces. Jaws can be reversed.

For drilling, tapping, spotting, reaming, counterboring, etc., also on engine lathes for drilling, turning, burring, filing, etc.

Chucks for Taper Shank tools hold tools either with or without tangs, and no collets, sockets or wrenches are used.

For Straight Shank Tools

Size Inch	Capacity	Diameter Inches	Length Inches	Furnished With	Each
$\frac{1}{2}$	No. 53 to $\frac{1}{2}$ inch	$2\frac{1}{16}$	$2\frac{3}{8}$	* No. 1	$16.00
$\frac{1}{2}$	No. 53 to $\frac{1}{2}$ inch	$2\frac{1}{16}$	$2\frac{3}{8}$	No. 2	16.00
$\frac{3}{4}$	No. 33 to $\frac{3}{4}$ inch	$2\frac{11}{16}$	$3\frac{1}{16}$	No. 2	24.50
$\frac{3}{4}$	No. 33 to $\frac{3}{4}$ inch	$2\frac{11}{16}$	$3\frac{1}{16}$	No. 3	25.00
$\frac{3}{4}$	No. 33 to $\frac{3}{4}$ inch	$2\frac{11}{16}$	$3\frac{1}{16}$	No. 4	25.50
1	$\frac{3}{16}$ to 1 inch	$3\frac{1}{2}$	$3\frac{3}{4}$	No. 3	34.50
1	$\frac{3}{16}$ to 1 inch	$3\frac{1}{2}$	$3\frac{3}{4}$	No. 4	35.00

For Taper Shank Tools

	Diameter Inches	Length Inches	Furnished With	Each
1, 2 and 3 Morse Tapers	$2\frac{15}{16}$	$3\frac{1}{2}$	No. 3	$29.50
1, 2 and 3 Morse Tapers	$2\frac{15}{16}$	$3\frac{1}{2}$	No. 5	30.00

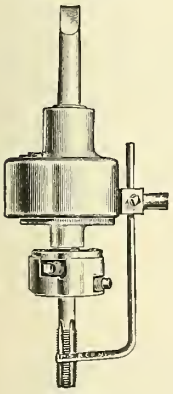
* Standard Morse Taper Arbors furnished

Auto-Reverse Tapping Chucks

Errington

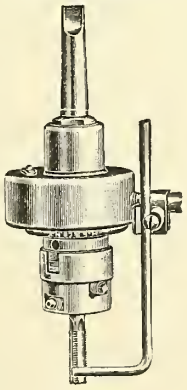
The Errington Auto-Reverse Tapping Chuck requires no reversing mechanism on the drill press, as it drives the tap in, stops automatically, and backs the tap out with quick return by simply raising (not stopping or reversing) the drill spindle. Fits socket of any drill press, and can be used for right and left threads

Adjustable Positive Stop



Style B

Adjustable Friction Stop



Style C

Style B should be used where the work is easily handled and centered, so that all the holes can be drilled, then the work rehandled and tapped. Only one hand required to operate.

Style C should be used for tapping in copper, bronze or steel, wherever there is danger of breaking taps. Can be changed to Positive Drive by inserting a key.

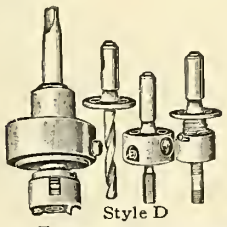
Style D drills, taps and sets studs in line, without stopping or reversing machine and without moving work. Stud Setter is not included in price.

Size Number	Taps Standard Inches	Taps Pipe Inches	Morse Taper Shank Number	Style B Positive Tap Holder and Stop Each	Style C Friction Tap Holder and Stop Each	Style D Friction Interchangeable Drill and Tap Holders Each	Stud Setter Fitted to Style D Each
00	$\frac{1}{16}$— $\frac{3}{8}$	...	1, 2, 3	$25.00	$30.00		
0	$\frac{1}{8}$— $\frac{5}{8}$	$\frac{1}{4}$	3, 2 (1*)	30.00	35.00		
1	$\frac{1}{4}$— $\frac{3}{4}$	$\frac{1}{2}$	3, 4	35.00	40.00	$55.00	$12.50
2	$\frac{5}{16}$—1	$\frac{1}{2}$	4, 5 (3*)	40.00	50.00	65.00	15.00
3	$\frac{3}{8}$—$1\frac{1}{4}$	1	4, 5 (3*)	50.00	60.00	75.00	17.50
4	$\frac{1}{2}$—$1\frac{1}{2}$	$1\frac{1}{4}$	5, 4	70.00	80.00	90.00	20.00
5	$\frac{1}{2}$—2	2	5 (4*)	80.00	90.00	100.00	22.50

The first size of Morse Taper Shank given above for each size is the one regularly furnished; the other sizes can be furnished, but the size marked (*) is too small to be used unless it is re-enforced by a set-screw.

Friction Interchangeable Drill and Tap Holder

Errington



Style D

Drill Press Turret with Interchangeable Drill, Tap and Stud Holders

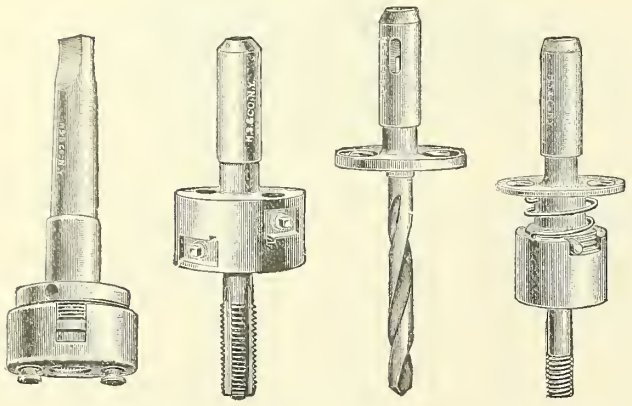
See next page for prices and sizes of Drill Holders—when desired for above Chucks specify Style " D" instead of Style " E"

Duplex Tools

Errington

For Use on Reversible Drill Presses

Interchangeable Drill and Tap Holder



Style E

Style E drills Taps and sets Studs without stopping the press or moving the work. The self-centering Tap Chuck is the only tap holder that will hold any make of taps. It is a Universal Chuck without a universal screw. Two universal dogs, placed one above the other, center the tool with the direct pressure of two set screws against wide V surfaces. This Chuck compels the operator to grip both the square and the round of the tap, making it impossible for the tap to turn in, or destroy the alignment of the Chuck. Price of this tool does not include Stud Setter.

Style F is the Tap Chuck described above with Morse Taper Shank, and Style G the same with friction stop.

Size Number	Taps Standard Inches	Taps Pipe Inches	Morse Taper Shank Number	Model E Interchangeable Drill and and Tap Holder	Stud-Setter fitted to Style E	Model F Positive Tap Holder	Model G Friction Tap Holder
00	1/16— 3/8	...	1, 2	.....	.....	$6.00	$10.00
0	1/8— 5/8	1/4	3, 2 (1*)	.....	.....	9.00	15.00
1	1/4— 3/4	1/2	3, 4	$40.00	$12.50	12.50	20.00
2	5/16—1	1/2	4, 3, 5	50.00	15.00	15.00	22.50
3	3/8—1 1/4	1	4, 5	60.00	17.50	17.50	25.00
4	1/2—1 1/2	1 1/4	5, 4	70.00	20.00	20.00	27.50
5	1/2—2	2	5	80.00	22.50	25.00	30.00

The first size of Morse Taper Shank given above for each size is the one regularly furnished, the other sizes can be furnished, but the size marked (*) is too small to be used unless it is reinforced by a set screw.

Extra Drill-Holder for No. 1	Style E has No. 1 Morse Taper Socket	$6.25
Extra Drill-Holder for No. 2	Style E has No. 2 Morse Taper Socket	8.00
Extra Drill-Holder for Nos. 3 and 4	Style E has No. 3 Morse Taper Socket	10.00
Extra Drill-Holder for No. 5	Style E has No. 4 Morse Taper Socket	18.00
Special Drill-Holder for No. 2	Style E has No. 3 Morse Taper Socket	12.00
Special Drill-Holder for Nos. 3 and 4,	Style E has No. 4 Morse Taper Socket	18.00

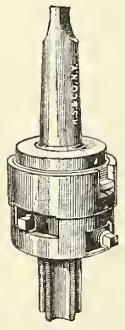
Extra tap holders for Styles D and E are listed the same as Style F duplex tap holders

Positive Tap Holder



Style F

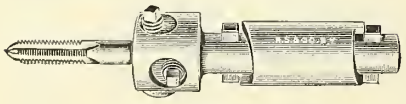
Friction Tap Holder



Style G

For Use on Turret Lathes

Positive Turret Tap Holder



Style F-H

Style F-H (Style F with Double-clutch Sleeve) taps the hole and pulls off at distance set by stop on machine, when the tap revolves freely with the work until the machine is reversed, whereupon the back-clutch engages and the tap backs out. The best style for brass and through holes.

Friction Self-centering Tap Holder



Style G-H

Style G-H has the additional advantage of an Adjustable Friction Clutch, to avoid breaking taps, and is especially valuable for tapping steel. It can be used with or without the Double-clutch Sleeve, according to the nature of the work.

Interchangeable Friction Turret Tap Holder



Style G-I

Style G-I (Style G with Splined Sleeve) is designed for using Roughing and Finishing taps in one hole in the Turret in tapping tool steel, etc. Spring in shank insures catching the same thread. Taps steel without breaking taps in bottom or through holes. Taps last longer and can be run faster than when positively driven.

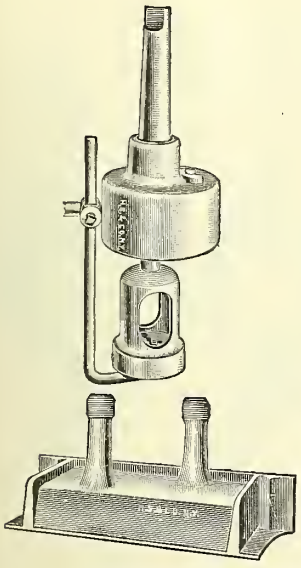
No special shanks; use any make of taps.

Number	00	0	1	2	3	4	5
Style F–H	$11.00	$14.00	$17.50	$20.00	$22.50	$25.00	$30.00
Style G–H	15.00	20.00	25.00	27.50	30.00	32.50	35.00
Style G–I	15.00	20.00	25.00	27.50	30.00	32.50	35.00

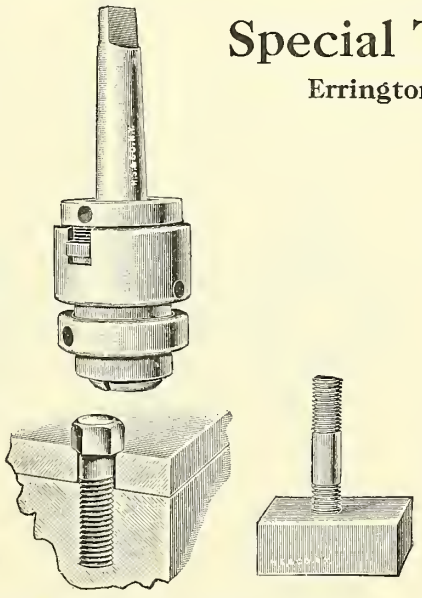
For capacity of each size see table for Styles E, F and G

Special Tools

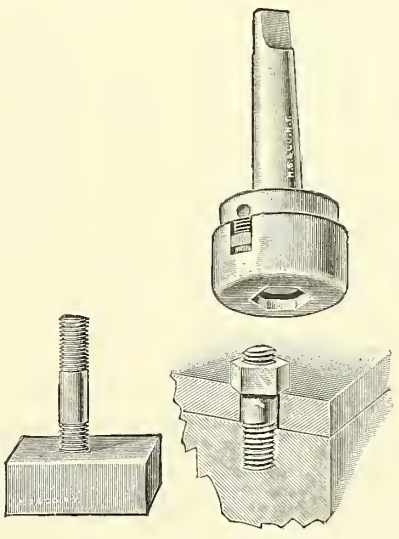
Errington



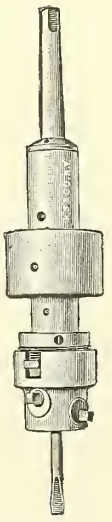
Auto-Reverse Die



Auto-Opening Stud or Nut Setter



Friction Stud or Nut Setter



Friction Screw Driver

The Auto-Reverse Die will thread work on a Drill Press at a saving of 80 per cent over chucking the work in a lathe.

The Auto-opening Stud or Nut Setter (Positive or Friction) can be used on any Drill Press, Portable, Electric or Pneumatic Drill, Flexible Shaft, etc., making it possible, without stopping or reversing machine, to set studs, cap screws, nuts, etc., after the work has been erected. The jaws open automatically by the slipping of the friction.

The Friction Stud or Nut Setter accomplishes the same work as the Auto-Opening Setter, but machine must be stopped each time to disengage the holder from the nut, or reversed off stud.

The Friction Screw Driver for Drill Press, Speed Lathes, Flexible Shaft, etc., sets machine or wood screws at a uniform tension.

Prices on Automatic Stud Setter will be furnished on application. State definitely the work that is to be done and the method of drive to be employed.

Prices on Auto-Reverse Die and Friction Screw Driver

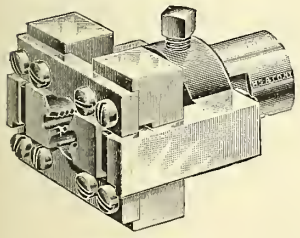
Size	Morse Taper Shank Number	Holds Dies or Drives Screws Inches	Auto-Reverse Die Each	Friction Screw Driver Each
00	1, 2, 3	1/16— 3/8	$25.00	$20.00
0	3, 2 (1*)	1/8— 5/8	30.00	25.00
1	3, 4	1/4— 3/4	35.00	30.00
2	4, 5 (3*)	5/16—1	40.00	32.50
3	4, 5 (3*)	3/8—1 1/4	50.00	35.00
4	5, 4	1/2—1 1/2	70.00	37.50
5	5 (4*)	1/2—2	80.00	40.00

Prices do not include dies or bits.
*These sizes of shanks not recommended unless reinforced by set screw.

Automatic Die-Heads

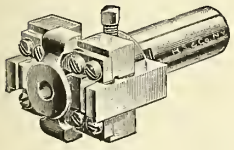
Errington

For Turret



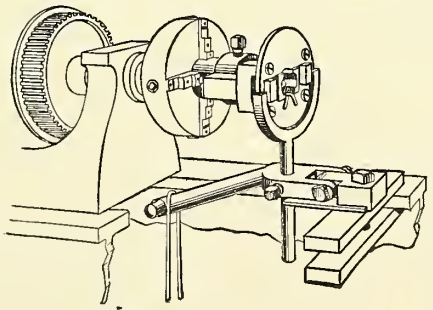
Styles A and E

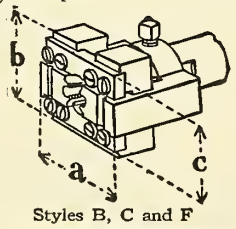
With Guide



Style C

For Live Spindle of Lathe





Styles B, C and F

The Skeleton Frame and the simple, direct-acting principle of opening and closing the Dies axially (all other heads make a quarter turn to open or close the dies) permit a universal adaptability of the Errington Die to every requirement of screw cutting, either as a rotary or stationary device. Style A for Turret, except where close to shoulder work demands the Style E attachment. Style B, C, D, for Live Spindle of Speed-Lathe, Engine-Lathe, Drill Press, etc., except where close shoulder work demands Style F. Styles C and D have self-centering guides that avoid chucking the work.

In ordering Die Chucks give diameter of hole in your turret (to fit shank to), and name length of thread on largest diameter of work (to bore shank out for).

In ordering Dies, state diameter, pitch, right or left, and style of thread (V., U. S. S., or W. Pipe Taper, or Pipe straight) desired. Send a sample wherever possible, and state whether for rod or shoulder work, and the metal to be cut.

Opens automatically. Closes by foot while rotating.

Number	Size of Dies Inches Standard	Pipe	Size Shank Inches Stock Diameter	Stock Bore	Dimensions for Turret Inches A	B	C	Turret, Each Style A	Style E	Rotary for Lathe or Drill, Each Style B	Yoke foot closer	Style C	Style D	Style F	Extra Dies per Pair Net
1	1/8 to 5/8	1/8 to 3/8	1 1/4	3/8	3 1/8	2 1/4	1 15/16	$30.00	$35.00	$35.00	$2.50	$35.00	$40.00	$40.00	$1.50
2	5/16 to 1	1/8 to 3/4	1 3/4	1/2	4 1/8	2 3/4	2 3/8	40.00	45.00	45.00	3.00	45.00	50.00	50.00	2.00
3	1/2 to 1 1/2	1/8 to 1	2	5/8	5	3 1/4	2 7/8	50.00	55.00	55.00	3.50	55.00	60.00	60.00	2.50
4	3/4 to 2	1/2 to 1 1/2	2	5/8	5 5/8	3 1/2	3 1/2	60.00	65.00	60.00	4.00	65.00	70.00	70.00	4.00
5	1 to 2 1/2	3/4 to 2	2 1/2	1 1/4	7	4 1/4	4 1/4	80.00	85.00	85.00	4.00	85.00	90.00	90.00	5.00

From center of turret hole to top of turret slide is one-half of "a" when held edgeways. From center of turret hole to top of turret slide is one-half of "b" when held flat. To pass between parting and forming tools is "c"

Lathe Dogs

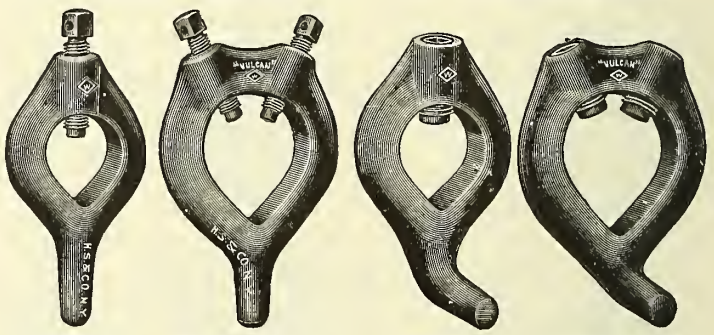
Vulcan Drop-Forged

Either Square Head or Safety type screws will be supplied, but we recommend, and will ship, the Safety unless otherwise specified, as they reduce the risk to the operator and provide a better balance on the lathe

Number Straight	Number Bent	Capacity Inches	Each	Screws Extra Square Head Each	Screws Extra Safety Each	Safety Wrenches Extra
21	1	3/8	$ .40	$ .08	$ .10	$ .06
22	2	1/2	.50	.10	.14	.07
23	3	3/4	.60	.12	.18	.08
24	4	1	.70	.15	.22	.09
25	5	1 1/4	.85	.16	.26	.10
26	6	1 1/2	1.00	.18	.32	.11
27	7	1 3/4	1.20	.20	.40	.13
28	8	2	1.40	.23	.50	.15
29	9	2 1/2	1.70	.24	.60	.18
30	10	3	2.10	.27	.70	.22
31	11	3 1/2	2.60	.32	.80	.27
32	12	4	3.30	.35	.90	.33
33	13	5	6.00	.50	1.00	.40
32A	12A	4	5.00	.35	.90	.33
33A	13A	5	9.00	.50	1.00	.40
34A	14A	6	14.00	.50	1.15	.48

Price of Dogs with Safety Screws does not include wrench

With Square Head Screws — With Safety Screws



Straight Tail Nos. 21 to 33 — Heavy Straight Tail Nos. 32 A to 34 A — Bent Tail Nos. 1 to 13 — Heavy Bent Tail Nos. 12 A to 14 A

All above Dogs furnished with either type screw



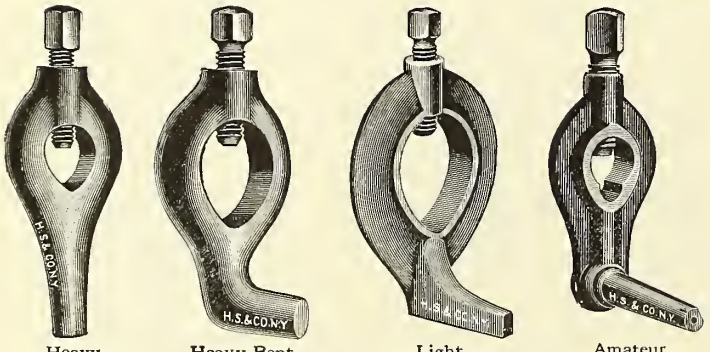
Safety Screw Wrench



Safety Screw

Le Count, Cast Steel

Single Screw



Heavy Straight Tail — Heavy Bent Tail — Light Bent Tail — Amateur Bent Tail

Heavy Straight Tail

Number	Size Inches	Each	Number	Size Inches	Each
1	3/4	$ .60	11	2 1/2	$1.45
2	7/8	.70	12	3	1.60
3	1	.70	13	3 1/2	1.80
4	1 1/8	.80	14	4	2.10
5	1 1/4	.80	15	4 1/2	2.75
6	1 3/8	.95	16	5	3.25
7	1 1/2	.95	17	5 1/2	4.00
8	1 3/4	1.10	18	6	5.00
9	2	1.20	19	7	6.00
10	2 1/4	1.35	20	8	7.00

Heavy Bent Tail

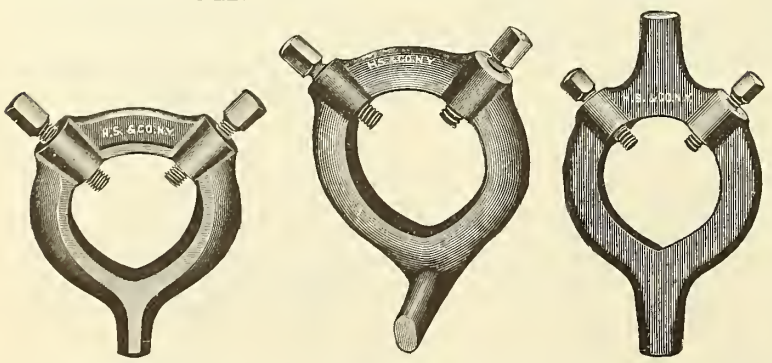
Number	Size Inches	Each	Number	Size Inches	Each
1	3/8	$ .40	13	2 1/4	$1.35
2	1/2	.50	14	2 1/2	1.45
4	3/4	.60	15	3	1.60
6	1	.70	16	3 1/2	1.80
8	1 1/4	.80	17	4	2.10
10	1 1/2	.95	18	4 1/2	2.75
11	1 3/4	1.10	19	5	3.25
12	2	1.20			

Light Bent Tail

Number	Size Inches	Each	Number	Size Inches	Each
1	3/8	$ .35	7	1 3/4	$1.00
2	1/2	.35	8	2	1.10
3	3/4	.50	9	2 1/2	1.40
4	1	.60	10	3	1.50
5	1 1/4	.75	11	3 1/2	1.70
6	1 1/2	.85	12	4	1.90

Amateur Bent Tail

Number	Size Inch	Each	Number	Size Inch	Each
1	3/8	$ .30	3	3/4	$ .45
2	1/2	.35	4	1	.50



Straight Tail — Bent Tail — Double Tail

Two-Screw

Extra Heavy. Straight, Bent or Double Tail

Size Inches	Each	Size Inches	Each
2	$5.75	5	$10.50
2 1/2	7.50	5 1/2	11.25
3	8.00	6	12.00
3 1/2	8.50	6 1/2	12.75
4	9.00	7	13.50
4 1/2	9.75	8	14.50

Double Tail also furnished in 9-inch, $17.00; 10-inch, $19.50; 11-inch $26.00; and 12-inch $28.00.

Lathe and Clamp Dogs, Etc.

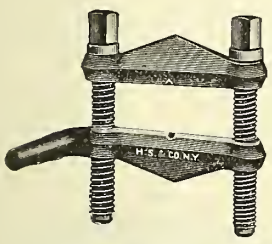
Armstrong U-Clamp Lathe Dog



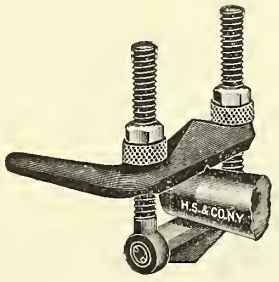
Safe and well balanced. Will accommodate itself readily to work of any shape and will hold it securely and squarely, being especially adapted for use on finished work which would be liable to be damaged by the set screw of a common lathe dog. One advantage is that it can be adjusted without removing work from center. It possesses a wide range of adjustment.

Number	Capacity Inches	Each
1	⅛ to ⅝	$ .65
2	¼ to 1	.90
3	⅜ to 1½	1.40
4	½ to 2	2.00
5	¾ to 3	2.00
6	1 to 4	4.00
7	1½ to 5	5.00

Billings and Spencer Clamp Lathe Dogs



Model A U—Regular



Model A V—Swivel Jaw

Model A U—Drop-forged from Best Bar Steel

	Each
No. 1—1¾ inches between screws	$1.50
No. 2—2¼ inches between screws	2.00
No. 3—2¾ inches between screws	2.50
Per set of three, $5.50	Each
No. 1—Screw	.10
No. 2—Screw	.15
No. 3—Screw	.20

Model A V—With Swivel Jaw

For holding taper pieces. The top jaw rolls in the eye of the screw, conforming to the taper of the piece, holding it securely. It can also be used on straight pieces.

	Each
No. 00—Amateur, ¾ inch between screws	$ .75
No. 0—Amateur, 1¼ inches between screws	1.25
No. 1—1¾ inches between screws	1.75
No. 2—2¼ inches between screws	2.25
No. 3—2¾ inches between screws	2.75
Per set of five, $8.00	Each
No. 00—Screw	.10
No. 0—Screw	.12
No. 1—Screw	.12
No. 2—Screw	.18
No. 3—Screw	.25

Steel Dog Wrenches



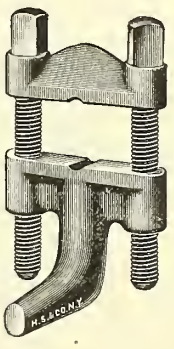
Fitting screw heads from ⅜ to ¾ inch square, will answer for both dogs and tool post.....Each $ .75

Vulcan Drop-forged Milling Machine Dogs



These are designed for taper work carried between centers on milling machines; the flat tail works in the head-slot without the back-lash unavoidable in dogs with taper tail. They serve also as a heavy pattern lathe dog.

Number	Capacity Inches	Each
42	½	$ .50
43	¾	.60
44	1	.70
45	1¼	.85
46	1½	1.00
47	1¾	1.20
48	2	1.40

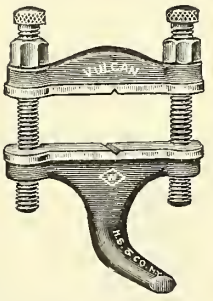


Lecount Clamp Lathe Dog

Malleable Iron

		Each
No. 1	Opens 1 inch	$1.00
No. 2	Opens 1½ inches	1.10
No. 3	Opens 2 inches	1.30
No. 4	Opens 3 inches	1.60
No. 5	Opens 4 inches	2.75
No. 6	Opens 5 inches	3.25
No. 7	Opens 6 inches	4.00

Vulcan Drop-forged Clamp Dog



These are drop-forged from a strong, grade of carefully selected steel and are submitted to a special process after forging which increases their stiffness and strength and reduces the liability of springing.

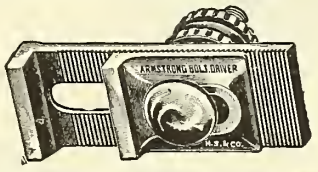
The screws, threaded U. S. Standard, are made of a special grade of steel, well adapted to the purpose and are hardened and tempered. The nuts are case hardened. Extra screws and nuts carried in stock.

The nuts furnish ready means of arrangement for the minimum projection of screws beyond the body of dog and thus lessen the danger to the operator when tool is in use.

Number	Distance between Screws Inches	Maximum Opening Inches	Each
61	1¾	1⅝	$1.50
62	2¼	1⅞	2.00
63	2¾	2½	2.50
64	3½	3¼	3.50

Armstrong Bolt Driver

An extremely handy lathe attachment for turning square, flat or hexagon stock, especially when a number of pieces of same size are to be turned, as no adjustment, tightening or loosening is necessary, when changing pieces.



Number	Capacity, Inches	Each
2-D	2	$2.75
3-D	3	4.00
4-D	4	6.00

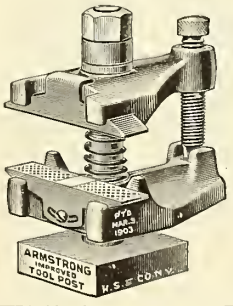
Armstrong Improved Lathe Tool Post

It has a great range of adjustment without loss of holding power as the rocker jaws adjust themselves on parallel lines.

The open side design permits rapid and convenient change and adjustment of tools.

It will not cut or tear the tool shank, and is therefore peculiarly adapted to use in connection with tool holders.

Fitting: An extra charge of 50 cents net will be made for fitting bolt head to dimensions.

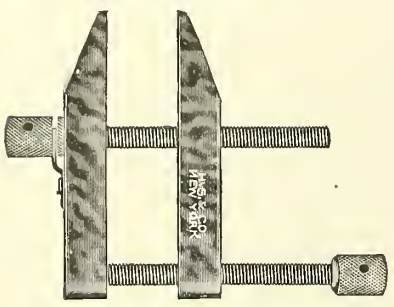


No.	For Tools	For Lathes	Each
1-T	½x1 inch and less	12 to 14 inch swing	$5.50
2-T	⅝x1¼ and ¾x1½ inches	16 to 18 inch swing	7.00
3-T	¾x1½ and ⅞x1⅝ inches	20 to 22 inch swing	9.00
4-T	⅞x1⅝ and 1x1¾ inches	24 to 32 inch swing	12.00

Clamps

Toolmakers Parallel

Brown & Sharpe

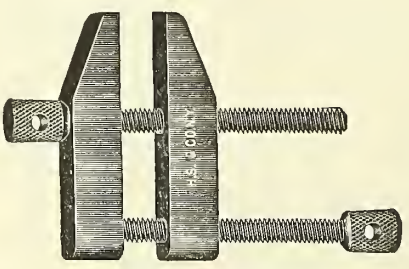


No 754—Steel, Hardened

The spring attachment holds the "loose" jaw tightly and prevents its dropping or sliding while opening or closing the Clamp.

Opening of Jaws Inches	Length of Jaws Inches	Each
5/8	1 1/2	$ .45
1	2 1/8	.50
1 1/2	2 3/4	.65
2	3 3/8	.75
2 1/2	4	1.00
3 1/2	5	1.65

Starrett

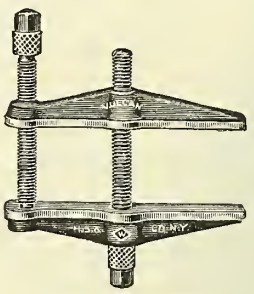


Steel, Hardened

Number	Opening of Jaws Inches	Length of Jaws Inches	Each
161AA	3/4	1 5/8	$1.00
161A	1 1/4	2	1.25
161B	1 3/4	2 1/2	1.50
161C	2 1/4	3	1.75
161D	2 3/4	4	2.00

Machinists Parallel

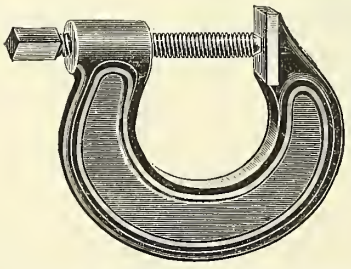
Vulcan



Steel, Drop-forged

Number	Capacity Maximum Opening Inches	Capacity Length Jaw from Screw Inches	Each
301	1 1/4	1 3/4	$1.50
302	2 1/4	2 1/4	2.00
303	3 1/4	2 3/4	2.50
304	4 1/4	3 1/4	3.00

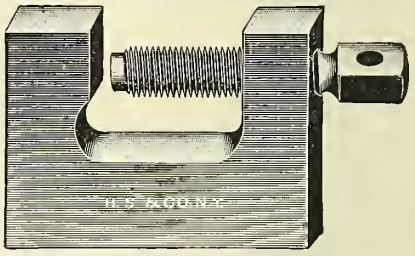
Steel Fitters



These Clamps have square thread steel screws with hardened points running down to the foot. The foot is planed square by the screw.

Number	Opens Inches	Depth Inches	Weight Pounds	Each
1	1 1/8	1 1/8	1 1/2	$1.25
2	1 3/4	1 3/4	2 1/2	1.50
3	2 1/2	2 1/2	3 1/2	1.75

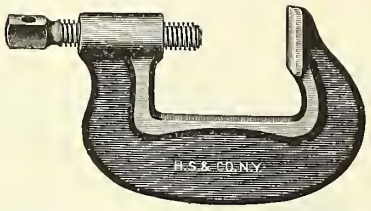
Parallel



All steel, case-hardened. All surfaces are either parallel or at right angles to each other. Articles held in these Clamps may have holes drilled parallel or at right angles to each other without being removed from the Clamps.

Size Open Inches	Weight	Each
1	4 1/2 ounces	$ .75
1 1/4	8 ounces	1.00
1 5/8	9 ounces	1.25
2	1 7/8 pounds	1.75
3	2 pounds	2.00
4	5 pounds	3.00
5	11 1/2 pounds	5.00
6	12 3/4 pounds	6.00

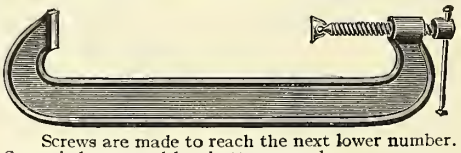
Mechanics



The back is 1 1/2 inches from center of screw

Number	Opens Inches	Weight Pounds	Each
1	2	3 1/4	$1.25
2	3	3 1/2	1.50
3	4	3 3/4	1.75
4	5	4	2.00
5	6	4 1/4	2.25
6	7	4 1/2	2.50
7	8	4 3/4	2.75
8	9	5	3.00

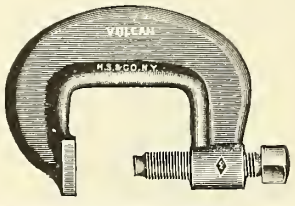
Extra Heavy Steel Bridge



Screws are made to reach the next lower number. Screw is heavy and has button on end.

No. 12. Opens 24 inches, each $12.00
No. 13. Opens 30 inches, each 16.00
No. 14. Opens 42 inches, each 20.00

Vulcan



For Severe Service
Depth of throat is measured from center of screw.

Drop-Forged Steel "C"

Number	Old Number	Capacity	Depth of Throat Inches	Approx. Weight Pounds	Extra Screws Each	Clamps Complete Each
0	9	3/4	3/4	1/4	$ .08	$ .50
1	10	1 1/4	1 1/8	5/8	.11	.75
1 1/2	11	1 3/4	1 1/2	1 7/8	.14	1.25
2	12	2 1/4	1 3/4	3 3/4	.20	1.75
3	13	3 1/4	2 3/8	6	.28	2.50
4	14	4 1/2	2 3/4	10 1/4	.38	3.25
5	15	5 1/2	3 1/8	12 1/4	.50	4.00
6	16	6 1/2	3 3/8	17	.65	5.00
8	18	8 1/2	3 3/4	23 1/4	.85	7.00
10 1/2	..	10 1/2	4 1/8	28	.85	9.50
12 1/2	..	12 1/2	4 1/2	40	1.20	12.50

Agrippa



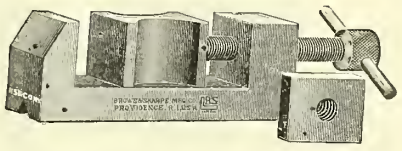
For Less Severe Service

Number	Capacity	Depth of Throat from center of Screw Inches	Extreme Dimensions of Body Length Inches	Extreme Dimensions of Body Width Inches	Approximate Weight Each Pounds	Extra Screws Each	Clamps Complete Each
104	4	2 3/8	8 3/16	5 1/8	5 1/4	$ .70	$2.25
106	6	2 1/2	10 5/16	5 3/8	6 1/4	.70	2.75
108	8	2 5/8	12 7/16	5 9/16	7 1/2	.70	3.25
110	10	2 3/4	14 5/8	5 13/16	9	.70	3.75
112	12	2 7/8	16 13/16	6 1/16	10 1/2	.70	4.25
115	15	3 1/16	20 1/4	6 9/16	15	.90	5.50
118	18	3 1/4	23 1/2	7	20	.90	7.00

Clamps

Toolmakers Vise

Brown & Sharpe



This is a reliable and handy tool for use in drilling, fitting, and laying out work on surface plates. The screw will hold the jaws rigidly in place.

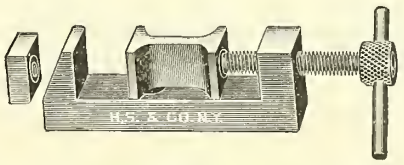
It is drop-forged and case-hardened, thus adapting it for hard usage without danger of damaging it. It is also light and convenient to handle, being frequently held in the hand during operations.

The distinctive feature in this tool is the V-groove in the under side of the base. This adds to the handiness of the clamp as it can be used as a V-block.

The greatest capacity of the clamp is 2 inches. Each clamp is furnished with two steel jaws, as shown in the cut, that slip on and off the end of the screw.

No. 752, each $1.00

Starrett



These Clamps are made from drop forgings, nicely finished, case-hardened, and have take-up blocks to slip on and off end of screw, and are held to same in a novel manner. They will hold work square and parallel for laying out on surface plates, fitting or drilling. A round piece may be rigidly held in two of the clamps and drilled on an upright, central and parallel. Put up and sold in pairs. With the small block in use, the capacity of the smaller clamp is a little over 1 inch, and that of the larger clamp 2 inches.

No. 160

1 inch (per pair) $1.35
2 inches (per pair) 1.75

Drop-Forged Strap

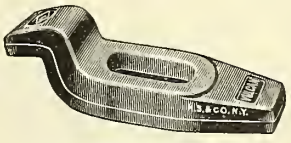
Vulcan

These forgings are made from a strong, tough grade of carefully selected steel and are submitted to a special process after forging, which increases their strength and stiffness. On Planer, Lathe, Drill Press, Milling and Boring Machine work they are time-saving and effective.



Pattern

Number	Old Number	Length Inches	Maximum Width Inches	Thickness Inches	Slot Dimensions Minimum Width Inch	Slot Dimensions Maximum Length Inches	Finger Dimensions Inch	Each
64	104	4½	1¾	¾	11/16	3½	½x½	$ .30
66	106	6⅝	1 15/16	⅞	11/16	5½	⅝x⅝	.50
68	...	8¾	2 13/32	1⅛	13/16	7⅜	¾x¾	.85



Goose Neck Pattern

Number	Old Number	Length Inches	Width, Inches Ends	Width, Inches Center	Thickness, Inches Ends	Thickness, Inches Center	Slot Minimum Dimensions Inches Length	Slot Minimum Dimensions Inches Width	Neck Offset Inches	Each
74	204	4	1 3/16	1⅜	½&⅜	¾	15/16	11/16	13/16	$ .30
76	206	6	1¼	1¾	7/16&9/16	⅞	1 11/16	11/16	15/16	.50
78	208	8	1½	2⅛	9/16&¾	1⅛	2 7/16	13/16	1⅛	.85



Adjustable Step Pattern

Number	Old Number	Length Inches	Width, In. Ends	Width, In. Center	Thickness In. Ends	Thickness In. Center	Slot Minimum Dimensions Inches	Screws Diameter Inch	Screws Length Inch	Extra Screws Each	Clamp Each
54A	4A	4	1 3/16	1⅝	½	¾	11/16x1⅜	½	1¾	$ .14	$ .45
56A	6A	6	1¼	1¾	9/16	⅞	11/16x2 1/16	⅝	2⅛	.18	.72
58A	8A	8	1½	2⅛	¾	1⅛	13/16x2 13/16	¾	2½	.25	1.20



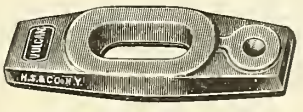
Finger Pattern, Double End

Number	Old Number	Length Inches	Width Center Inches	Thickness Center Inch	Diameter Hole Inch	Finger Dimensions Inch	Each
30	330	3	1½	⅝	11/16	½ & ½	$ .20
35	335	3½	1⅝	¾	11/16	⅝ & ⅝	.25
40	340	4	1 13/16	⅞	13/16	¾ & ¾	.35



Finger Pattern, Single End

Number	Old Number	Length Inches	Width Inches Flat End	Width Inches Center	Thickness Inches Flat End	Thickness Inches Center	Slot Minimum Dimensions Inches Length	Slot Minimum Dimensions Inches Width	Finger Dimensions Inch	Each
44	...	4	1 3/16	1⅜	7/16	¾	1⅜	11/16	½ & ½	$ .30
46	306	6	1¼	1¾	½	⅞	1 15/16	11/16	⅝ & ⅝	.50
48	308	8	1½	2⅛	⅝	1⅛	2 9/16	13/16	¾ & ¾	.85



Plain Slot Pattern

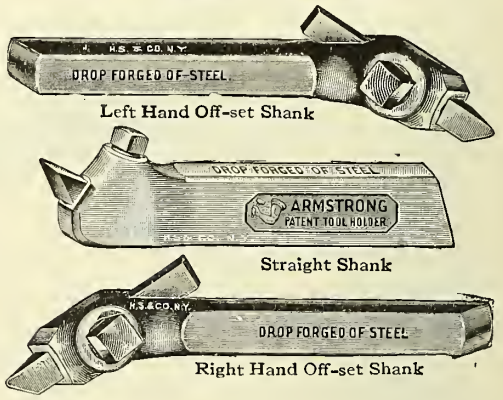
Number	Old Number	Length Inches	Width Inches Ends	Width Inches Center	Thickness Inches Ends	Thickness Inches Center	Slot Minimum Dimensions Inches Length	Slot Minimum Dimensions Inches Width	Each
54	4	4	1 3/16	1⅝	½	¾	1⅜	11/16	$ .30
56	6	6	1¼	1¾	9/16	⅞	2 1/16	11/16	.50
58	8	8	1½	2⅛	¾	1⅛	2 13/16	13/16	.85

Lathe Tools

Armstrong Holders and Cutters

Regular

With Straight and Off-set Shanks



Left Hand Off-set Shank

Straight Shank

Right Hand Off-set Shank

Complete with Two Cutters and Wrench

Left Hand Number	Straight Shank Number	Right Hand Number	Size of Holder Inches	Size of Cutters Inches Square	Each Complete With Self-Hardening Cutters	Each Complete With High Speed Cutters	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
00-L	00-S	00-R	5/16 x 3/4 x 4 1/2	3/16	$1.60	$1.80	$ .10	$ .20
0-L	0-S	0-R	3/8 x 7/8 x 5	1/4	1.65	1.90	.12	.24
1-L	1-S	1-R	1/2 x 1 1/8 x 6	5/16	1.80	2.15	.18	.35
2-L	2-S	2-R	5/8 x 1 3/8 x 7	3/8	2.30	2.70	.25	.45
3-L	3-S	3-R	3/4 x 1 5/8 x 8	7/16	3.00	3.60	.35	.65
4-L	4-S	4-R	7/8 x 1 3/4 x 9	1/2	3.80	4.60	.45	.85
5-L	5-S	5-R	1 x2 x11	5/8	4.75	5.85	.65	1.20
6-L	6-S	6-R	1 1/4 x 2 1/4 x 13	3/4	7.00	8.75	1.00	1.90
7-L	7-S	7-R	1 1/2 x 2 1/2 x 16	7/8	12.00	15.00	1.75	3.25
750-L	750-S	750-R	1 5/8 x 2 3/4 x 18	1	17.50	22.00	2.50	4.75
800-L	800-S	800-R	1 3/4 x 3 x20	1 1/8	23.00	28.50	3.25	6.00

Complete with Two Cutters and Wrench

Left Hand Off-set Number	Straight Shank Number	Right Hand Off-set Number	Size of Holder Inches	Size Cutter Inch Square	Size Cutter Height Point	Each Complete With Self-Hardening Cutters	Each Complete With High Speed Cutters	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
100-L	100-S	100-R	1/2 x 5/8 x 6	3/16	9/16	$1.75	$1.90	$ .10	$ .20
101-L	101-S	101-R	5/8 x 3/4 x 7 1/2	1/4	11/16	2.00	2.25	.12	.24
201-L	201-S	201-R	3/4 x 7/8 x 8 1/2	5/16	13/16	2.50	2.85	.18	.35
102-L	102-S	102-R	7/8 x1 x 9 1/2	3/8	15/16	3.25	3.65	.25	.45
301-L	301-S	301-R	1 x1 1/8 x10 1/2	7/16	1 1/16	4.00	4.60	.35	.65
103-L	103-S	103-R	1 1/8 x1 1/4 x11 1/2	1/2	1 3/16	5.00	5.80	.45	.85
104-L	104-S	104-R	1 3/8 x1 1/2 x13 1/2	5/8	1 5/16	7.50	8.60	.65	1.20
105-L	105-S	105-R	1 5/8 x1 3/4 x15 1/2	3/4	1 1/2	12.00	13.80	1.00	1.90
106-L	106-S	106-R	1 7/8 x2 x17 1/2	7/8	1 3/4	17.50	20.50	1.75	3.25
107-L	107-S	107-R	2 1/8 x2 1/4 x19 1/2	1	2	23.00	27.50	2.50	4.75

Drop Head

With Straight and Off-set Shanks



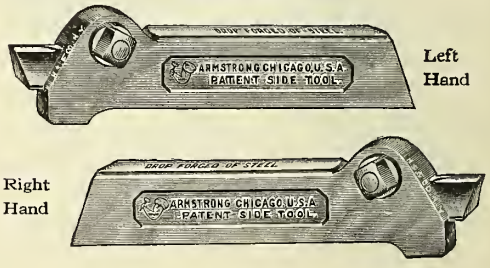
Straight Shank

Complete with One Cutter and Wrench

Left Hand Number	Right Hand Number	Size of Holder Inches	Each Complete With Self-Hardening Cutter	Each Complete With High Speed Cutter	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
79-L	79-R	5/16 x 3/4 x 4 1/2	$2.00	$2.40	$ .40	$ .80
80-L	80-R	3/8 x 7/8 x 5	2.20	2.65	.45	.90
81-L	81-R	1/2 x1 1/8 x 6	2.40	3.00	55	1.10
82-L	82-R	5/8 x1 3/8 x 7	3.00	3.75	.75	1.50
83-L	83-R	3/4 x1 5/8 x 8	3.90	5.00	1.15	2.30
84-L	84-R	1 x1 3/4 x 9	4.90	6.25	1.35	2.70
85-L	85-R	1 1/8 x2 x11	6.50	8.25	1.85	3.70
86-L	86-R	1 1/4 x2 1/4 x13	8.50	11.00	2.50	5.00
87-L	87-R	1 1/2 x2 3/8 x15	12.00	15.75	3.75	7.50

Side

With Straight Shanks



Left Hand

Right Hand

Complete with One Cutter and Wrench

Left Hand Off-set Number	Straight Shank Number	Right Hand Off-set Number	Size of Holder Inches	Size of Blade Inches	Each Complete With Self-Hardening Blade	Each Complete With High Speed Blade	Extra Blades, Each Self-Hardening	Extra Blades, Each High Speed
29-L	19	29-R	5/16 x 3/4	5/64 x 1/2	$1.65	$1.90	$ .25	$ .50
30-L	20	30-R	3/8 x 7/8	3/32 x 5/8	1.65	1.90	.25	.50
31-L	21	31-R	1/2 x1 1/8	1/8 x 3/4	1.80	2.15	.35	.70
32-L	22	32-R	5/8 x1 3/8	1/8 x 7/8	2.30	2.75	.45	.90
33-L	23	33-R	3/4 x1 5/8	3/16 x1	3.00	3.60	.60	1.20
34-L	24	34-R	7/8 x1 3/4	3/16 x1 1/8	3.80	4.50	.75	1.50
35-L	25	35-R	1 x2	1/4 x1 1/4	4.75	5.75	.95	1.90
36-L	26	36-R	1 1/4 x2 1/4	1/4 x1 3/8	6.50	7.75	1.25	2.50

Cutting-off

With Straight and Off-set Shanks



Straight Shank

Round Cutter

With Straight Shanks

The convenience and economy of this tool will recommend it wherever a single tool is required to do a wide variety of lathe and shaper work.

The Cutter is round and rake and clearance can be altered instantly by rotating the Cutter in the socket. The Cutter is held solidly by a tapered tool steel key.

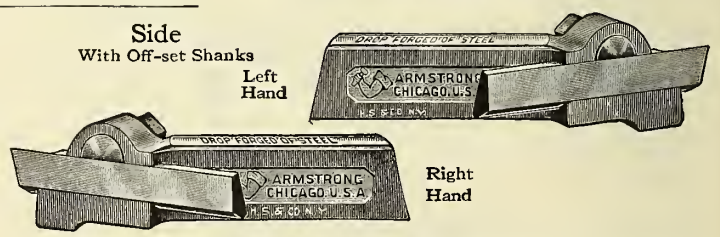


Complete with One Cutter

Number	Size of Holder Inches	Size of Cutter Round Inch	Each Complete With Self-Hardening Cutter	Each Complete With High Speed Cutter	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
120	3/8 x 3/4 x 5	1/4	$1.45	$1.55	$ .12	$ .24
121	1/2 x1 x 6	5/16	1.55	1.70	.18	.35
122	5/8 x1 1/4 x 7	3/8	1.90	2.10	.25	.45
123	3/4 x1 1/2 x 8	7/16	2.50	2.80	.35	.65
124	7/8 x1 5/8 x 9	1/2	3.25	3.65	.45	.85
125	1 x1 3/4 x11	5/8	4.00	4.55	.60	1.15

Side

With Off-set Shanks



Left Hand

Right Hand

Complete with One Cutter and Wrench

Left Hand Number	Right Hand Number	Size of Shank Inches	Each Complete With Self-Hardening Cutter	Each Complete With High Speed Cutter	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
69-L	69-R	5/16 x 3/4	$2.00	$2.40	$ .40	$ .80
70-L	70-R	3/8 x 7/8	2.20	2.65	.45	.90
71-L	71-R	1/2 x1 1/8	2.40	3.00	.55	1.10
72-L	72-R	5/8 x1 3/8	3.00	3.75	.75	1.50
73-L	73-R	3/4 x1 5/8	3.90	5.00	1.15	2.30
74-L	74-R	7/8 x1 3/4	4.90	6.25	1.35	2.70
75-L	75-R	1 x2	6.50	8.25	1.85	3.70
76-L	76-R	1 1/4 x2 1/4	8.50	11.00	2.50	5.00

Lathe Tools

Armstrong Holders and Cutters

Threading



Each tool is equipped with one single point cutter, V, U. S. or Whitworth Standard, and a drop-forged wrench.

Number	Size of Holder Inches	Each Complete With Carbon Steel Cutter	Each Complete With High Speed Cutter
00T	5/16 x 3/4 x 5	$2.25	$2.75
50	3/8 x 7/8 x 5	2.25	2.75
51	1/2 x 1 1/8 x 6	2.75	3.35
52	5/8 x 1 3/8 x 7	3.50	4.25
53	3/4 x 1 5/8 x 8	4.50	5.50
54	7/8 x 1 3/4 x 9	5.50	6.50
55	1 x 2 x 10	7.00	8.25

Note—In ordering tools equipped with U. S. or Whitworth cutters be careful to specify pitch or number of threads per inch wanted. Tools equipped with single point Sharp V cutter will always be shipped unless otherwise ordered.

Tools with Carbon Steel Cutters will be sent if High Speed is not specified.

Cutters

For Tool Number		00T and 50		51	
Shape of Thread	Made from	Single Point	Chaser	Single Point	Chaser
Sharp V	Carbon Steel	$ .45	$ .90	$ .55	$1.05
	High Speed	.90	1.80	1.10	2.10
United States Standard	Carbon Steel	.50	.90	.60	1.05
	High Speed	1.00	1.80	1.20	2.10
Whitworth	Carbon Steel	.75	1.25	.90	1.40
	High Speed	1.50	2.50	1.80	2.80

For Tool Number		52		53 and 54		55
Shape of Thread	Made from	Single Point	Chaser	Single Point	Chaser	Single Point Only
Sharp V	Carbon Steel	$ .70	$1.20	$ .90	$1.30	$1.25
	High Speed	1.40	2.40	1.80	2.60	2.50
United States Standard	Carbon Steel	.75	1.20	.95	1.30	1.35
	High Speed	1.50	2.40	1.90	2.60	2.70
Whitworth	Carbon Steel	1.15	1.65	1.40	1.80	1.95
	High Speed	2.30	3.30	2.80	3.50	3.90

Note—When ordering cutters or chasers (except single point V cutters) it is necessary to specify exact pitch or number of threads per inch.

When High Speed is not specified in order, Carbon Steel Cutters will be shipped

Holders for Grinding Cutters



Save Tool Holders from being ground away and ruined by holding cutters in them while being ground or sharpened.

Every shop should have a set of these holders on the tool grinder.

Number	Holds Cutters	Each
1-G	3/16 inch and 1/4 inch	$ .30
2-G	5/16 inch and 3/8 inch	.35
3-G	7/16 inch and 1/2 inch	.45
4-G	5/8 inch and 3/4 inch	.60
5-G	7/8 inch and 1 inch and 1 1/8 inches	.85

Planer



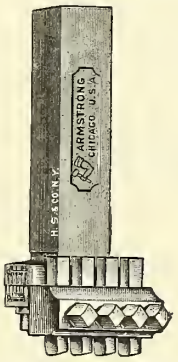
Works at any angle, right or left hand. Equals a complete set of Forged Planer Tools

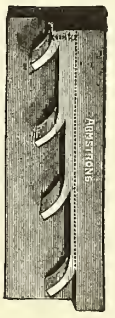
Complete with Wrench and two Cutters

Number	Size of Holder Inches	Size of Cutter Inches	Each Complete With Self-Hardening Cutters	Each Complete With High Speed Cutters	Extra Cutters Each Self-Hardening	Extra Cutters Each High Speed
40	1/2 x 1 x 7	1/4 x 3/8	$2.75	$3.10	$ .20	$ .37
401	5/8 x 1 1/4 x 8 1/2	5/16 x 7/16	3.50	4.00	.30	.55
41	3/4 x 1 1/2 x 10	3/8 x 1/2	4.50	5.25	.40	.75
42	1 1/8 x 1 3/4 x 13	1/2 x 3/4	7.00	8.25	.70	1.30
43	1 3/8 x 2 x 16	5/8 x 7/8	11.00	12.75	1.00	1.90
44	1 7/8 x 2 1/4 x 19	3/4 x 1	16.00	19.50	2.00	3.75
45	2 1/8 x 2 3/4 x 22	7/8 x 1 1/8	25.00	30.00	3.00	5.70

Gang Planer

For Planing Large Surfaces





As each chip is comparatively light, a planer will, with this tool, carry with ease a feed and depth of cut much greater than is possible when using an ordinary tool, and there is much less tendency to "break out" at the end of cut. On larger surfaces, this tool has reduced time 50 to 75 per cent.

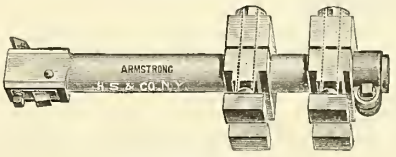
The illustration shows plan of cut made by Gang Planer Tool set to 1/4 inch, distributing the cut so that each cutter takes but 1/16 inch.

Complete with one Set (four) Cutters, Wrench and Grinding Gauge

Number	Size Shank Inches	Length Over All Inches	Size Cutter Inch	Feed Adjustment Inch	Each Complete With Self-Hardening Cutters	Each Complete With High Speed Cutters	Extra Cutters Each Self-Hardening	Extra Cutters Each High Speed
61	1 1/4 x 1 3/4 x 7 1/2	10	3/8 x 1/2	0 to 1/4	$12.00	$13.00	$ .35	$ .65
62	1 5/8 x 2 1/4 x 9	12	1/2 x 11/16	0 to 3/8	20.00	22.00	.60	1.15
63	2 x 2 1/2 x 11	14	5/8 x 7/8	0 to 1/2	35.00	38.50	1.00	1.90

When not otherwise specified Self-Hardening Cutters will be shipped

Slotter



With Hollow Bar

Complete with Wrench and two Cutters

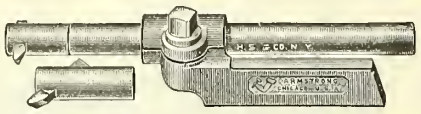
Number	For Slotting Machine Inches Stroke	Diam. Bar Inches	Length Over all Inches	Size of Cutter Inch	Each Complete With Self-Hardening Cutters	Each Complete With High Speed Cutters	Extra Cutters Each Self-Hardening	Extra Cutters Each High Speed
91	6 and 8	1 1/2	16	7/16 x 9/16	$20.00	$20.75	$ .50	$ .90
92	10 and 12	2	22	1/2 x 11/16	30.00	31.00	.65	1.20
93	14 and 16	2 1/4	27	9/16 x 3/4	45.00	46.50	.85	1.60
94	18 and 20	2 1/2	32	5/8 x 7/8	65.00	67.00	1.15	2.20
95	22 and 24	2 3/4	37	3/4 x 1	95.00	98.50	2.00	3.75

Note—As there is considerable difference in size of the T-slots of machines of different manufacture, the clamps and bolt heads of this tool are made of ample size to allow for fitting.

Fitting. An extra charge of $2.00 net will be made for fitting to dimensions.

Boring Lathe Tools

Armstrong Holders and Cutters



This is a stiff, handy tool and can be used on any lathe without fitting. Effectively equal to a dozen forged tools.

Including Straight and 45-degree End Caps, two Cutters and Wrench.

Number	Size Shank Inches	Diameter Bar Inches	Size Cutter Inch Square	Each Complete With Self-Hardening Cutters	Each Complete With High Speed Cutters	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
00B	5/16 x 3/4	1/2	3/16	$3.00	$3.25	$ .12	$ .24
8	3/8 x 7/8	9/16	3/16	3.00	3.25	.12	.24
9	1/2 x1 1/8	3/4	1/4	3.60	3.85	.15	.28
10	5/8 x1 3/8	15/16	5/16	4.75	5.10	.20	.37
11	3/4 x1 5/8	1 1/8	3/8	6.75	7.25	.30	.55
12	7/8 x1 3/4	1 5/16	7/16	10.00	10.75	.40	.75
13	1 x2	1 1/2	1/2	14.00	15.00	.50	1.00

Without Shank

In many cases it is very convenient and desirable to have a Boring Tool equipped with bars of different sizes. We are prepared to furnish extra bars with bushings to fit same to shanks of larger size. These extra bars to be of practical use must necessarily be equipped with wrench, caps, etc., making it a complete tool with exception of the shank.

Includes Bar with Straight and 45-degree End Caps, two Cutters, Wrench and Bushing. No bushing with Nos. 013, 014, 015.

Number	Dimensions of Bar Diam. Inches	Dimensions of Bar Length Inches	Size of Cutter Inch Square	With Bushing to Fit Shank Number	Each Complete With Self-Hardening Cutter	Each Complete With High Speed Cutter	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
0B	1/2	8	3/16	8, 9 or 10	$ 1.75	$2.00	$ .12	$ .24
08	9/16	9	3/16	9, 10 or 11	1.75	2.00	.12	.24
09	3/4	11	1/4	10, 11 or 12	2.25	2.50	.15	.28
010	15/16	13	5/16	11, 12 or 13	3.25	3.60	.20	.37
011	1 1/8	16	3/8	12 or 13	4.50	5.00	.30	.55
012	1 5/16	18	7/16	13	6.25	7.00	.40	.75
013	1 1/2	21	1/2	None	7.75	8.75	.50	1.00
014	1 13/16	24	5/8	None	9.75	11.00	.70	1.30
015	2 1/4	30	3/4	None	13.00	14.75	1.00	1.90

When not otherwise specified Self-hardening Cutters will be shipped.

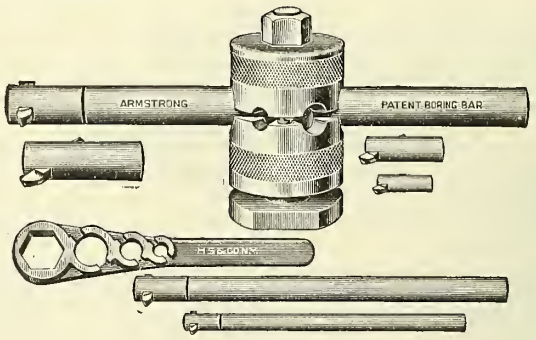
Note—In ordering be careful to give size of shank (or number of tool) in which bar is to be used. When this information is not given no bushing will be included.



For Use on Lathes with Clamp Tool Rest

Complete with Holder and Bar, straight and 45-degree End Caps. Two Cutters and Double Head Wrench.

Number	Size of Shank Inches	Diameter of Bar Inches	Length of Bar Inches	Size of Cutter Inch Square	Each Complete With Self-Hardening Cutters	Each Complete With High Speed Cutters	Extra Cutters, Each Self-Hardening	Extra Cutters, Each High Speed
108	3/4 x 7/8	9/16	9	3/16	$2.50	$2.75	$ .12	$ .24
109	1 x1 1/8	3/4	11	1/4	3.00	3.25	.15	.28
110	1 1/4 x1 3/8	15/16	13	5/16	4.00	4.35	.20	.37
111	1 1/2 x1 5/8	1 1/8	16	3/8	5.75	6.25	.30	.55
112	1 3/4 x1 7/8	1 5/16	18	7/16	8.00	8.75	.40	.75
113	2 x2 1/8	1 1/2	21	1/2	10.50	11.50	.50	1.00
114	2 1/4 x2 3/8	1 13/16	24	5/8	13.75	15.00	.70	1.30
115	2 3/4 x2 7/8	2 1/4	30	3/4	18.50	20.25	1.00	1.90



Three Bar

A slight turn of one nut releases or fastens both Bar and Holder.

Bars can be changed as needed almost instantly, thus allowing the operator to use the stiffest bar possible for each job with the result that speeds and feeds can be increased and time saved.

The set comprises the Holder and three Armstrong Boring Bars, with straight and 45-degree End Caps, six Cutters, and a Combination Wrench.

Number of Tool	1-B	2-B	3-B	4-B
Complete Set with Self-hardening Cutters	$12.00	$16.00	$21.00	$28.00
Complete Set with High Speed Cutters	13.00	17.25	22.75	30.00

Dimensions

Number of Tool	1-B	2-B	3-B	4-B
Diameter Bars	1/2, 3/4, 1 1/8	9/16, 15/16, 1 5/16	3/4, 1 1/8, 1 1/2	15/16, 1 5/16, 1 13/16
Length Bars	8, 11, 16	9, 13, 18	11, 16, 21	13, 18, 24
Size Cutters	3/16, 1/4, 3/8	3/16, 5/16, 7/16	1/4, 3/8, 1/2	5/16, 7/16, 5/8
For Lathes	14 to 16	16 to 18	20 to 22	24 to 32

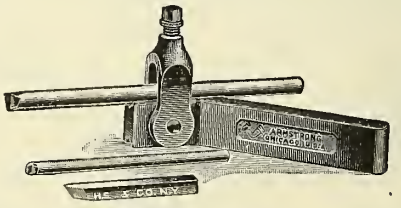
Extra Cutters—Stock Shapes Only

Size, inches square	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Each, High Speed	$ .24	$ .28	$ .37	$ .55	$ .75	$1.00	$1.30
Each, Self-hardening	.12	.15	.20	.30	.40	.50	.70

When not otherwise specified Self-hardening Cutters will be shipped.

Note—Bolt Head and bottom part of Holder are made of ample size to allow for fitting, which is necessary on account of the great variation in height of centers above slide rest and difference in sizes of T-slots.

Fitting—An extra charge of $1.00 net will be made for tools ordered fitted to special dimensions.



For Light Work

Includes Holder, Wrench, two Boring Bars and one Self-hardening Cutter

Number	Size of Shank Inches	Size of Bars Furnished Diameter Inch	Size of Square Cutter Inch	Each Complete	Extra Square Cutter Each
15	3/8 x 3/4	1/8 and 1/4	1/4	$2.75	$ .12
16	1/2 x1	3/16 and 5/16	5/16	3.50	.18
17	5/8 x1 1/4	1/4 and 3/8	3/8	4.50	.25
18	3/4 x1 1/2	5/16 and 7/16	7/16	5.75	.35

Extra Boring Bars

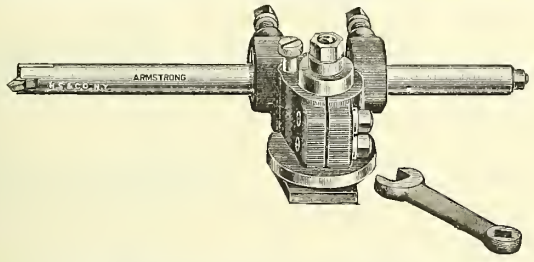
Diameter, inch	1/8	3/16	1/4	5/16	3/8	7/16
Length, inches	4	4 1/2	5	6	7	8
Each	$ .20	$ .25	$ .30	$ .40	$ .55	$. 75

Lathe Tools

Armstrong

Adjustable Boring

This tool combines Convenience, Adjustability and Rigidity to a remarkable degree and is well adapted to a very wide range of work. The holder is easily adjustable to different heights and will hold bars of various diameters. The Bars are made from high carbon steel seamless tubing of heavy gauge and are extremely stiff. The cutter can be adjusted and solidly fixed at various angles for boring, facing of turning.



Including Holder, one Bar, two Cutters and Wrench

Number	Capacity of Holder Diameter Bars Inches	Size Bar Furnished Inches	Size Cutter Inch Square	For Lathes Swinging Inches	With Self-Hardening Cutters Each	With High Speed Cutters Each
212	1/4 to 1 5/16	1 5/16 x 21	3/8	14 to 18	$16.00	$16.50
213	3/8 to 1 1/2	1 1/2 x 24	7/16	16 to 20	21.00	21.75
214	1/2 to 1 13/16	1 13/16 x 28	1/2	18 to 24	28.00	29.00
215	5/8 to 2 1/4	2 1/4 x 36	5/8	20 to 36	40.00	41.25

Note—Bolt Head is made large enough to allow for fitting T-slots of various sizes.
Fitting—An extra charge of 50 cents net will be made for fitting Bolt Head to special dimensions.

Extra Bars

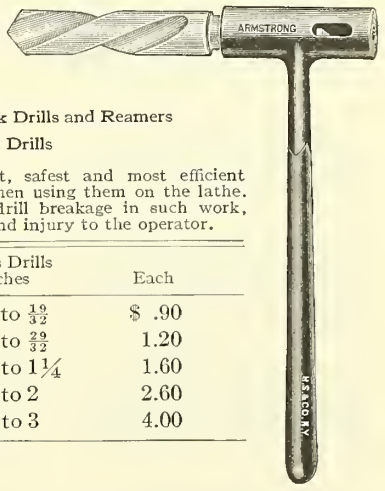
Including one Bar of size specified, two Cutters and Wrench

Size of Bar Diameter Inches	Size of Bar Length Inches	Size Cutter Inch Square	With Self-Hardening Cutters Each	With High Speed Cutters Each
3/4	14	3/16	$3.00	$3.25
15/16	16	1/4	3.75	4.00
1 1/8	18	5/16	4.75	5.10
1 5/16	21	3/8	6.00	6.50
1 1/2	24	7/16	8.00	8.75
1 13/16	28	1/2	11.00	12.00
2 1/4	36	5/8	15.00	16.25

Extra Cutters—Stock Shapes Only

Size Inch Square	High Speed Each	Self-Hardening Each	Size Inch Square	High Speed Each	Self-Hardening Each
3/16	$ .24	$ .12	3/8	$ .55	$ .30
1/4	.28	.15	7/16	.75	.40
5/16	.37	.20	1/2	1.00	.50
			5/8	1.30	.70

Drill and Reamer Holders



For Holding Morse Taper Shank Drills and Reamers

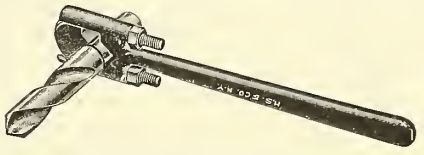
Saves Fingers and Drills

This Holder furnishes the simplest, safest and most efficient means for holding Taper Shank Drills when using them on the lathe. Its use will eliminate 90 per cent of drill breakage in such work, mutilation of drill shanks and sockets, and injury to the operator.

Number	Size Shank Morse Taper	Holds Drills Inches	Each
1	No. 1	1/16 to 19/32	$ .90
2	No. 2	39/64 to 29/32	1.20
3	No. 3	59/64 to 1 1/4	1.60
4	No. 4	1 17/64 to 2	2.60
5	No. 5	2 1/64 to 3	4.00

U-Clamp Drill and Reamer Holder

This tool is designed for use in holding Straight Shank Drills, Reamers or similar tools, with safety to the operator and without danger of injury to the tool held.



Number	Capacity, Inches	Length, Inches	Each
200	1/4 to 1	11	$1.20
300	3/8 to 1 1/2	13	1.60
400	1/2 to 2	15 1/2	2.60
500	3/4 to 3	18	4.00

Books

The Mechanic's Tool-Book

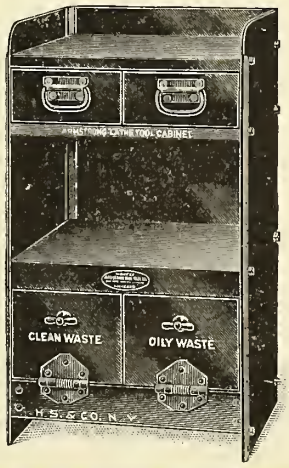
By W. B. Harrison

Contents: Contains a veritable mine of valuable information for the mechanic about the use of his various tools to their best advantage, and shows how to make small tools and how to use these as auxiliaries or by themselves. With practical rules and suggestions for use of Machinists, Ironworkers and others. 44 illustrations, 5 x 7 1/2 inches. 286 pages.

Each $1.50

All Steel Tool Cabinets

Armstrong



Especially Adapted for Armstrong Lathe Tool Sets

These handsome cabinets not only add to the systematic and orderly appearance of the shop, but they will save much time that is ordinarily wasted hunting for mislaid tools, as they keep together each man's tools, chuck, waste and other equipment within easy reach at all times.

They also conform to the modern shop practice of replacing wood with non-combustible materials wherever possible, and furnish separate, automatic closing receptacles for clean and oily waste, as required by the insurance rules.

Number	Dimensions Inches	Suitable for Lathe Tool Sets	Each
0-1	18x16x34	Nos. 0 and 1	$24.00
2-3	21x19x34	Nos. 2 and 3	27.00
4-5	24x22x34	Nos. 4 and 5	30.00

Lathe Tool Sets



Straight Shank Turning Tool



Left Hand Off-set Side Tool



Straight Shank Cut-off Tool



Left Hand Off-set Cut-off Tool



Left Hand Turning Tool

Armstrong

Each set includes ten tools shown on the preceding pages and is so complete as to cover the entire range of lathe work and to render entirely unnecessary the forging of tools with the attendant waste of time and material.

Number	Size of Tool Shanks Inches	For Lathes (See Note) Inches Swing	With Self-Hardening Cutters* Per Set	With High Speed Cutters Per Set
00	$\frac{5}{16}$ x $\frac{3}{4}$	7 to 10	$19.00	$21.90
0	$\frac{3}{8}$ x $\frac{7}{8}$	10 to 12	19.50	22.75
1	$\frac{1}{2}$ x 1$\frac{1}{8}$	14 to 16	22.00	26.00
2	$\frac{5}{8}$ x 1$\frac{3}{8}$	16 to 18	28.00	33.25
3	$\frac{3}{4}$ x 1$\frac{5}{8}$	18 to 20	37.00	44.25
4	$\frac{7}{8}$ x 1$\frac{3}{4}$	24 to 36	48.00	57.00
5	1 x 2	36 to 48	62.25	74.50

Note—As there is a wide variation in the proportions of Lathes of different manufacture, it is only possible to give approximate size or swing of Lathes adapted to the use of tools of different sizes. Tool posts should be carefully measured before ordering tools.

*Except Threading Tool Cutter of Carbon Steel.


Boring Tool



Right Hand Off-set Side Tool



Threading Tool



Right Hand Off-set Cut-off Tool



Right Hand Turning Tool

Tool Steel Lathe Tool Cutters

Require only grinding to make them ready for use in Armstrong Tool Holders

Squares for Turning and Boring Tools

For Turning Tools			
Size Inches	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{3}{16}$	1$\frac{3}{4}$	$ .50	$ .70
$\frac{1}{4}$	2$\frac{1}{8}$	.65	1.00
$\frac{5}{16}$	2$\frac{3}{4}$	1.15	1.80
$\frac{3}{8}$	3$\frac{1}{4}$	1.90	3.00
$\frac{7}{16}$	3$\frac{3}{4}$	2.95	4.70
$\frac{1}{2}$	4$\frac{1}{4}$	4.25	6.80
$\frac{5}{8}$	4$\frac{3}{4}$	6.80	10.85
$\frac{3}{4}$	5$\frac{3}{4}$	11.40	19.70
$\frac{7}{8}$	6$\frac{3}{4}$	18.80	29.90
1	7$\frac{1}{2}$	27.00	43.35
1$\frac{1}{8}$	8$\frac{1}{2}$	36.00	58.00

For Boring Tools			
Size Inch	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{3}{16}$	1	$ .35	$ .55
$\frac{3}{16}$	1$\frac{1}{4}$	.40	.60
$\frac{1}{4}$	1$\frac{1}{4}$	.50	.75
$\frac{1}{4}$	1$\frac{3}{4}$	.55	.90
$\frac{5}{16}$	1$\frac{1}{2}$	.75	1.20
$\frac{5}{16}$	2$\frac{1}{4}$	.95	1.60
$\frac{3}{8}$	1$\frac{7}{8}$	1.20	2.10
$\frac{3}{8}$	2$\frac{5}{8}$	1.55	2.70
$\frac{7}{16}$	2$\frac{1}{8}$	1.85	3.25
$\frac{7}{16}$	2$\frac{7}{8}$	2.30	4.00
$\frac{1}{2}$	2$\frac{3}{8}$	2.60	4.45
$\frac{1}{2}$	3$\frac{1}{4}$	3.30	5.75
$\frac{5}{8}$	2$\frac{3}{4}$	4.30	7.55
$\frac{5}{8}$	4	5.75	10.00
$\frac{3}{4}$	3$\frac{1}{8}$	7.40	12.90
$\frac{3}{4}$	5	10.75	18.85

Flats for Planer and Slotter Tools

For Planer Tools			
Size Inches	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{1}{4}$ x $\frac{3}{8}$	2$\frac{1}{2}$	$1.05	$1.65
$\frac{5}{16}$ x $\frac{7}{16}$	3	1.75	2.75
$\frac{3}{8}$ x $\frac{1}{2}$	3$\frac{1}{2}$	2.75	4.30
$\frac{1}{2}$ x $\frac{3}{4}$	4$\frac{1}{4}$	6.20	8.80
$\frac{5}{8}$ x $\frac{7}{8}$	5	10.15	16.10
$\frac{3}{4}$ x 1	6	16.65	26.50
$\frac{7}{8}$ x 1$\frac{1}{4}$	7	25.35	40.25

For Slotter and Gang Planer Tools			
Size Inch	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{7}{16}$ x $\frac{9}{16}$	3$\frac{1}{2}$	$3.60	$5.65
$\frac{1}{2}$ x $\frac{11}{16}$	3$\frac{3}{4}$	5.00	7.95
$\frac{9}{16}$ x $\frac{3}{4}$	4$\frac{1}{4}$	7.15	11.35
$\frac{5}{8}$ x $\frac{7}{8}$	5	10.25	16.25
$\frac{3}{4}$ x 1	5$\frac{3}{4}$	16.00	25.40
$\frac{3}{8}$ x $\frac{1}{2}$	3	2.35	3.70
$\frac{1}{2}$ x $\frac{11}{16}$	3$\frac{1}{2}$	4.70	7.40
$\frac{5}{8}$ x $\frac{7}{8}$	4$\frac{1}{2}$	9.15	14.50

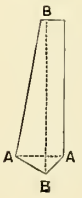
Round for Turning Tools

Size Inch	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{1}{4}$	2$\frac{3}{8}$	$ .65	$ .95
$\frac{5}{16}$	3	1.05	1.65
$\frac{3}{8}$	3$\frac{1}{2}$	1.70	2.70
$\frac{7}{16}$	3$\frac{7}{8}$	2.55	4.00
$\frac{1}{2}$	4$\frac{1}{2}$	3.80	6.00
$\frac{5}{8}$	5$\frac{1}{2}$	6.40	10.15

Bevel for Cutting-off Tools

Size Inches	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{5}{16}$ x $\frac{1}{2}$	4$\frac{1}{2}$	$1.65	$2.60
$\frac{3}{32}$ x $\frac{5}{8}$	5	1.80	2.90
$\frac{1}{8}$ x $\frac{3}{4}$	6	2.60	4.15
$\frac{1}{8}$ x $\frac{7}{8}$	7	3.40	5.30
$\frac{3}{16}$ x 1	8	6.20	9.85
$\frac{3}{16}$ x 1$\frac{1}{8}$	9	8.50	13.85
$\frac{1}{4}$ x 1$\frac{1}{4}$	10	10.80	17.50
$\frac{1}{4}$ x 1$\frac{3}{8}$	11	14.25	24.50

Special Shape for Side Tools



Size Inches on Lines AA and BB	Length Inches	Self-Hardening Per Dozen	High Speed Per Dozen
$\frac{1}{8}$ x $\frac{1}{2}$	4$\frac{1}{2}$	$1.65	$2.60
$\frac{5}{32}$ x $\frac{5}{8}$	5	2.90	4.60
$\frac{3}{16}$ x $\frac{3}{4}$	6	4.35	6.90
$\frac{1}{4}$ x $\frac{7}{8}$	7	6.75	10.75
$\frac{5}{16}$ x 1	8	10.60	16.90
$\frac{3}{8}$ x 1$\frac{1}{4}$	9	15.35	25.90
$\frac{7}{16}$ x 1$\frac{3}{8}$	10	21.10	36.50
$\frac{1}{2}$ x 1$\frac{1}{2}$	11	28.50	48.55
$\frac{9}{16}$ x 1$\frac{5}{8}$	15	42.75	

Note—Steel for side Tools and Cutting-off Tools is rolled to approximate size, but requires grinding on edges to bring to exact size.

Tool Steel

For use in Armstrong Tool Holders

Special Self-Hardening Steel

Ready to use. No treatment required

Three-Foot Bars



Squares

For use in Armstrong Turning and Boring Tools

Size, inches	3/16	1/4	5/16	3/8	7/16	1/2
Per Bar	$ .50	.60	.85	1.20	1.65	2.10
Size, inches		5/8	3/4	7/8	1	1 1/8
Per Bar		$3.00	4.50	5.75	7.60	9.00



Flats

For use in Armstrong Planer and Slotter Tools

Size, inches	1/4x3/8	5/16x7/16	3/8x1/2	7/16x9/16	1/2x11/16
Per Bar	$ .85	1.20	1.60	2.10	2.75
Size, inches	1/2x3/4	9/16x3/4	5/8x7/8	3/4x1	7/8x1 1/8
Per Bar	$3.00	3.40	4.20	5.75	7.50



Rounds

For use in Armstrong Turning Tools

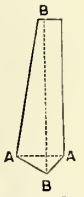
Size, inches		1/4	5/16	3/8
Per Bar		$ .50	.70	1.00
Size, inches		7/16	1/2	5/8
Per Bar		$1.35	1.75	2.40



Bevel

For use in Armstrong Cutting-off Tools

Size of Steel, inches	5/64x1/2	3/32x5/8	1/8x3/4	1/8x7/8
Per Bar	$ .75	.75	.90	1.00
Size of Steel, inches	3/16x1	3/16x1 1/8	1/4x1 1/4	1/4x1 3/8
Per Bar	$1.60	2.00	2.75	3.10



Special Shape

For use in Armstrong Side Tools

Size of Steel on lines AA and BB, inches	1/8x1/2	5/32x5/8	3/16x3/4	1/4x7/8	5/16x1
Per Bar	$ .75	1.20	1.50	2.00	2.75
Size of Steel on lines AA and BB, inches	3/8x1 1/4	7/16x1 3/8	1/2x1 1/2	9/16x1 5/8	
Per Bar	$3.75	4.75	5.75	6.75	

Note—Steel for Side Tools and Cutting-off Tools is rolled to approximate size, but requires grinding on edges to bring to exact size.

High-Speed Steel

Treatment—Cutters made from Armstrong High Speed Steel will give best results when treated as follows: Pre-heat slowly to 1200 degrees Fahrenheit, then bring up heat rapidly to 2150 degrees (or until steel begins to sweat) and cool in air (fan blast is best) or in oil. Draw cutters to 500 or 550 degrees to toughen and remove strains.

Three-Foot Bars, Annealed



Squares

For use in Armstrong Turning and Boring Tools

Size, inches	3/16	1/4	5/16	3/8	7/16	1/2
Per Bar	$ .75	.90	1.30	1.80	2.50	3.15
Size, inches		5/8	3/4	7/8	1	1 1/8
Per Bar		$4.50	6.75	8.65	11.50	13.50



Flats

For use in Armstrong Planer and Slotter Tools

Size, inches	1/4x3/8	5/16x7/16	3/8x1/2	7/16x9/16	1/2x11/16
Per Bar	$1.30	1.80	2.40	3.15	4.15
Size, inches	1/2x3/4	9/16x3/4	5/8x7/8	3/4x1	7/8x1 1/8
Per Bar	$4.50	5.10	6.30	8.65	11.25



Rounds

For use in Armstrong Turning Tools

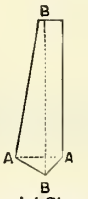
Size, inches		1/4	5/16	3/8
Per Bar		$ .75	1.05	1.50
Size, inches		7/16	1/2	5/8
Per Bar		$2.00	2.60	3.60



Bevel

For use in Armstrong Cutting-off Tools

Size of Steel, inches	5/64x1/2	3/32x5/8	1/8x3/4	1/8x7/8
Per Bar	$1.15	1.15	1.35	1.50
Size of Steel, inches	3/16x1	3/16x1 1/8	1/4x1 1/4	1/4x1 3/8
Per Bar	$2.40	3.00	4.15	4.65



Special Shape

For use in Armstrong Side Tools

Size of Steel on lines AA and BB, inches	1/8x1/2	5/32x5/8	3/16x3/4	1/4x7/8	5/16x1
Per Bar	$1.15	1.80	2.25	3.00	4.15
Size of Steel on lines AA and BB, inches	3/8x1 1/4	7/16x1 3/8	1/2x1 1/2	9/16x1 5/8	
Per Bar	$5.65	7.15	8.65	10.00	

Note—Steel for side Tools and Cutting-Off Tools is rolled to approximate size, but requires grinding on edges to bring to exact size.

Turning Tools for Metal, Bone, Hard Rubber, Etc.

Buck Bros.



No. 1 No. 2 No. 4 No. 5 No. 6 No. 7 No. 9 No. 11

With Handles

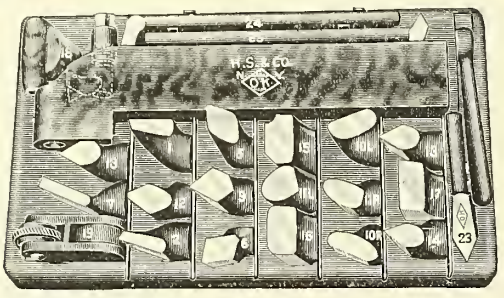
		Dozen	Each
No. 1	Square points, 1/4, 5/16, 3/8, 1/2 and 5/8 inch	$4.20	$ .42
No. 2	Skew points, right hand, 1/4, 5/16, 3/8, 1/2 and 5/8 inch	4.20	.42
No. 3	Skew points, left hand, 1/4, 5/16, 3/8, 1/2 and 5/8 inch	4.20	.42
No. 4	Round points, 1/4, 5/16, 3/8, 1/2 and 5/8 inch	4.20	.42
No. 5	Spear points, 1/4, 5/16, 3/8, 1/2 and 5/8 inch	4.40	.44
No. 6	Square graver, 1/4, 5/16 and 3/8 inch	4.40	.44
No. 7	Inside tool, right hand	6.00	.60
No. 8	Inside tool, left hand	6.00	.60
No. 9	Side tool, right hand	6.00	.60
No. 10	Side tool, left hand	6.00	.60
No. 11	Cutting-off tool	6.00	.60

Tool Holders and Tools

O K

This system of Holders and Tools offers all the advantages of a solid forged cutting tool combined with the economical use of high priced high speed steel. It will be noticed that for lathe, planer and shaper work one holder, and for boring mill work two holders only are required for the full range of work. With these holders and assorted tools and fixtures a mechanic has, contained in a small wood block, an outfit that will enable him to do any ordinary range of work. These tools are Hydraulic and Drop-forged from best grades of high speed and other steels and are guaranteed to be correctly ground and tempered.

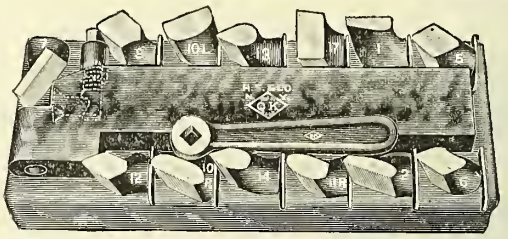
Standard Complete Sets, Number 100



Consisting of Holder and twenty-two assorted tools and fixtures, including block. In size A complete set we furnish single knurl. Complete sets, sizes B and C, are regularly furnished with double knurl. With single knurl, $1.00 less. All cutters are made from the best high speed steel obtainable.

Number	Size of Shank Inches	Contains Tools	Set
A	⅜ x ¾	Nos. 1, 2, 13, 3, 4, 5, 6, 7, 8, 9, 12, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25.....	$10.75
B	½ x 1	Nos. 1, 2, 13, 3, 4, 5, 6, 7, 8, 9, 12, 11, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25.....	13.00
C	½ x 1 9/16 x 1⅛	Nos. 13, 17, 14, 10L, 10R, 11R, 11L, 15, 16, 5, 9, 6, 1, 12, 2, 13, 12.....	15.00
	⅝ x 1¼	18, 19, 23, 24, 25.....	15.00

Standard Lathe Working Sets, Number 200

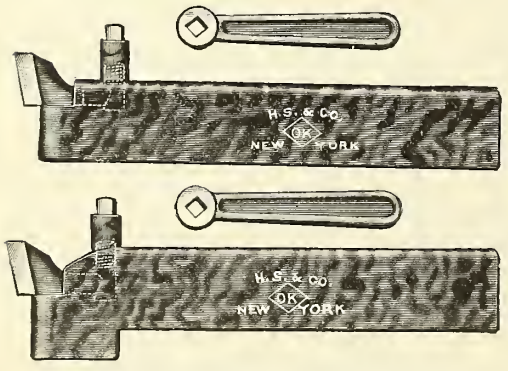


Working Sets in sizes from A to C consist of a Holder, Block and thirteen assorted tools. From D to H consist of a Holder, Block and twelve assorted tools. All cutters are made from the best high speed steel obtainable.

Number	Size of Shank Inches	Contains Tools	Set
A	⅜ x ¾	Nos. 5, 6, 1, 2, 17, 9, 13, 14, 8, 12, 12, 7, 2.....	$5.85
B	½ x 1	Nos. 5, 6, 1, 2, 17, 11R, 13, 14, 8, 9, 12, 7, 2.....	6.50
C	½ x 1 9/16 x 1⅛ ⅝ x 1¼	Nos. 12, 9, 2, 1, 14, 13, 10R, 10 L, 11R, 17, 5, 6, 7.....	8.00
D	¾ x 1⅜	Nos. 1, 2, 5, 6, 9, 10L, 10R, 11R, 11L, 17, 12, 13.....	13.00
E	1 x 1¾	Nos. 1, 2, 5, 6, 9, 10R, 10L, 11R, 11L, 17, 12, 12.....	17.15
F	1¼ x 2	Nos. 11R, 11R, 11L, 5A, 6A, 10R, 10L, 12, 9, 5, 6, 17.....	22.25
G	1½ x 2	Nos. 11R, 11R, 11L, 12, 9, 5, 6, 11R, 11L, 17, 11R, 11L.....	29.25
H	1¾ x 2½	Nos. 11R, 11R, 11R, 11L, 11L, 11L, 12, 9, 5, 6, 17, 11R.....	37.25

Working sets for shaper use same as above, except tools are ground with same clearance as planer tools, and tools Nos. 20 and 11L substituted for tools Nos. 13 and 14. Be sure and specify for shaper use when ordering.

Standard Lathe Holders

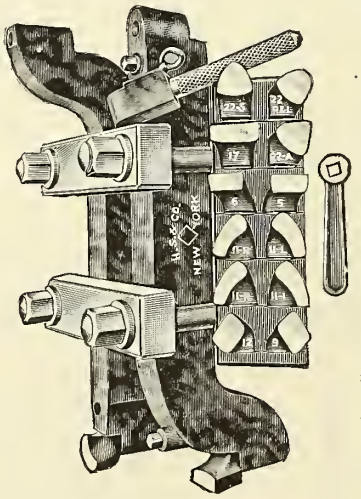


Number	Size Shank Inches	Height from point of tool to bottom of Holder Straight Inches	Drop Inches	Each
A	⅜x ¾	1 1/16	⅞	$1.80
B	½x1	1⅜	1⅛	2.00
C	½x1	...	1 3/16	2.50
	9/16x1⅛	...	1¼	
	⅝x1¼	1⅝	1 5/16	
D	¾x1⅜	2 1/16	1⅝	4.00
E	1 x1¾	2½	1 13/16	6.00
F	1¼x2	2⅝	2	7.00
G	1½x2	2¾	2	8.00
H	1¾x2½	3¼	2½	10.00

Standard Planer Sets

The cut shows planer holder when used as a goose-neck holder, and also in a reversed position, when used as a straight holder.

We recommend the straight end of the double-ended planer holder when cutting steel, and also where it is necessary to get up close to a shoulder or for working into a pocket. For other uses we recommend the goose-neck end of the holder.



With Double End Holders

Number	Size Shank Inches	Contains	Set
C	¾x1½x12	12 Tools, Nos. 11R, 11L, 20, 10R, 10L, 6, 5, 9, 17, 12, 1, 2.....	$11.00
D	1 x1¾x15	12 Tools, numbers as above	17.25
E	1¼x2 x18	12 Tools, Nos. 11R, 11L, 20, 10R, 10L, 6A, 5A, 9, 17, 12, 1, 2.....	21.15
F	1½x2½x24	12 Tools, numbers 11R, 11L, 10R, 10L, 9, 12, 5, 6, 17, 22, R and L, 22 str. 11L.....	27.75
G	1¾x3 x24	12 Tools, numbers as above in Size F.....	36.75
H	2 x3½x24	12 Tools, numbers as above in Size F.....	45.75

Planer Holders Only

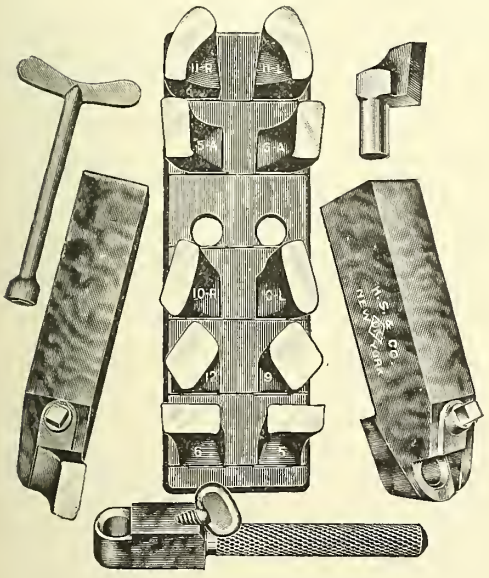
Number	Size Shank Inches	Double End Each	Straight Each
C	¾x1½x12	$6.00	$4.50
D	1 x1¾x15	8.00	6.00
E	1¼x2 x18	10.00	7.00
F	1½x2½x24	12.00	8.00
G	1¾x3 x24	15.00	10.00
H	2 x3½x24	18.00	12.00

Special combinations furnished at special prices

Tool Holders and Tools

O K

Boring Mill Sets



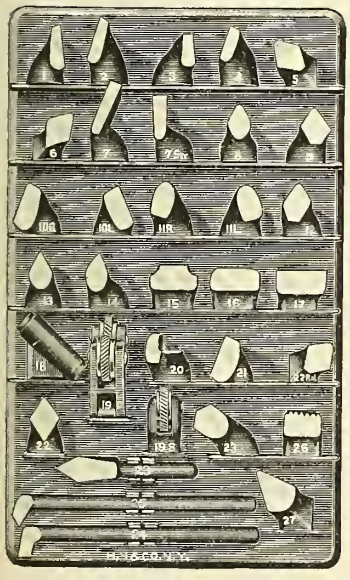
This type of Holder can be used on any boring mill. Care should be taken to give the proper dimensions for shank, that is, the width, height and length. These Holders have sufficient drop to bring the cutting edge of a new tool ¼ inch above the top of Holder. In ordering tools for these Holders be careful to specify for use in Type OKB Holders, as these tools are ground in a way that gives them a support both on the back and sides, and all tools are interchangeable on either the right or left hand side of Holder.

Type OKB, size F, 1¼ x 1¼ inch, complete with pair of Holders, right and left, 12 tools and hand grinding Holder $28.00
Type OKB, size G, 1½ x 1½ inch, complete with pair of Holders, right and left, 12 tools and hand grinding Holder 38.00
Type OKB, size H, 1¾ x 2 inch, complete with pair of Holders, right and left, 12 tools and hand grinding Holder 48.00
Holders only, Type OKB, Size F, per pair, 1¼ x 1¼ inch 12.00
Holders only, Type OKB, Size G, per pair, 1½ x 1½ inch 16.00
Holders only, Type OKB, Size H, per pair, 1¾ x 2 inch 20.00

Holders to hold sizes F, G and H Tools are made to fit any size boring mill at the same price as above.

Tools for O K Holders

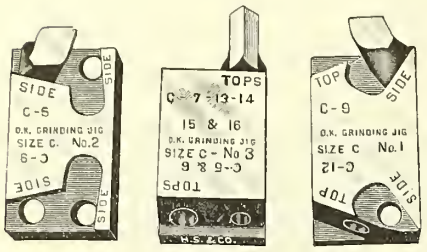
The cut shows the various tools supplied for O K Holders described on this and the preceding page. In ordering state whether they are for use on Lathe, Shaper, Planer or Boring Mill. Made from best High Speed Steel.



No.	Tools Size	A	B	C	D	E	F	G	H
1	Left Side Tool	$ .30	$ .33	$ .40	$ .75	$ .90	$1.25	$1.75	$2.25
2	Right Side Tool, bent	.30	.33	.40	.75	.90	1.25	1.75	2.25
3	Left Side Brass Tool	.30	.33						
4	Right Side Brass Tool	.30	.33						
5	Left Offset Diamond Tool	.30	.33	.40	.75	.90	1.25	1.75	2.25
6	Right Offset Diamond Tool	.30	.33	.40	.75	.90	1.25	1.75	2.25
7	Right Side Parting Tool	.32	.35	.45	.90				
8	Straight Brass Tool	.30	.33	.40					
9	Left Diamond Point Tool	.30	.33	.40	.75	.90	1.25	1.75	2.25
10	Roughing Tool, right and left	.....		.40	.75	.90	1.25	1.75	2.25
11	Hog Nose Tool, right and left	...	.33	.40	.75	.90	1.25	1.75	2.25
12	Right Diamond Point	.30	.33	.40	75	.90	1.25	1.75	2.25
13	Straight Thread Tools	.35	.40	.50	.85	1.25			
14	Right Thread Tools	.35	.40	.50	.85	1.25			
15	Female Radius Tools $\frac{3}{32}, \frac{1}{8}, \frac{5}{32}$ inches	.55	.63	.75	1.25	2.00			
16	Male Radius Tools $\frac{3}{32}, \frac{1}{8}, \frac{5}{32}$ inches	.55	.63	.75	1.25	2.00			
17	Flat Nose Tool	.35	.40	.60	1.00	1.25	1.50	2.00	2.50
18	Inside Boring Fixture	.90	1.00	1.10					
19	Knurling Fixture	.90	1.00	2.00					
20	Steel Finishing Tool for Shaper and Planer	.....		.50	.75	.90	1.25	1.75	2.25
21	Bull Nose Roughing Tool	.....		...	.85	.90			
22	Round Nose Tool, right and left or Straight	.....		.40	.75	1.25	1.50	2.00	2.50
23	Spotting Tool, solid	.....		.40	.75				
23	Spotting Tool for No. 18	.20	.25	.30					
24	Inside Boring Tool	.20	.25	.30					
25	Inside Threading Tool	.20	.25	.30					
26	Thread Chasing Tool	.....		1.50	2.00				
27	Dove-tail Tool	.....		.50	.85	1.25			

Grinding Fixtures

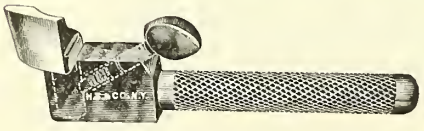
For O K Tools



For Machine Grinding

These fixtures are intended for use on a disc grinder. All of these fixtures will grind a tool on the correct angle and maintain that angle until the tool is worn out, by simply placing them in their respective holes and sliding them along on the table up to the wheel. By the use of these fixtures all the grinding can be done by one man, the machine operators simply exchanging dull tools for sharp ones.

All sizes, each $2.50



For Hand Grinding

This fixture is intended for use on emery wheel or grindstone, and one fixture will grind every shape that we make of same size. Made in all sizes.

All sizes, each $1.50

Special combinations furnished at special prices

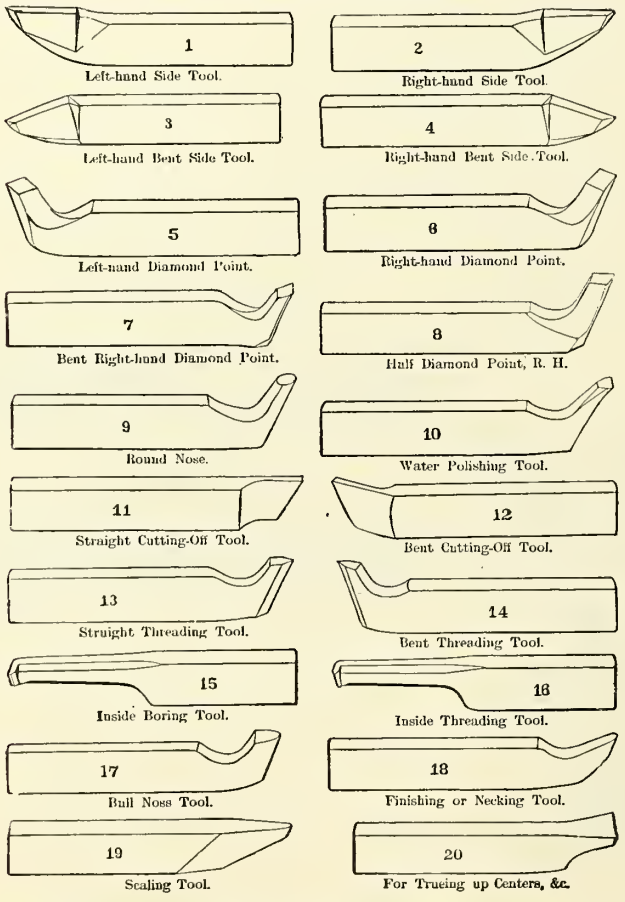
Lathe, Planer and Shaper Tools

H. S. & Co.

Of all the tools used in a machine shop, none perform so important a part in the earning of a profit as Lathe, Planer and Shaper Tools, for they are the connecting link between the machines and the work being done.

An inferior tool, imperfect as to shape or temper, may be the means of reducing your profit more than the price of the highest grade tool obtainable.

Set of Twenty Lathe Tools



Set of 16 contains Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16 and 19.
Set of 12 contains Nos. 1, 2, 4, 5, 6, 9, 11, 13, 14, 15, 16 and 19.
Set of 10 contains Nos. 1, 2, 5, 6, 9, 11, 13, 15, 16 and 19.
Set of 8 contains Nos. 1, 2, 6, 9, 11, 13, 16 and 19.

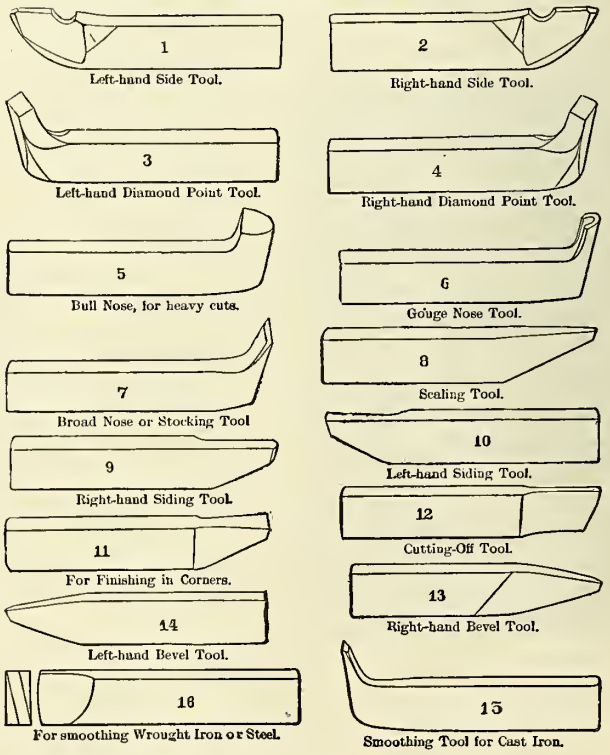
Many kinds of tools have been devised for this kind of work, but none yet which can beat the solid forged tool if properly made of the right material. We make two grades of these tools—carbon steel tools for all ordinary purposes, made of a special analysis crucible tool steel, and high-speed tools for the severest kind of work, made of the highest grade of high-speed steel.

The Lathe Tools are made in twenty different styles, assembled in sets of eight, ten, twelve, sixteen and twenty tools. The Planer and Shaper Tools are made in sixteen styles, assembled in sets of twelve and sixteen tools.

Each set is packed in a separate box, nicely labeled, but if full sets are not wanted, selections can be made of any particular styles.

Both grades are hammer forged at the proper heat, each tool shaped to a standard size by gauges and templets, tempered by a special process, and ground ready for use, the product of an up-to-date plant and years of experience in working tool steel.

Set of Sixteen Planer and Shaper Tools



Set of 12 contains Nos. 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13 and 14.

For prices see next page

Lathe, Planer and Shaper Tools

H. S. & Co.

(For illustrations see preceding page)

Carbon Steel

Lathe Tools

Sets of	8	10	12	16	20
¼x ½x 4 long, per set	$1.36	$1.70	$2.04	$2.72	$3.40
5/16x 5/8x 4½ long, per set	1.36	1.70	2.04	2.72	3.40
⅜x ⅝x 5 long, per set	2.00	2.50	3.00	4.00	5.00
⅜x ¾x 6 long, per set	2.00	2.50	3.00	4.00	5.00
½x1 x 8½ long, per set	4.00	5.00	6.00	8.00	10.00
⅝x1¼x 9½ long, per set	6.00	7.50	9.00	12.00	15.00
⅝x1½x11 long, per set	8.00	10.00	12.00	16.00	20.00
¾x1½x12 long, per set	8.80	11.00	13.20	17.60	22.00
¾x1¾x13 long, per set	10.80	13.50	16.20	21.60	27.00
⅞x2 x14 long, per set	14.00	17.50	21.00	28.00	35.00
1 x2 x15 long, per set	16.80	21.00	25.20	33.60	42.00
1⅛x2¼x16 long, per set	22.00	27.50	33.00	44.00	55.00
1¼x2½x18 long, per set	28.80	36.00	43.20	57.60	72.00

Planer and Shaper Tools

Sets of	12	16
⅜x ¾x 6 long, per set	$3.00	$4.00
½x1 x 9 long, per set	6.00	8.00
⅝x1¼x11 long, per set	9.00	12.00
⅝x1½x13 long, per set	13.50	18.00
¾x1½x14 long, per set	15.00	20.00
¾x1¾x15 long, per set	18.00	24.00
1 x2 x17 long, per set	27.00	36.00
1¼x2½x20 long, per set	48.00	60.00

The lengths given above are nearly correct, but vary slightly

High Speed Steel

Lathe Tools

	Each		Each
⅜x¾	$1.00	⅝x1½	$4.70
½x1	1.90	¾x1½	5.80
⅝x1¼	3.00	1x2	11.00

Planer and Shaper Tools

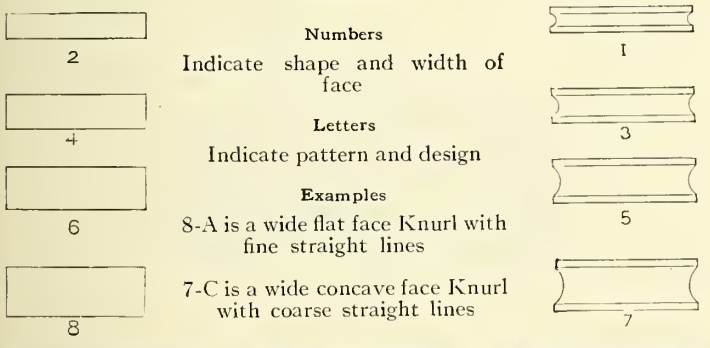
	Each		Each
½x1	$2.00	¾x1½	$6.00
⅝x1¼	3.75	1x2	12.00
⅝x1½	5.25		

Special sizes and shapes of these tools made to order at special prices

Knurls and Knurling Tools

H. S. & Co.

Knurls



Numbers

Indicate shape and width of face

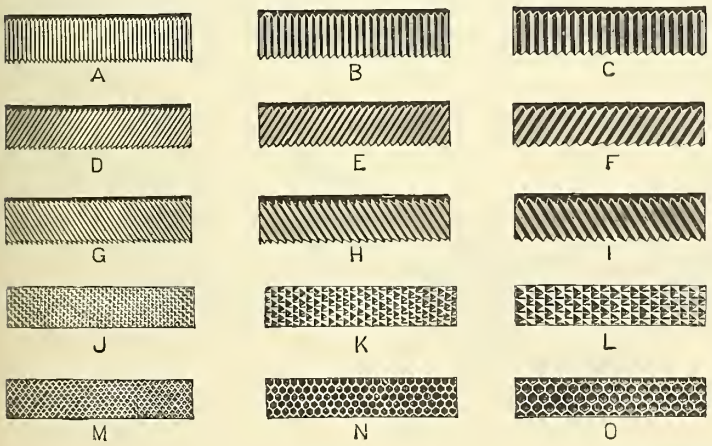
Letters

Indicate pattern and design

Examples

8-A is a wide flat face Knurl with fine straight lines

7-C is a wide concave face Knurl with coarse straight lines



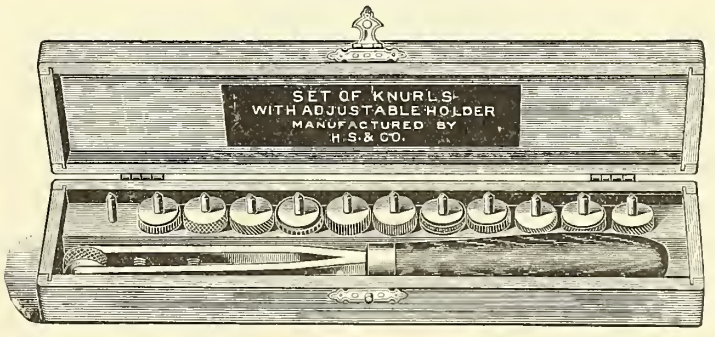
Adjustable Holders



Will hold Knurls any width up to ½ inch

No. 20 Polished applewood handles, per dozen $5.50

Sets of Knurls



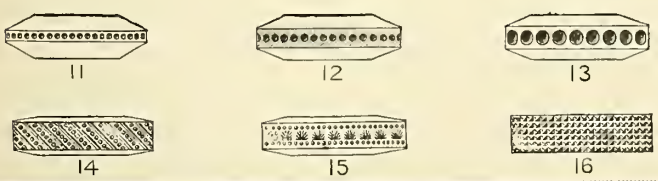
Polished Hardwood Boxes

No. 6 Contains 6 Knurls (No. 8-B, 8-E, 8-K, 4-A, 5-E, 7-B) and adjustable Knurl Holder; room for 18 Knurls more, set $3.00

No. 12 Contains 12 Knurls (No. 8-A, 8-B, 8-G, 8-H, 8-J, 8-K, 5-B, 7-E, 7-H, 8-N, 12, 15) and adjustable Holder; room for 12 Knurls more, set 5.00

No. 24 Contains 24 Knurls (8-A, 8-B, 8-C, 8-E, 8-G, 8-H, 8-J, 8-J, 8-K, 8-L, 8-M, 8-N, 8-O, 3-G, 5-H, 7-A, 7-B, 7-C, 6-H, 11, 12, 14, 15, 16) and adjustable Knurl Holder, set 9.00

Fancy Knurls



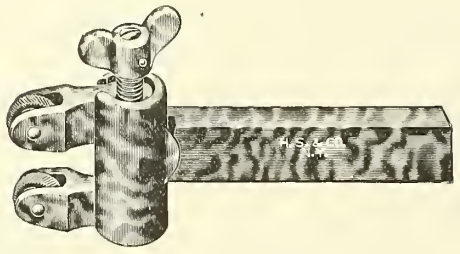
We can supply almost anything in the knurl line. Send sample or impression.

Nos. 11, 12 and 13, dozen $5.00

Nos. 14, 15 and 16, dozen 4.00

Knurling Tools and Knurls

Billings and Spencer
Improved Lathe Tool

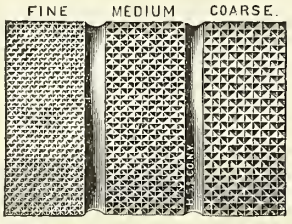


	Inches
Maximum opening between Knurls	1 3/8
Minimum opening between Knurls	3/16
Depth from center of Knurls	7/8
Width of Knurls	3/16
Diameter of Knurls	3/4

The movable arms holding the Knurls, in connection with the rocking joint, have a positive opening and closing movement in parallel lines, actuated by a right and left hand screw, moving the Knurls toward and from each other. The Knurls will center themselves to the work.

Holder only, 1 x ½ x 6 inches (without Knurls,) each $4.25

Knurls for Above

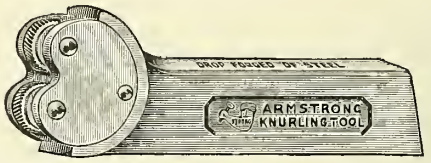


Actual Size

This cut shows the style of work produced by this tool—in ordering be sure to state whether fine, medium, or coarse Knurls are wanted.

Per pair ..... $ .75

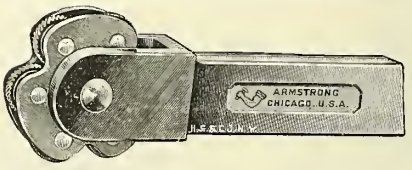
Armstrong
Lathe Tool



A good Knurling Tool should be self centering with as little lost motion as possible, and the knuckle or joint must have ample bearing to resist the severe strains of both end and side thrust. In both of these essentials as well as in general design and high quality of material and workmanship the Armstrong Knurling Tool is unexcelled.

Number	Size, Inches	Each Complete	Extra Knurls Per Pair
1-K	½x1⅛x6½	$4.50	$ .75

Lathe Tool with Revolving Head



The advantages of this tool are apparent at a glance. The revolving head is fitted with three pairs of Knurls, fine, medium and coarse, either of which can be used without the inconvenience and loss of time incident to changing Knurls.

Number	Size, Inches	Each, Complete	Extra Knurls Per Pair
3-K	½x1⅛x6½	$6.00	$ .75

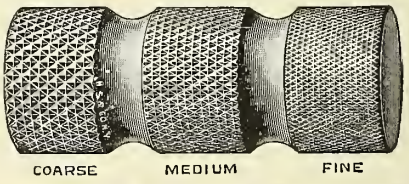
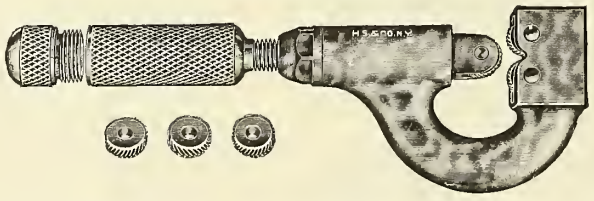


Illustration shows full size Diamond Knurling

Note—Knurls can be furnished coarse, medium and fine in either Straight line or Diamond pattern. Medium Diamond Knurls will be sent with tool when not otherwise specified.

Standard width of Knurl face is ¼ inch, but Knurls with full width face (⅜ inch) will be furnished at regular price when required and so specified.

Wade
Hand Tool



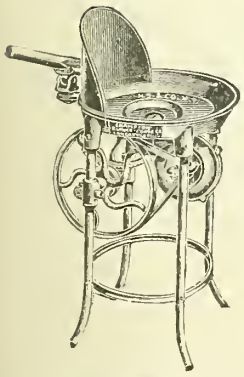
A small Knurling Tool, 7 inches in length, to be held in the hand, and is especially adapted for quick accurate knurling on the smallest possible piece required up to its full capacity of ¾ of an inch in diameter, and is an addition to the kit that makes the eyes sparkle every time it is brought into use, for there is no limit to the length of the pieces which can be knurled, the work being well supported between the three Knurls. The handle from which adjustments are obtained is hollow and contains the extra set of three Knurls, a coarse and fine set being furnished with each Knurling Tool.

Each $5.00

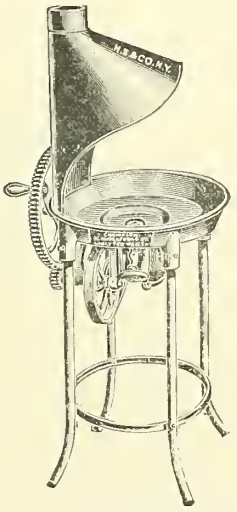
Forges

Champion

Agricultural



With Lever and Shield

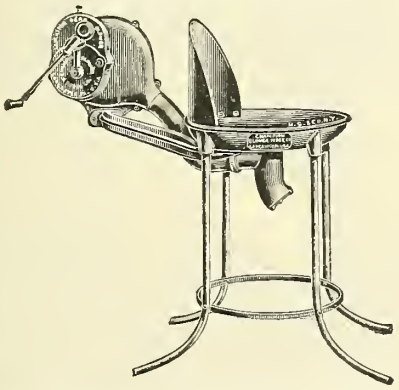


With Crank and Half-hood

Meets the demand of those who wish a strong and rigid forge, not too expensive, and suitable for all light repairing, etc. The size of hearth is 18 inches diameter; fan 8 inches diameter:

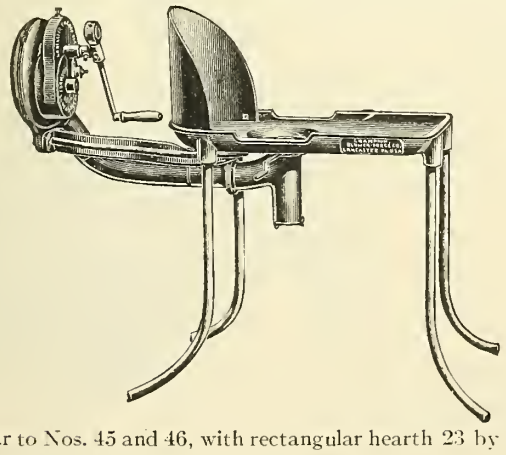
		Each
No. 150.	With lever and shield, weight 75 pounds	$14.00
No. 151.	With lever and half-hood, weight 80 pounds	16.00
No. 152.	With crank and shield, weight 75 pounds	14.00
No. 153.	With crank and half-hood, weight 80 pounds	16.00

Geared Agricultural



A well-built, good blast producer, readily portable. Makes a splendid low-priced rivet forge. Hearth 22 inches diameter; 10-inch fan.

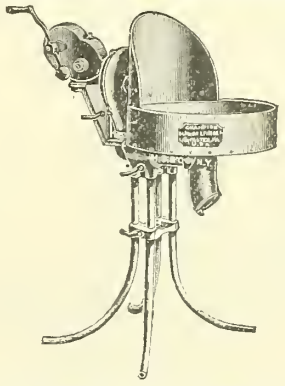
		Each
No. 45.	With shield (as shown), weight 115 pounds	$27.00
No. 46.	With half-hood, weight 120 pounds	30.00



Similar to Nos. 45 and 46, with rectangular hearth 23 by 35 inches; 12-inch fan.

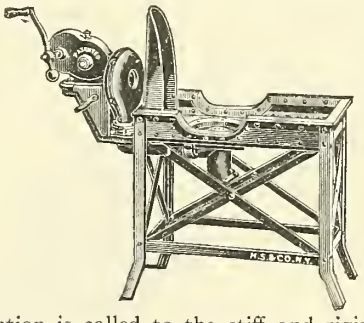
		Each
No. 42.	With shield (as shown), weight 165 pounds	$36.00
No. 43.	With half-hood, weight 170 pounds	40.00

Steel Rivet or Toolmakers



This forge is constructed from structural steel and is very strong and durable. It has a patented high-speed spiral gearing, adjustable ball bearings and runs noiselessly. It will produce blasts to weld 3½ to 4 inches iron in ten minutes. The crank turns either way to produce the blast. The hearth is 18 inches in diameter; the fan 9 inches; height 30 inches.

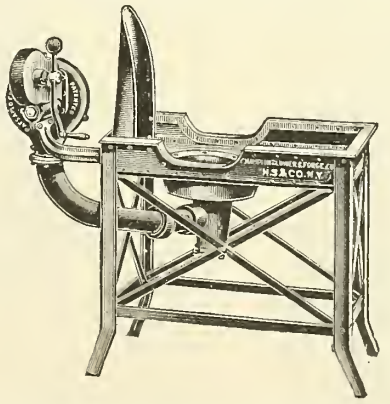
		Each
No. 401.	With shield (as shown), weight 115 pounds	$35.00
No. 402.	With half-hood, weight 120 pounds	38.00
No. 403.	With closed hood, weight 125 pounds	40.00



Special attention is called to the stiff and rigid, yet light, construction of these forges. It is a practical and serviceable forge for railroad, structural, bridge, boiler or toolmakers' work. The blower and gearing may be quickly taken off and boxed where it is necessary to transport the forge any distance. Has the same blower as described above. Hearth 24 by 24 inches; fan 9 inches diameter.

		Each
No. 404.	With shield (as shown), weight 170 pounds	$45.00
No. 405.	With half-hood, weight 180 pounds	49.00

Boilermakers and Machinists



The general specifications of these forges is the same as Nos. 404 and 405. The hearth and fan are larger, the hearth measuring 30 by 30 inches and the fan 10 inches diameter.

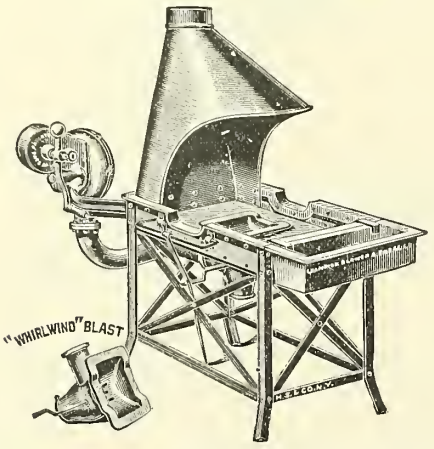
		Each
No. 406.	With shield (as shown), weight 230 pounds	$55.00
No. 407.	With half-hood, weight 240 pounds	60.00

Water Tank, $5.00 extra

Forges and Blowers

Champion

Blacksmiths Steel Forge

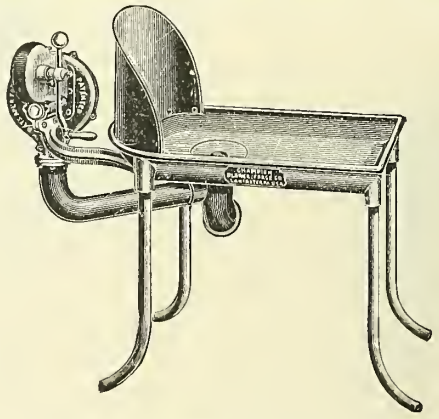


These Forges are equipped with the fan mechanism of the Nos 401, etc., and the "Whirlwind" Anti-Clinker Heavy Nest Tuyere Iron This Tuyere Iron furnishes a true rotary blast, saving time and fuel and providing heat where it is wanted in the hearth. Fan 12 inches diameter

		Each
No. 408	Hearth 30 x 36 inches, weight 300 pounds	$65.00
No. 409	Hearth 30 x 40 inches, weight 310 pounds	70.00

Water Tank, $5.00 extra

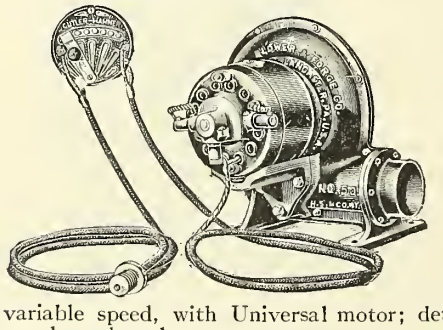
Machinists Cast Iron Hearth Forge



With the same fan mechanism of the Nos. 401, etc. A splendid forge, with the shield, for railroad bridge and boiler work, and, with the Half-hood, for tool dressing and general repair work. Guaranteed to furnish sufficient blast in ten minutes to weld a 4-inch iron with ease.

		Each
No. 434	With Shield (as shown), weight 195 pounds	$40.00
No. 435	With Half-hood, weight 200 pounds	44.00

Electric Blower

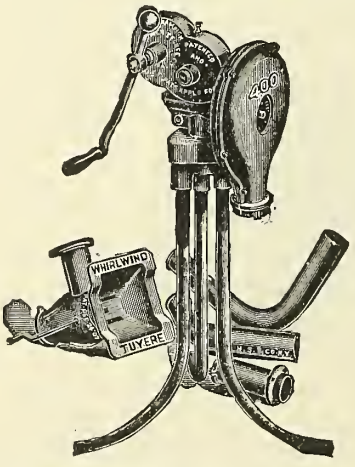


One-fire, variable speed, with Universal motor; detached rheostat giving six speeds, and steel pressure case.

This Blower is furnished with a Universal motor, wound for both alternating and direct current, either 110 or 220 volts. The detached rheostat can be placed wherever desired by the operator. The motor is generously designed, insuring capacity and endurance. They are guaranteed to run the blower at highest speed and greatest pressure open and away from the fire for eight to ten hours without a stop. Weight, 35 pounds.

No. 50	Complete with rheostat, but without cord and attachment plug	$40.00

Blacksmiths Steel Blower



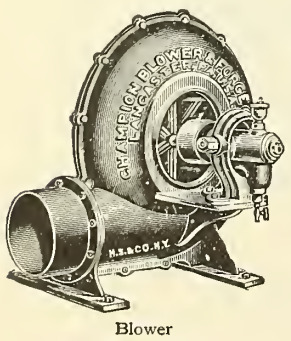
This Blower, with its high speed spiral gearing and adjustable ball bearings will produce a roaring white-heat pressure blast without injury to the gearing or the bearings. The phosphor bronze spiral gear and tool steel spiral shaft make the durability of the blower an absolute certainty even with the most careless handling.

The ball bearings are made of the highest grade tool steel, with cups and cones hardened and ground.

With each blower is furnished a Whirlwind blast, Anti-clinker, Heavy Nest Tuyere Iron. It produces a rotary blast and heats iron one-third quicker, as the heat is not blown through the fire, as in other tuyere irons. The saving in time and coal will pay for the cost of the blower in a short time. Furnished Right Hand (as shown) unless ordered Left Hand. Fan, 12 inches diameter.

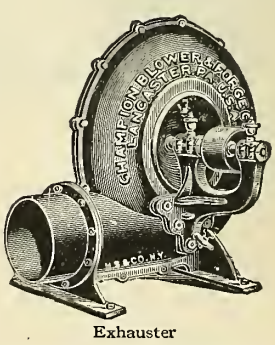
Weights, Blower, 100 pounds; Tuyere Iron, 60 pounds, complete. $37.00

Blowers and Exhausters



Blower

No.	Each	Height, Inches	Inside Diam. of Inlet Inches	Inside Diam. of Outlet Inches	R. P. M. 2-ounce Blast for Boiler Fires	R. P. M. 4-ounce Blast for Forge Fires	Number of Forge Fires	Blower Diam. of Pulley, Inches	Blower Face of Pulley, Inches	Exhauster Diam. of Pulley, Inches	Exhauster Face of Pulley Inches
½	$12.00	12	4½	3½	3,300	4,500	1	2 9/16	1¾	2¼	1½
1	15.00	15	5	4	3,000	4,000	2	3	2	2 9/16	2
2	20.00	18	5¾	4¾	2,600	3,600	4	3	2½	3	2½
3	25.00	21½	6½	5¾	2,300	3,200	6	3½	2½	3½	2½
4	33.00	25½	7½	7½	1,928	2,682	9	4¼	3½	4¼	3½
5	44.00	29¼	9	9	1,638	2,279	15	5⅛	4	5⅛	4
6	55.00	34	10½	10½	1,410	1,961	18	6	4¾	6	4¾
7	70.00	40	12	12	1,194	1,662	24	6¾	5¼	6¾	5¼
8	90.00	45	14	14	1,018	1,417	30	8	6½	8	6½
9	150.00	50	16	16	878	1,234	40	9	8	9	8
10	200.00	57	18	18	766	1,065	52	10	9	10	9

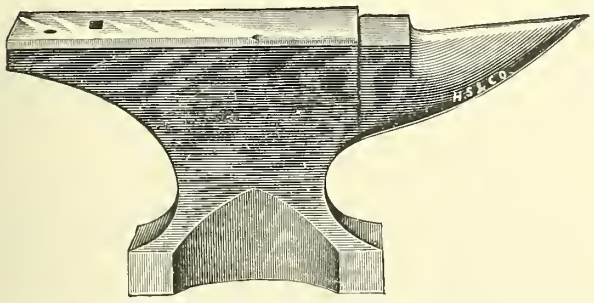


Exhauster

These Blowers and Exhausters are adapted for handling air in large volume and moderate pressure. Their uses are too numerous to detail. They are supplied with Bottom, Horizontal Discharge (as shown) either hand. They can also be furnished with Top Horizontal or Upward Discharge at 10 per cent. advance over price of Bottom Horizontal.

Anvils

Hay-Budden

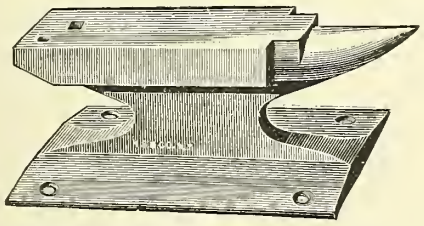


Hay-Budden Anvils are a solid forged steel top welded at the waist to a solid wrought iron base. The entire top being one piece of high grade forged steel, makes it impossible to have a loose face.

Dimensions given are approximate and are not guaranteed. Intermediate weights can be supplied, but we stock only listed weights.

Weight Pounds	Face Inches	Horn Inches	Hardie Hole Inches	Pritchel Hole Inch	Add to Base Price Per Pound
10	2 x 6	3½	½	5/16	15 Cents
20	2¼x 7	4	5/8	3/8	8 Cents
30	2⅜x 8	5	5/8	3/8	5 Cents
40	2¾x 9	6	3/4	7/16	3 Cents
50	3 x 9½	6½	3/4	7/16	2 Cents
60	3¼x10	7	3/4	7/16	1 Cent
70	3⅜x11	7½	3/4	7/16	½ Cent
80	3½x12	8½	3/4	7/16	Base
100	3⅝x13½	9	3/4	7/16	Base
125	3¾x15	10	7/8	9/16	Base
150	4 x16½	10½	7/8	9/16	Base
175	4¼x17	11	1	9/16	Base
200	4½x18	11½	1⅛	11/16	Base
250	4¾x20	12½	1⅛	11/16	Base
300	5 x21	13	1¼	11/16	Base
350	5½x22	13½	1¼	11/16	Base
400	6 x23	14½	1⅜	11/16	Base
450	6½x24	15½	1⅜	11/16	½ Cent
500	6¾x25	16	1½	13/16	½ Cent
600	7 x26	17	1½	13/16	½ Cent
626	7 x26	17	1½	13/16	2 Cents
700	7½x27	18	1¾	7/8	2 Cents
800	8 x28	19	1¾	7/8	2 Cents

Hill, Solid Steel



These Anvils are not cast into this shape, but are forged from solid steel, and have a suitable anvil temper throughout. The horn is two inches long, in addition to length of face; the face, sides and horns are polished, the base japanned.

Number	Length Inches	Width Inches	Weight Pounds	Each
1	5	1½	4	$2.00
2	6	2	5½	2.50
3	7	2	9	3.00

Swage Blocks

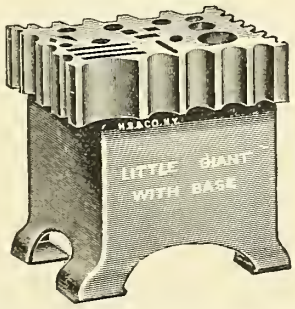
For Machine and Blacksmith Shops

Plain



		Not Planed Each	Planed Each
No. 1	18x18x4 inches	$11.00	$13.00
No 2	15x15x4 inches	7.00	8.50
No. 3	11x11x4 inches	4.00	5.00

With Base



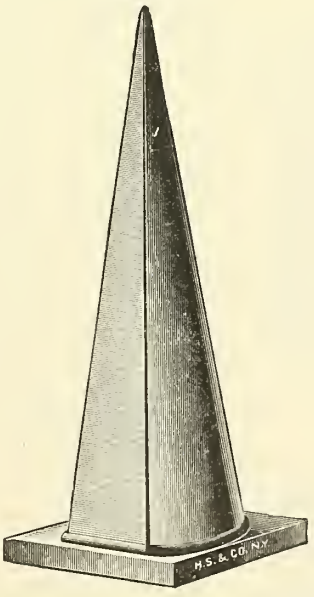
Swage Block and base are cast in one piece. When edges are used base can be tipped so that edge needed will come on upper side.

		Not Planed Each	Planed Each
No. 11	18x18x4x16 inches high	$15.50	$17.50
No. 12	15x15x4x16 inches high	12.00	13.50
No. 13	11x11x4x16 inches high	7.25	8.25

Unless ordered otherwise, Swage Blocks will be sent not planed.

Blacksmith Mandrels

Plain



With Swage Base



Plain

Number	Size of Base Inches	Height Inches	Weight Pounds	Each
1	10	36	90	$6.00
2	10	46	120	7.75
3	12	48	170	11.00
4	16	62	285	16.00

With Swage Base

Upwards of 70 forms and shapes are contained in the Swage Block. Base is 15x15x18 inches, mandrel 35 inches high, making total height 53 inches. Mandrel is flattened one side to permit tongs to grasp work.

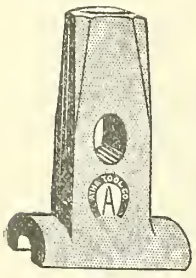
Weight, 450 pounds, each.....$25.00

Blacksmiths Anvil Tools

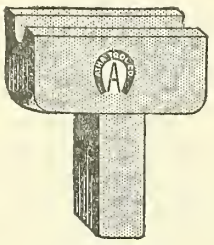
Under this heading are classed such tools as are mainly used in connection with anvils. Those set in a hole in the anvil are termed bottom tools and are made to fit a 1-inch square hole, unless otherwise specified.

All anvil tools have a black japan finish unless otherwise noted.

All weights given are approximate only.



No. 1190



No. 1200

Swages

These are used for shaping, sizing and smoothing round forgings. The sizes given are the diameters of round bars to which the Swages will finish. The length of working groove varies from 2½ to 3½ inches. The groove in the Swage is the section of a circle less than a half.

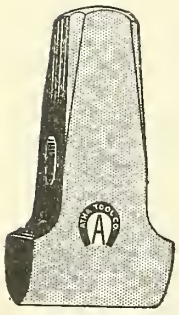
When specially ordered, No. 1200 in all sizes listed can be supplied with shanks ⅞ inch without extra charge; and 1⅛, 1¼, 1⅜ or 1½ inches square at an extra charge.

Top No. 1190

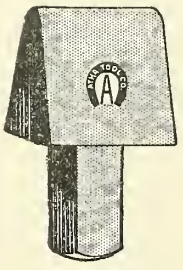
Carried in stock, inches	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½
Weight, pounds	2½	2½	2½	2½	2½	2½	2½	3¼	3¼	3¼	3¾	3¾	3¾	4¼
Each	$ .75	.75	.75	.75	.75	.75	.85	1.00	1.00	1.00	1.15	1.15	1.30	1.30
Carried in stock, inches	1⅝	1¾	1⅞	2	2⅛	2¼	2½	2¾	3	3¼	3½	3¾	4	
Weight, pounds	4¼	4¾	4¾	4¾	4¾	5	5½	5½	5½	6	6	6¾	6¾	
Each	$1.30	1.45	1.45	1.45	1.60	1.60	1.75	1.80	1.95	2.10	2.10	2.25	2.25	

Bottom No. 1200

Carried in stock, inches	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½
Weight, pounds	2	2	2	2	2½	2½	2½	2½	2½	3	3	3	3½	3½
Each	$ .75	.75	.75	.75	.75	.75	.85	1.00	1.00	1.00	1.15	1.15	1.30	1.30
Carried in stock, inches	1⅝	1¾	1⅞	2	2⅛	2¼	2½	2¾	3	3¼	3½	3¾	4	
Weight, pounds	4	4	4½	4½	4½	5½	5½	5½	5½	7	7	7	7	
Each	$1.30	1.45	1.45	1.45	1.60	1.60	1.75	1.80	1.95	2.10	2.10	2.25	2.25	



No. 1210



No. 1220

Fullers

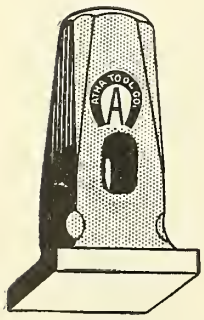
Fullers are used for necking and grooving forgings, and also for drawing down a forging to a smaller section. When specially ordered, No. 1220 in all sizes listed can be supplied with shanks ⅞ inch without extra charge, and 1⅛, 1¼, 1⅜ or 1½ inches square at an extra charge. The sizes given are the diameters of the working edges. The length of working edge varies from 2½ to 3½ inches.

Top No. 1210

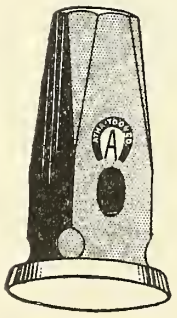
Carried in stock, inches	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛
Weight, pounds	2½	2½	2¾	2¾	2¾	2¾	2¾	2¾	3	3	3
Each	$ .75	.75	.85	.85	.85	.85	.85	.85	1.00	1.00	1.00
Carried in stock, inches	1¼	1⅜	1½	1⅝	1¾	1⅞	2	2¼	2½	2¾	3
Weight, pounds	3½	3½	3½	3½	4	4	4½	5½	5½	6½	7½
Each	$1.05	1.05	1.20	1.20	1.30	1.30	1.45	1.65	1.75	1.95	2.10

Bottom No. 1220

Carried in stock, inches	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛
Weight, pounds	2¼	2¼	2¼	2¼	2¼	2¼	2½	2½	2½	2½	3½
Each	$ .75	.75	.85	.85	.85	.85	.85	.85	1.00	1.00	1.00
Carried in stock, inches	1¼	1⅜	1½	1⅝	1¾	1⅞	2	2¼	2½	2¾	3
Weight, pounds	3½	3½	3½	4	4	4	4½	5½	5¼	5¼	6½
Each	$1.05	1.05	1.20	1.20	1.30	1.30	1.45	1.65	1.75	1.95	2.10



No. 1230



No. 1240

Flatters

For smoothing and finishing flat forgings. No bottom tool is required, the anvil serving as such. The round flatters are available in certain places where the corner of a square flatter would be objectionable.

The size given is the square of the face.

Square No. 1230

Carried in stock, inches	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
Weight, pounds	¾	¾	1	1½	2	2¼	3¼	3½	4½	5	6	7	8
Each	$ .75	.75	.75	.75	.90	1.05	1.20	1.35	1.50	1.80	2.10	2.70	3.00

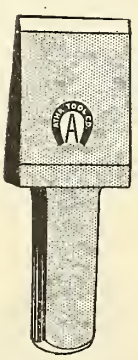
Round No. 1240

The size given is the diameter of the face.

Carried in stock, inches	—	—	—	—	2	—	2½	—	3	—	—	—	—
On special order, inches	1	1¼	1½	1¾	—	2¼	—	2¾	—	3¼	3½	3¾	4
Weight, pounds	½	1	1½	1½	2	2¼	2½	3½	4½	4½	6	7	8
Each	$ .75	.75	.75	.75	.90	1.05	1.20	1.35	1.50	1.80	2.10	2.70	3.00



No. 1310



No. 1310A

Hardies

A Hardie is a tool which sets in the anvil and is used for cutting off forgings.

The first sizes given are the sizes of the shanks, which are always square.

Regular No. 1310

Carried in stock, inches	½	⅝	¾	⅞	1	1⅛	1¼
Width of bit, inches	1⅝	1⅝	1⅞	2	2¼	2¼	2½
Weight, pounds	⅝	1	1¼	1¾	2	2½	2¾
Each	$ .40	.40	.45	.55	.60	.75	.85

Straight No. 1310A

Carried in stock, inches	½	⅝	¾	⅞	1	1⅛	1¼
Width of bit, inches	1½	1⅝	1¾	2	2	2⅛	2 3/16
Weight, pounds	1	1¼	1½	2	2½	2¾	3
Each	$ .40	.40	.45	.55	.60	.75	.85

Blacksmiths Anvil Tools

Punches

Square No. 1260

The first sizes given are the sizes of the punch faces.

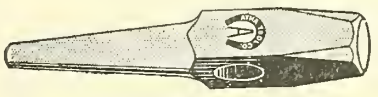
Carried in stock, inches	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Stock at eye, inches	1¼	1¼	1¼	1¼	1¼	1¼	1⅜	1½	1½
Length, inches	7⅜	7¼	6¾	6¾	6¾	6	6⅝	6½	6⅞
Weight, pounds	2	2	2	2	2	2	2¾	3	3½
Each	$ .60	.60	.60	.60	.60	.75	.85	.90	1.05



No. 1260—2 lbs.

Round No. 1270

Carried in stock, inches	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Stock at eye, inches	1¼	1¼	1¼	1¼	1¼	1¼	1 5/16	1⅜	1½
Length, inches	7⅛	7¼	7¼	7¼	7½	7	8	7⅛	7⅜
Weight, pounds	1¾	1¾	1¾	2	2	2	2½	2½	3¼
Each	$ .60	.60	.60	.60	.60	.75	.85	90	1.05



No. 1270—1¾ lbs.

Center No 1181A

Carried in stock. length inches	5
Weight, pound	⅞
Each	$1.15



No. 1181-A.

Countersink No. 1180A

Carried in stock, length inches	5
Weight, pound	⅞
Each	$1.15



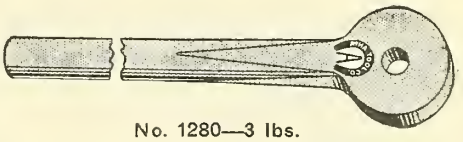
No. 1180-A.

Heading

No. 1280

Used for holding bolts while forming the head. The first sizes given are the diameters of the holes.

Carried in stock, inch	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Length, inches	15	15	15	15	15	15	15	18½	18½	18½
Weight, pounds	3	3	3	3	3	3	3	4½	4½	4¾
Each	$1.00	1.00	1.00	1.00	1.00	1.30	1.30	1.30	1.50	1.50



No. 1280—3 lbs.

Pritchels

No. 1420

For making or enlarging the nail holes in a horseshoe. Used also for handling the shoe.
Carried in stock, ⅝-inch octagon steel, 12 inches long, weight 1 pound.

Each ..... $ .50



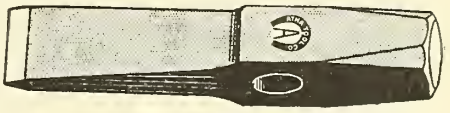
No. 1420.

Chisels

The first sizes given are the widths of the cutting edges.

Hot No. 1300

Carried in stock, inches	1⅜	1½	1⅝	1¾	2	2⅛	2¼	2½
Stock at eye, inches	1	1⅛	1¼	1⅜	1½	1⅝	1¾	2
Length, inches	6	6¾	7⅜	7¾	8¼	9	9¾	10¼
Weight, pounds	1¼	1½	2	2½	3	4	5	6
Each	$ .45	.55	.60	.75	90	1.20	1.50	1.80



No. 1300—3 lbs.

Cold No. 1290

Carried in stock, inches	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞
Stock at eye, inches	1	1⅛	1¼	1⅜	1½	1⅝	1¾	2
Length, inches	4⅞	5¼	5⅞	6⅛	6¼	6⅞	7⅜	7⅜
Weight, pounds	1¼	1½	2	2½	3	4	5	6
Each	$ .45	.55	.60	.75	.90	1.20	1.50	1.80



No. 1290—3 lbs.

Set Hammers

For setting down the metal in a forging to form a square corner at a point where the section changes.
The first size given is the square of the face.

No. 1250

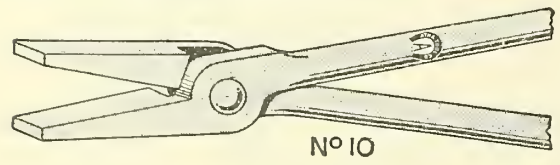
Carried in stock, inches	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2	2½	3
Weight, pounds	1	1¼	2	2¼	3¼	3½	4½	4½	5½	10	15
Each	$ .60	.70	.75	.85	1.00	1.05	1.20	1.35	1.50	2.85	4.65



No. 1250—3lbs.

Tongs

All Atha Tongs are made of solid steel. The weights are approximate only. The sizes given are the lengths over all. In the cuts the handles are broken so as to show the heads sufficiently large to clearly indicate the variations in the different numbers.

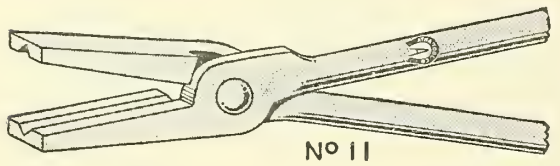


Straight Lip

Used for holding thin flat work. On account of the heavy stock in the jaws, they may be shaped by the blacksmith to suit his individual needs.

No. 10

Carried in stock, inches	14	16	18	20	22	24	26	28	30
Weight per dozen, pounds	27	30	33	35	38	40	43	45	48
Dozen	$6.90	7.20	7.50	7.95	8.55	9.60	10.20	10.80	11.40



Straight Lip, to Hold Squares

These Tongs have a "V" notch in each jaw so that they can firmly hold square or round work, though ordinarily meant for squares. All sizes of this style of Tong are known as Number 11, the letter following the number designating the size of square the jaws will hold.

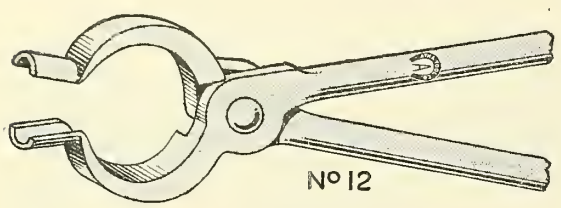
The sizes shown in the table below are carried in stock.

Any combination of length and jaw capacity shown in the table below, as well as squares larger than 2 inches, or Tongs with over all length of 14, 16, 28 or 30 inches, can be furnished on special order, for which prices will be quoted on application.

In ordering, give number, letter and length required.

No. 11A to 11L

Number	To Hold Squares Inch	Over All Length Inches	Weight Per Dozen Pounds	Dozen	Number	To Hold Squares Inches	Over All Length Inches	Weight Per Dozen Pounds	Dozen
11-A	1/4	18	32	$9.00	11-G	7/8	24	39	$12.75
11-B	5/16	18	32	9.00	11-H	1	24	39	12.75
11-C	3/8	20	34	9.75	11-I	1 1/4	24	39	12.75
11-D	1/2	20	34	9.75	11-J	1 1/2	26	42	14.25
11-E	5/8	22	37	11.25	11-K	1 3/4	26	42	14.25
11-F	3/4	22	37	11.25	11-L	2	26	42	14.25



Curved Lip, Fluted Jaws

These are sometimes called Bolt Tongs. They are used for holding bolts or other round work. The opening between the jaws and the hinge allows ample space for the head of a bolt. All sizes of this style of tong are known as Number 12, the letter following the number designating the size of round the jaws will hold.

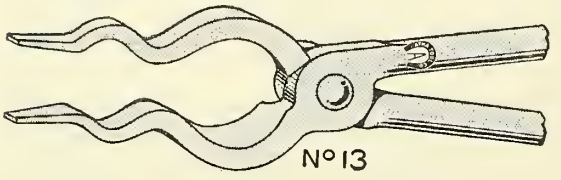
The sizes shown in the table below are carried in stock.

Any combination of length and jaw capacity shown in the table below as well as rounds larger than 2 inches, or Tongs with over all length of 14, 16, 28 or 30 inches can be furnished on special order for which prices will be quoted on application.

In ordering give Number, letter and length required.

No. 12A to 12L

Number	To Hold Rounds Inch	Over All Length Inches	Weight Per Dozen Pounds	Dozen	Number	To Hold Rounds Inches	Over All Length Inches	Weight Per Dozen Pounds	Dozen
12-A	1/4	18	32	$9.00	12-G	7/8	24	39	$12.75
12-B	5/16	18	32	9.00	12-H	1	24	39	12.75
12-C	3/8	20	34	9.75	12-I	1 1/4	24	39	12.75
12-D	1/2	20	34	9.75	12-J	1 1/2	26	42	14.25
12-E	5/8	22	37	11.25	12-K	1 3/4	26	42	14.25
12-F	3/4	22	37	11.25	12-L	2	26	42	14.25

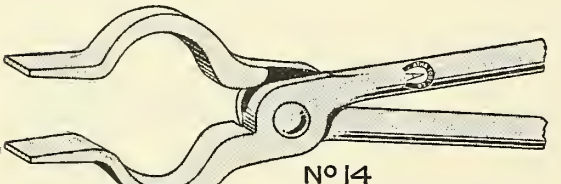


Double Pick Up

Used for picking up hot work, either flat or round.

No. 13

Carried in stock, inches	—	—	18	20	22	24	—	—	—
On special order, inches	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds	25	28	31	33	36	38	41	43	46
Dozen	$10 50	11 25	12 00	12.75	13.50	15 00	16.50	18.00	20.25

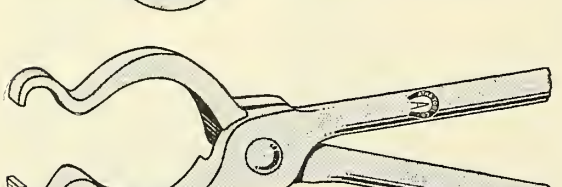


Single Pick Up

For similar use as No. 13. The jaws are larger, consequently will handle heavier work.

No. 14

Carried in stock, inches	—	—	18	20	22	24	—	—	—
On special order, inches	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds	25	28	31	33	36	38	41	43	46
Dozen	$10.50	11.25	12.00	12.75	13.50	15.00	16.50	18.00	20.25



Rivet

Used for handling hot rivets.

No. 15

Carried in stock, inches	—	—	18	20	22	24	—	—	—
On special order, inches	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds	25	28	31	33	36	38	41	43	46
Dozen	$21.00	22.50	24.00	25.50	27.75	30.00	32.25	34.50	36.75

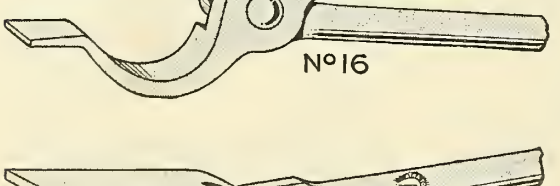


Gad, Flat Jaws

For general forging purposes.

No. 16

Carried in stock, inches	—	—	18	20	22	24	—	—	—
On special order, inches	14	16	—	—	—	—	26	28	30
Weight per dozen, pounds	25	28	31	33	36	38	41	43	46
Dozen	$9.00	9.00	9.00	9.75	11.25	12.75	14.25	15.75	18.00



Lathe Tool

For holding bar stock when forging lathe tools.

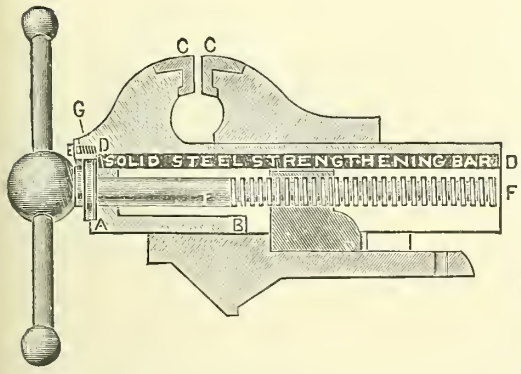
No. 18

Carried in stock, inches	—	16	18	20	22	24	—	—	—
On special order, inches	14	—	—	—	—	—	26	28	30
To hold stock, inches	3/4x3/8	3/4x3/8	3/4x3/8	1x1/2	1x1/2	1 1/4x5/8	1 1/2x3/4	1 1/2x3/4	1 1/2x3/4
Weight per dozen, pounds	26	29	32	34	37	39	42	44	48
Dozen	$21.00	22.50	24.00	25.00	27.75	30.00	32.25	34.50	36.75

SEE DISCOUNT SHEET

Vises

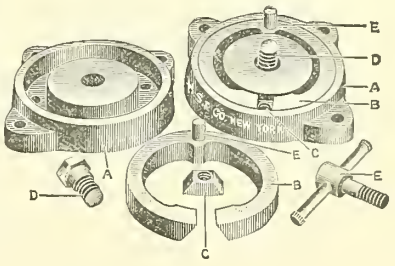
Parker Reinforced Slide



The Vises shown on this page are the strongest and most durable on the market. They are made from a mixture of Bessemer steel and gray iron. This semi-steel is the best material for vise purposes, giving considerably more strength than the ordinary vise castings. All parts are carefully machined.

The cut on the left, representing a half section of vise, shows (D to D) a solid steel strengthening bar inserted the entire length of slide, rendering same practically unbreakable.

Removable and renewable jaw faces (C C) are made of the best tool steel, milled and fitted to the jaws. The solid under portion on front jaw (A to D) which is open in other vises, adds materially to the strength, as does also the one-piece collar and vise screw (G F).



As will be noted from illustration, base "A" is designed with recess to receive expansion ring "B," also has hole in center to receive bolt "D," which is screwed into threaded hole in center of vise flange. The duty of this bolt is to hold base to vise.

The expansion ring "B" is split at one side with wedge shape opening to receive steel wedge "C," and on the other side has a stud "E" perpendicular to face of ring; this stud serving the double duty of keeping the dirt out of recess in base and also centering the wedge "C" in position to receive draw bolt "F."

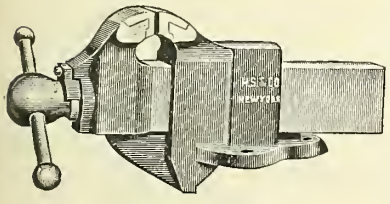
This bolt "F" is operated by small lever on top of vise flange, which turns bolt into wedge "C"; the wedge is drawn up, expanding the ring "B" against the wall of the base "A," forming a positive grip.

This swivel can be operated either from the right or left side of vise by turning out the center bolt "D," lifting vise off base and turning the ring "B" around so that the stud "E" enters the hole on the opposite side, then put draw bolt "F" in hole and turn into wedge "C," after securing base to vise with center bolt "D."

Solid Jaw

The very strong low Jaws are a distinctive feature of this line and have given them the name of Never Break

Stationary Base

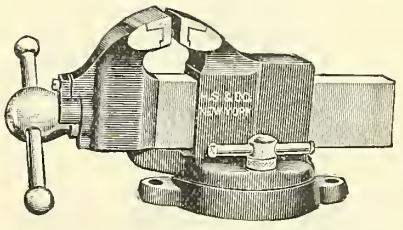


Stationary Base

Number	29	39	49	59	69	79
Jaws, inches	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches	4	6¼	7	8	9	9½
Weight, pounds	31	47	66	81	123	150
Each	$6.25	7.00	9.00	11.75	16.25	24.00

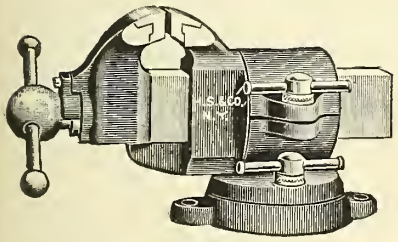
Swivel Base

Number	229	239	249	259	269	279
Jaws, inches	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches	4	6¼	7	8	9	9½
Weight, pounds	36	54	75	95	143	185
Each	$7.00	8.75	11.00	14.50	20.50	30.00



Swivel Base

Double Swivel



Made of ample weight and strength for the most severe work. It is the best general toolmakers vise on the market. It is not necessary to remove the work from the vise jaws; the vise can be swivelled on base, or turned in barrel without touching the vise screw or lever, and is held in position by a turn of the tightening studs.

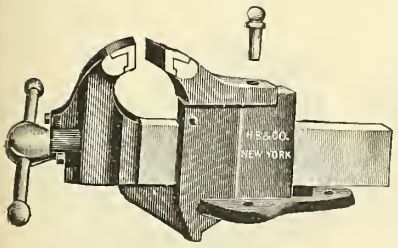
Number	429	439	449
Jaws, inches	3¼	3¾	4¼
Opens, inches	3¾	6	7¼
Weight, pounds	45	69	86
Each	$12.50	14.50	16.50

Victor

With Self-adjusting Back Jaws

Similar to the line above but somewhat lighter in construction and with higher Jaws, permitting a deeper grip

Stationary Base

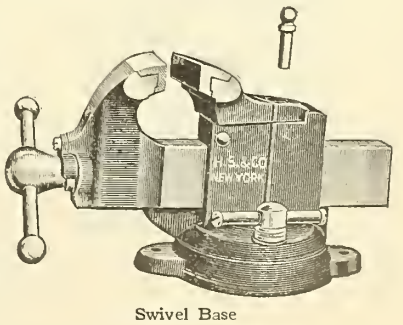


Stationary Base

Number	370	371	371½	372	373	374	375
Jaws, inches	3¼	3⅝	4	4½	5	5½	6¼
Opens, inches	3⅜	5	5	6	7	9	9¾
Weight, pounds	25	40	43	59	73	98	150
Each	$6.50	7.00	9.00	10.00	14.00	17.00	24.00

Swivel Base

Number	270	271	271½	272	273	274	275
Jaws, inches	3¼	3⅝	4	4½	5	5½	6¼
Opens, inches	3⅜	5	5	6	7	9	9¾
Weight, pounds	32	49	54	69	86	117	170
Each	$7.00	8.50	10.50	12.50	16.00	19.00	27.00

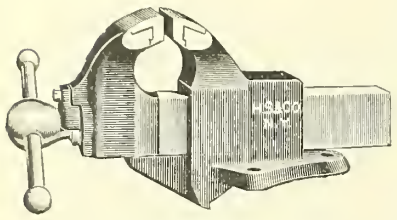


Swivel Base

Vises

Parker Improved Semi-Steel

Built the same as Solid Jaw line on preceding page but without steel strengthening bar, and somewhat lighter. The jaws are higher, which permit a deeper grip.



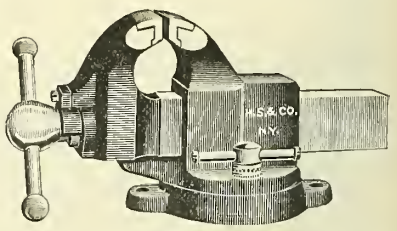
Stationary Base

Stationary Base

Number	3-0X	1X	2X	3X	4X	5X
Jaws, inches	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches	4¼	5½	6½	8¼	9½	10½
Weight, pounds	29	45	58	76	112	150
Each	$6.25	7.00	9.00	11.75	16.25	24.00

Patent Swivel Base (See preceding page)

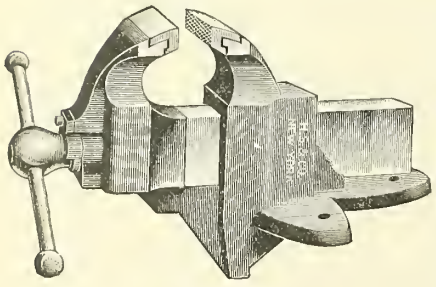
Number	21X	22X	23X	24X	25X	26X
Jaws, inches	3¼	3¾	4¼	4¾	5½	6¼
Opens, inches	4¼	5½	6½	8¼	9½	10½
Weight, pounds	33	52	69	88	129	176
Each	$7.00	8.75	11.00	14.50	20.50	30.00



Swivel Base

Parker Eclipse

Similar to line above, somewhat lighter in construction and made of high grade gray iron castings, instead of semi-steel; unequalled at the price

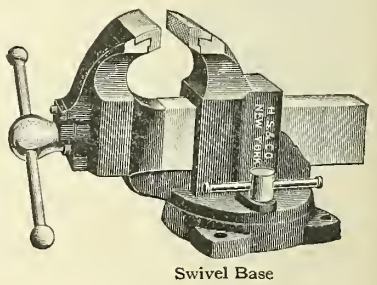

Stationary Base

Stationary Base

Number	102	103	104	105	106	107
Jaws, inches	3	3½	4	4½	5	6
Opens, inches	4	5	6	6½	7½	10
Weight, pounds	23	35	43	61	82	133
Each	$6.00	7.00	8.50	10.00	13.00	25.00

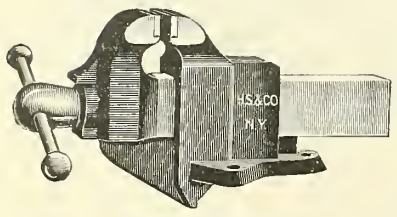
Patent Swivel Base (See preceding page)

Number	201	202	203	204	205	206	207
Jaws, inches	2½	3	3½	4	4½	5	6
Opens, inches	3	4	5	6	6½	7½	10
Weight, pounds	18½	27	42	58	76	104	158
Each	$5.25	7.50	8.75	10.50	12.50	16.00	30.00


Swivel Base

Parker Trojan

A low cost line, made of good material, unfinished



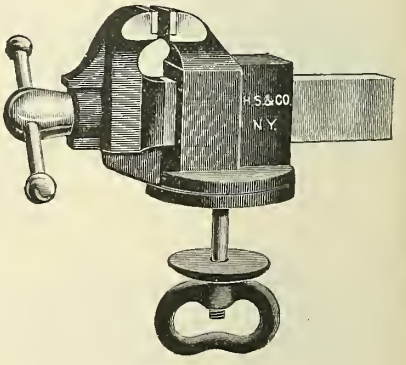
Stationary Base

Stationary Base

Number	700	701	702	703	704	705	706	707	708
Jaws, inches	2	2½	3	3½	4	4½	5	5½	6
Opens, in.	3	3½	4½	4⅝	5¼	6½	7	8	8½
Weight, lbs.	5¾	11¾	24½	28½	41	56	68	93	126
Each	$4.00	5.00	6.00	7.00	8.50	10.00	13.00	18.50	25.00

Swivel Base

Number	720	721	722	723	724	725	726	727	728
Jaws, inches	2	2½	3	3½	4	4½	5	5½	6
Opens, in.	3	3½	4½	4⅝	5¼	6½	7	8	8½
Weight, lbs.	6½	14	26	33	47	64	76	101	135
Each	$4.50	5.50	7.50	8.75	10.50	12.50	16.00	22.00	30.00



Swivel Base

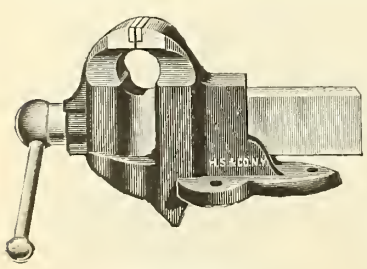
Starrett Improved

With Check or Smooth-Faced Tempered Steel Jaws

The handle does not slide through the screw-head. The handle, after the jaws are tightened onto the work, may be turned to any position out of the way, without turning the screw. A workman, on duplicate parts, will appreciate the value of this improvement. The jaws also may be tightened more firmly on the work, as the operator can select the position of greatest leverage.

The Swivel Base Vise has all the improved features of the Solid Base Vise and has in addition the improved swivel locking device which consists of a corrugated headed bolt engaging correspondingly corrugated base fastened to the bench. Loosening the nut on the bolt and pressing down against a weak spring one-eighth inch or so will release the corrugated connection, when the vise can be swiveled to any desired angle and quickly locked by turning the nut connected with a lever handle. Holding the lever upright, the nut can be speedily rotated by thumb and finger, then dropped and used to give the locking grip which will hold firmly.

The swivel base cannot be slipped after the clamp nut is tightened by the hand. The bolts can be pulled out of the bench or the ears broken off the sides of the vise, and even then the swivel will not slip. This swivel vise is as rigid as a stationary base vise.



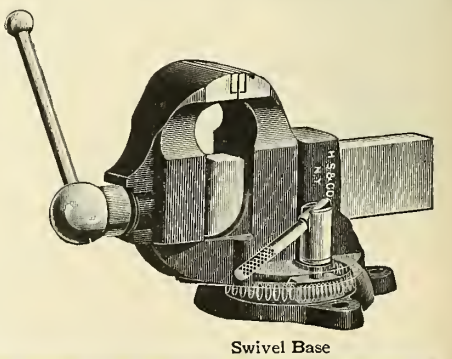
Stationary Base

Stationary Base

Number	705	707	709	711	713	715	717
Jaws, inches	2⅛	2½	3	3½	4	4½	5
Opens, inches	2	2¾	3½	4	5	6	7
Weight, pounds	6	10	16½	27	40	54	68
Each	$3.75	4.50	5.50	7.00	8.50	10.00	13.00

Swivel Base

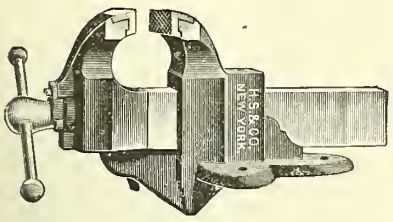
Number	704	706	708	710	712	714	716
Jaws, inches	2⅛	2½	3	3½	4	4½	5
Opens, inches	2	2¾	3½	4	5	6	7
Weight, pounds	7½	11½	19	31	49	66	85
Each	$4.25	5.50	7.00	8.75	10.50	12.50	16.00



Swivel Base

Vises

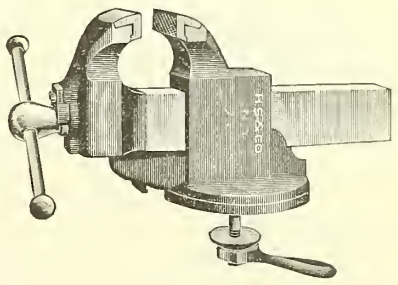
Parker Extra Heavy Railway



Stationary Base

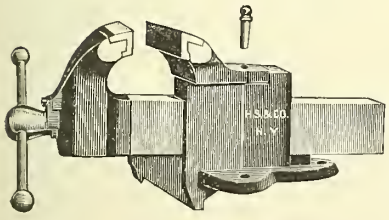
Have removable and renewable jaw faces, solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183. Nos. 600 and 160 are specially adapted for use by railways and machine shops requiring a dependable vise for extra heavy work. Nicely proportioned and very strongly made of high grade gray iron castings. Do not have steel strengthening bar.

	Number	Jaws Inches	Opens Inches	Weight Pounds	Each
Stationary Base	600	8⅛	12½	240	$45.00
Swivel Base	160	8⅛	12½	250	50.00



Swivel Base

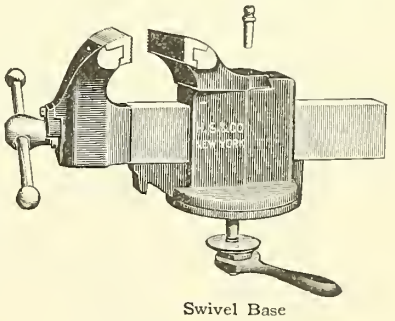
Victor—With Self-adjusting Back Jaws



Stationary Base

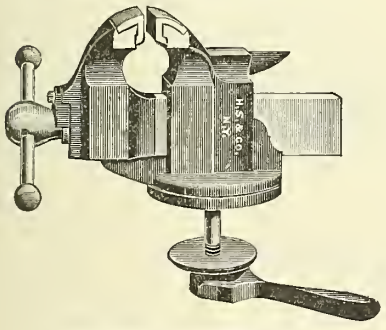
Semi-steel castings, steel strengthening bar, removable and renewable jaw faces, solid under portion on front jaw and one piece collar and vise screw, as explained on page 183.

	Number	Jaws Inches	Opens Inches	Weight Pounds	Each
Stationary Base	340	7½	12	185	$30.00
Swivel Base	240	7½	12	200	35.00



Swivel Base

Parker Swivel with Anvil

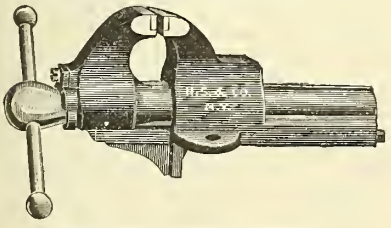


Semi-Steel, Cast Steel Anvil

Nos. 19 and 20 have inserted steel jaw faces; Nos. 21 and 22 have removable and renewable jaw faces, and the entire line have solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183.

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
19	2	2¼	8	$4.00
20	2¼	2¼	8½	5.00
21	3⅛	4	23	7.00
22	3⅝	4¼	35	8.75

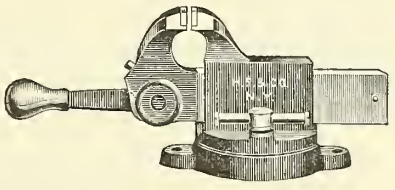
Parker Oval Slide

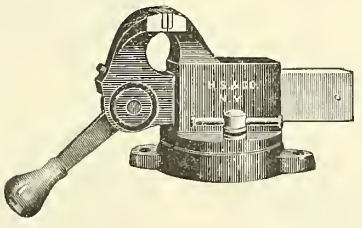


Hard Steel Inserted Jaw Faces
Low priced. Fair quality

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
030	2⅜	2¾	8	$2.25
30	2⅝	3¾	8½	2.50
31	3	4	13	3.00
32	3¼	4	19	4.25
33	3½	4	22	4.75
34	4	4	28	6.50
35	4¾	4¼	35	9.50
36	5¼	5	62	12.00

Parker Quick Action Semi-Steel





These Vises are the most convenient and quick working ever devised. The only Vises that grasp any size work by one motion of the hand and which can be used with either right or left hand with equal facility.

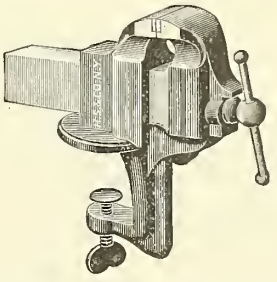
The jaws are moved by simply raising the lever to the horizontal position as shown in upper cut. The work is grasped by depressing the lever.

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
90	2	2	8	$5.00
92	3	3⅛	25	8.50
94	4	4¾	43	12.50
98	4	7¾	48	14.00

Note—No. 98 has Coachmakers Jaws

Standard Clamp

With Smooth Faced Tempered Steel Jaws

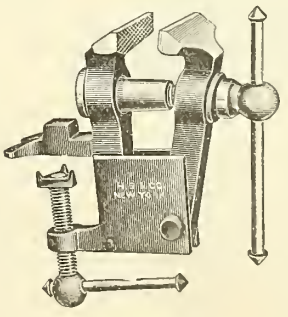


An exceptionally good Vise for very light work

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
3	1⅛	1¼	1½	$1.40
5	2⅛	2	5¾	3.15
*6	1⅝	1¾	2¾	2.00

*No. 6 has special deep clamp, which can be used on bench tops 2¼ inches thick.

Imported Clamp

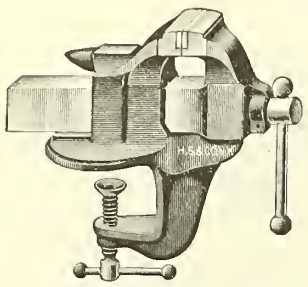


Solid Steel

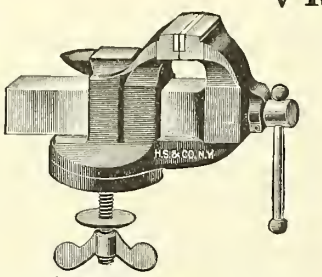
Number	Jaw Inches	Opens Inches	Weight Pounds	Each
171	2¾	1¾	4	$2.90

Vises

Jersey



Clamp Base



Swivel Base

"Jersey" Vises are made especially for light work and makers of small tools. They are strong and substantial. Only the best materials are employed in their construction, great care being taken to see that all parts fit accurately.

The Screw (body, head and collar) is turned from one piece of cold rolled steel and has a square, lathe-cut thread. The jaws are ground to insure that they meet squarely when tightened. Both back and front jaws are filed to a fit.

The Clamp Base permits the Vise to be clamped to benches of varying thicknesses up to 2 inches, and the Swivel Base is permanently screwed to the bench, but allows the Vise to be turned to the right or left as desired, and firmly locked by means of a clamping nut.

Clamp Base; Hardened Tool Steel Jaws. Deep Throat

Number	Jaws Inches	Weight Pounds	Each
662	1¾	3½	$1.60
663	2	4½	1.75
664	2¼	6	2.25
665	2½	9¼	2.75

Clamp Base; Plain Iron Jaws

Number	Jaws Inches	Weight Pounds	Each
741	1½	3	$ .70

Clamp Base; Hardened Tool Steel Jaws

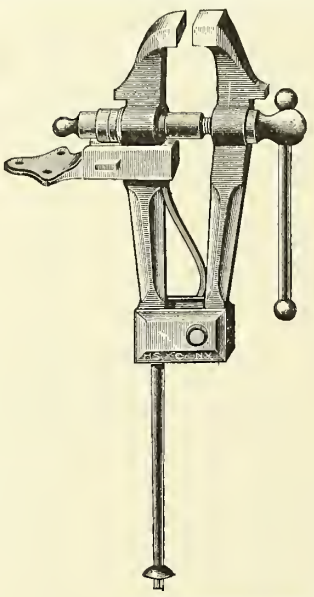
Number	Jaws Inches	Weight Pounds	Each
761	1½	3	$ .95
762	1¾	3¼	1.15
763	2	3½	1.30
764	2¼	4	1.55
765	2½	5	1.85
766	3	8¾	2.50

Swivel Base; Hardened Tool Steel Jaws

Number	Jaws Inches	Weight Pounds	Each
772	1¾	3	$1.25
773	2	3½	1.45
774	2¼	4½	1.75
775	2½	5½	2.10
776	3	9½	2.85

Solid Box Blacksmith

These Vises are of wrought steel, with jaws forged from one piece of special ingot steel and faced with high-grade crucible tool steel.



Number	Length of Jaws Inches	Opens Inches	Each
25	3¼	3¾	$12.00
30	3⅜	3¾	11.00
35	3¾	3¾	10.00
40	4	4	10.50
45	4¼	4¼	11.00
50	4½	4½	11.50
55	4¾	4¾	12.00
60	5	5	13.00
65	5	5	14.00
70	5¼	5¼	15.00
75	5¼	5¼	16.00
80	5½	5½	17.50
85	5½	5½	18.50
90	5¾	5¾	20.00
95	5¾	5¾	21.00
100	6	6	22.00
110	6	6	24.00
120	6½	6½	26.00
130	6½	6½	29.00
140	7	6¾	33.00
150	7	7	36.00
160	7¼	7½	41.50
170	7¼	8	44.50
180	7½	8	47.00
200	8	8	56.00

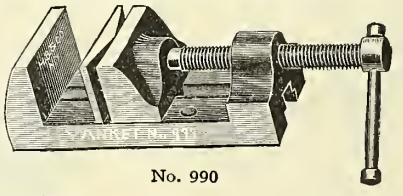
The above numbers also express approximate weights of Vises

Yankee

The body and sliding jaw are of cast iron, accurately machined to hold work square when used either flat or on sides. The sliding jaw has a T-shaped block screwed to its under side, sliding in a T-shaped slot $\frac{5}{16}$ inch wide, insuring parallel movement of jaw.

A removable swivel jaw is provided to hold taper work, and is made of steel, case hardened. The stem has a friction spring to hold jaw in position. The adjusting screw is of steel ½ inch diameter with ¾ inch head to receive sliding bar. The boss on end of body in which screw works is ⅞ inch long. Two countersink holes are provided in base to screw vise to bench if desired.

The base of vise is 6 inches long and 2¾ inches wide. Extreme height 2 inches. The opening of jaws, without swivel jaw, is 3 inches, with swivel jaw 2⅝ inches. Depth of jaws 1⅜ inches. Weight of vise 3¼ pounds.

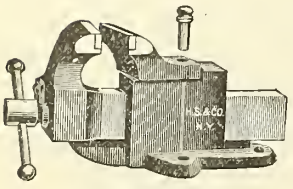


No. 990

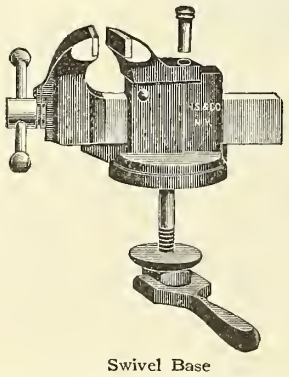
Packed one in paper box measuring
7⅜ x 3⅛ x 2⅛
Net weight, 4 pounds
Gross weight, 4 pounds
3 ounces
Each $2.80

Parker Jewelers

Victor, Semi-Steel



Stationary Base



Swivel Base

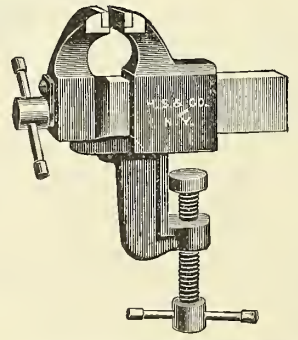
These Vises meet the demand for a small, convenient Vise of high grade construction. They have self-adjusting back jaws for irregular shaped work. Inserted hard steel jaw faces.

Stationary Base

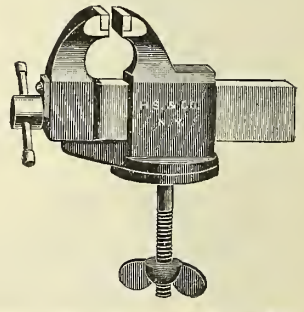
Number	Jaws Inches	Opens Inches	Weight Pounds	Plain Each	Nickel-plated Each
316	1⅞	2	4	$3.50	$5.75
318	2⅛	2¼	5	4.00	6.50

Swivel Base

Number	Jaws Inches	Opens Inches	Weight Pounds	Plain Each	Nickel-plated Each
216	1⅞	2	4½	$4.50	$6.75
218	2⅛	2¼	6	5.00	7.50

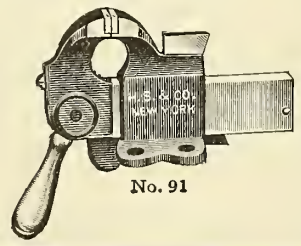


No. 16. With Clamp and Stationary Base



No. 18. With Clamp and Swivel Base

Number	Jaws Inches	Opens Inches	Weight Pounds	Each
16	1½	1¾	2¾	$3.00
18	1½	1¾	2¾	3.50



No. 91

Quick Action

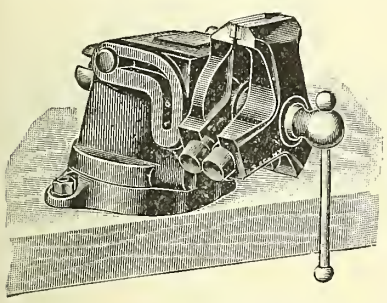
Construction and operation the same as Quick Action series on page 185, except they have anvil with polished right angle for bending—a feature invaluable to watch makers and jewelers and which is not found on other vises. Inserted hard steel jaw faces.

Jaw 2 inches
Opens 2 inches. Weight 2½ pounds
Each $4.00

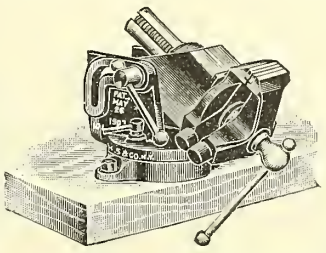
Machinists and Tool Makers Vises

Emmert Universal

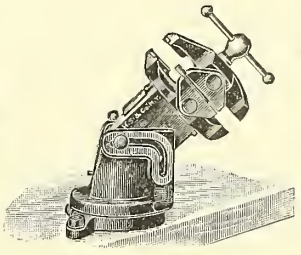
This Vise is so constructed as to be used in any conceivable position, and readily conforms itself to hold irregular-shaped pieces. It is supplied with five pairs of holding jaws: one pair for filing and fitting; one for round or finish work; one for rings, segments, hollow parts or irregular shapes; one for tapers, round or square, and for smaller metal rods; one for holding cylinders, etc. Three of these jaws are shaped on the vise head, any pair of which may be brought into service singly or together in pairs.



In natural position for holding rough castings



At angle, one of the most convenient positions for the tool maker and impossible to obtain in any other vise on the market.

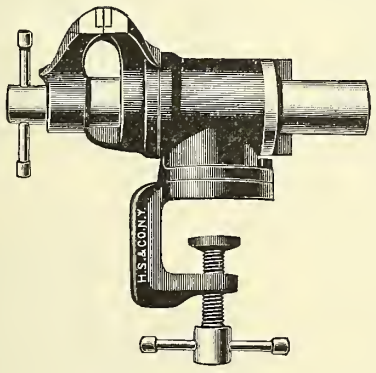


In position to hold tapered work of all descriptions.

Number	Size of Jaws Inches	Opens Inches	Weight Pounds	Each
5A	2	4	15	$7.00
6A	3	5	55	10.00
4A	4	6	100	12.50
10A	6	9	230	22.50

Auto and Motor Boat Vise

F. & R.



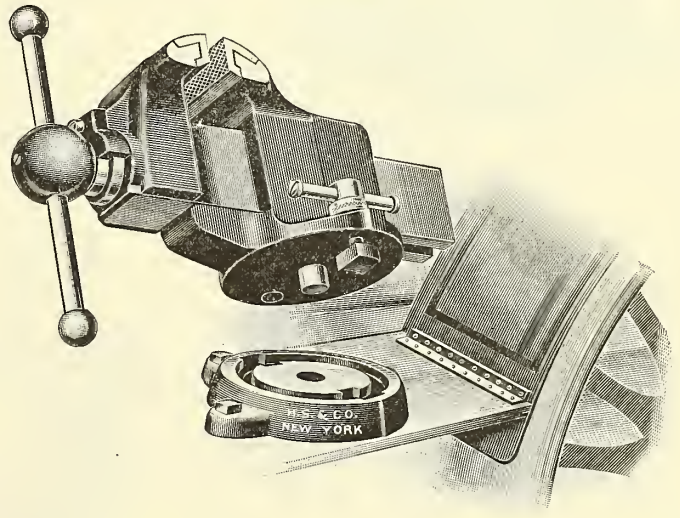
Designed to be quickly fastened to the running board of an automobile or the deck of a boat. It has a combination swivel, giving the most desirable positions for the use of a mechanic. The Vise is locked at any angle by two separate methods, one by clamping the work within the jaws and so tightening the friction, and the other by the use of the position pins. Both methods positively lock the vise in any position.

Width of Jaws Inches	Jaws Open Inches	Weight Pounds
2	2	7½

	Each
Painted, Jaws and Finished Parts, plain	$8.50
Painted, Jaws and Finished Parts, nickeled	10.00

Special Automobile Vises

Parker

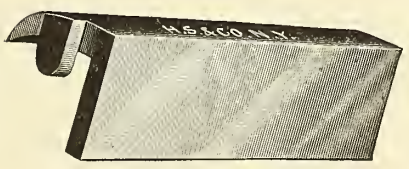


The illustration shows Vise with base bolted to running board of automobile, and with Vise over the base in position for quick adjustment. The adjustment is made by bringing line on vise flange even with line on base, lowering side bolt into base opening and turning vise to position desired. A turn of the tightening stud is all that is necessary to secure the Vise. Exactly the same as 229 line on page 183, except removable swivel.

Auto Number	Jaws Inches	Opens Inches	Weight Pounds	Each
229	3¼	4	36	$7.00
239	3¾	6¼	54	8.75

Finishing Caps for Vise Jaws

Made to cover rough jaw faces, and will not mar or injure finished work that may require clamping in a Vise, but which would be injured by the ordinary face of a Vise. When ordering caps for Vise Jaws, give size of jaw and number of Vise. Highly polished.

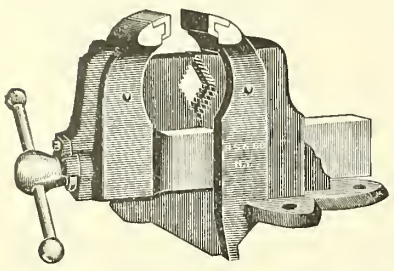


Length of Caps to Fit Vise Jaws, Inches				Brass Pair	Copper Pair
2	2⅛	2¼	2⅝	$ .50	$ .55
3	3⅛	3¼		.55	.60
3½	3⅝	3¾		.60	.70
4	4⅛	4¼		.75	.85
4½	4⅝	4¾		.80	.90
5	5¼	5⅜		1.00	1.15
	5½			1.50	1.65
6	6⅛	6¼		2.00	2.25
	6½			2.50	2.75

Combination Pipe Vises

Parker Reinforced Slide

Semi-steel casting, steel strengthening bar, removable and renewable jaw faces, solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183.



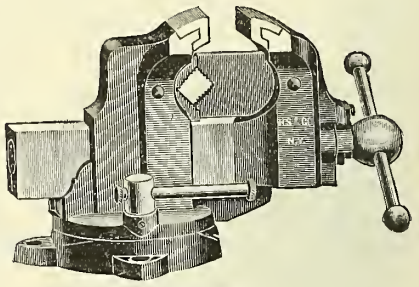
Stationary Base

Stationary Base

Number	Weight Pounds	Jaw Inches	Open Inches	Holds Pipe Inches	Each
88½	94	4¾	6½	4	$28.00
89½	141	5⅜	9½	6	35.00

Patent Swivel Base. (See page 183)

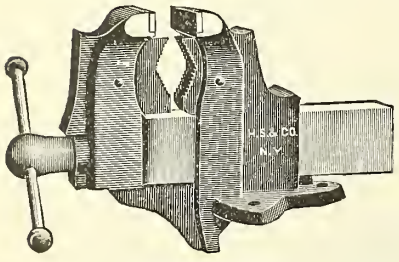
Number	Weight Pounds	Jaw Inches	Opens Inches	Holds Pipe Inches	Each
87	41	3⅝	4¾	2	$16.00
88	59	4⅛	6	3	20.00
288½	105	4¾	6½	4	28.00



Swivel Base

Parker Competitive

A low cost line made of good material, unfinished



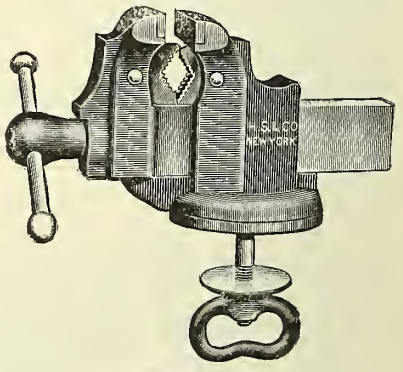
Stationary Base

Stationary Base

Number	Weight Pounds	Jaw Inches	Opens Inches	Holds Pipe Inches	Each
8½	75	4¾	7½	4	$28.00
9½	129	5⅜	10	6	35.00

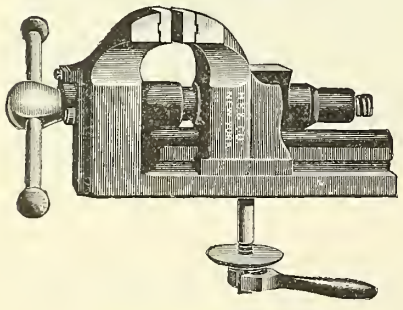
Swivel Base

Number	Weight Pounds	Jaw Inches	Opens Inches	Holds Pipe Inches	Each
7	39	3⅝	5	2	$16.00
8	57	4⅛	6	3	20.00



Swivel Base

Parker No. 650



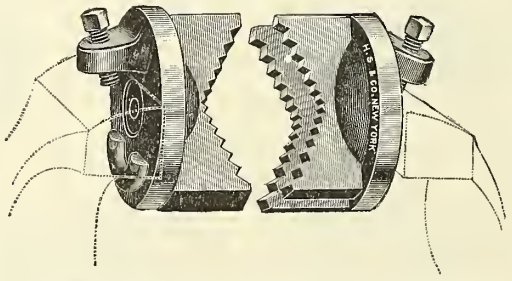
Swivels on the Bench

The faces of these Vise Jaws are made coarse, and will be found equally serviceable for holding all common work, in addition to its use as a Pipe Vise. Removable and renewable tool steel jaw face.

No. 650. Jaw, 5 inches; opens 7½ inches; weight 80 pounds; holds pipe 7 inches. Each..... $12.00

Pipe Grips

Standard



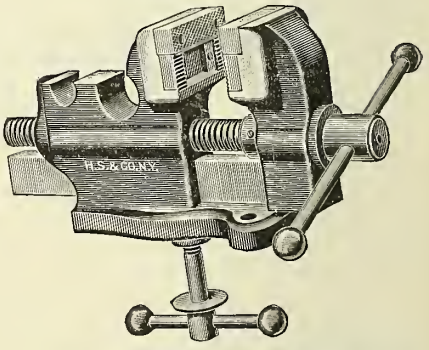
These Grips can be quickly fitted to an ordinary vise, where an occasional pipe job has to be done.

No. 150A. Fits any 3 to 4¾-inch vise, holds ¼ to 2½-inch pipe, per set..... $2.50

No. 150B. Fits any 5 to 6½-inch vise, holds ¼ to 5-inch pipe, per set..... 2.75

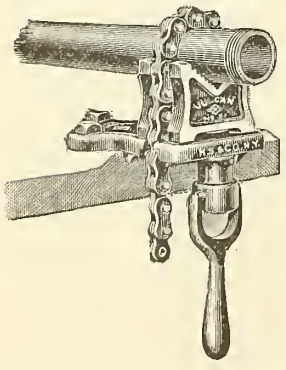
No. 150C. Fits any 7 to 8½-inch vise, holds ¼ to 6-inch pipe, per set..... 3.00

Vanderman



Combines an ordinary vise, pipe vise, anvil and bending form. Jaws may be quickly removed or reversed. Constructed with steel sliding bar.

No.	Holds Pipe Inches	Bends Pipe Inches	Width Jaws Inches	Weight Pounds	Each
0	⅛ to 2½	⅛ to 1	4	49	$15.00
1	⅛ to 7	⅛ to 1½	5	95	20.00
3	⅛ to 10	⅛ to 2	6	155	30.00



Chain Pipe Vises

Vulcan

Drop-forged steel. For holding pipe, bolts, bars, shafts, etc.

This Vise in unbreakable, compact, rapid in action and positive in gripping pipe. It especially replaces the bulky, heavier tools commonly used for service away from work-shop.

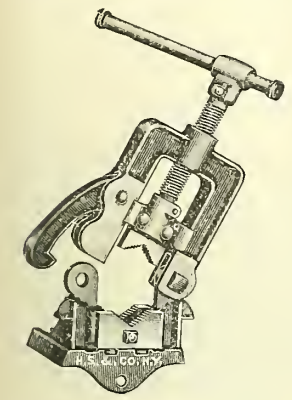
Adjustment is quickly effected by slightly turning the screw, and further quick adjustment is gained by engaging the projecting rivets of chain with a series of bosses on base.

It is made entirely of wrought steel. The drop-forged jaws are of saw-temper for file sharpening. The hand-made chains are of unexcelled quality. All parts are fully guaranteed and interchangeable.

Number	For Pipe Inches	Size Folded Inches	Weight Pounds	Each
1	⅛ to 2	4x 5x 6	4	$3.50
2	¼ to 4	6x 8x 8	10	6.50
3	¾ to 8	8x10x12	30	18.00

Pipe Vises and Fixtures

Armstrong Hinged Vises



Made of best malleable iron, with steel jaws; all parts interchangeable.

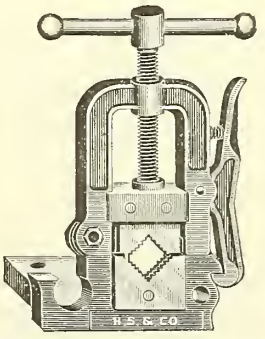
Armstrong

Number	Holds Pipe Inches	Weight Pounds	Each
Junior	⅛ to 1¼	3	$5.00
0	⅛ to 2½	11	8.00
1	⅛ to 2½	16	10.00
2	½ to 4½	30	20.00
3	1 to 6	35	30.00

Vanderman

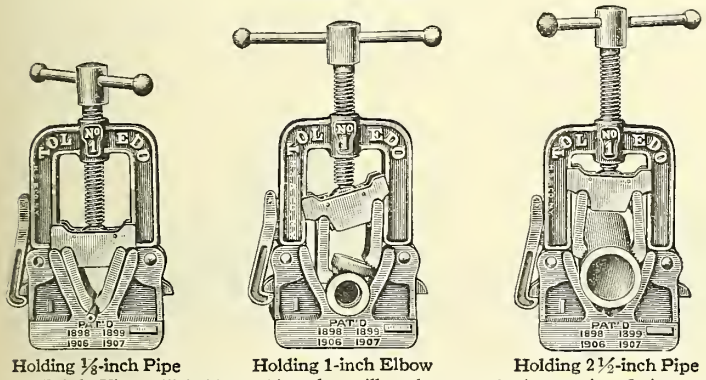
Number	Holds Pipe Inches	Weight Pounds	Each
1	⅛ to 1¼	6	$8.00
2	⅛ to 2	10	9.00
3	⅛ to 2½	18	10.00

Vanderman Hinged Vises



Malleable iron, with tool steel jaws. All parts interchangeable. With bending forms and hammering plate.

Toledo Vises

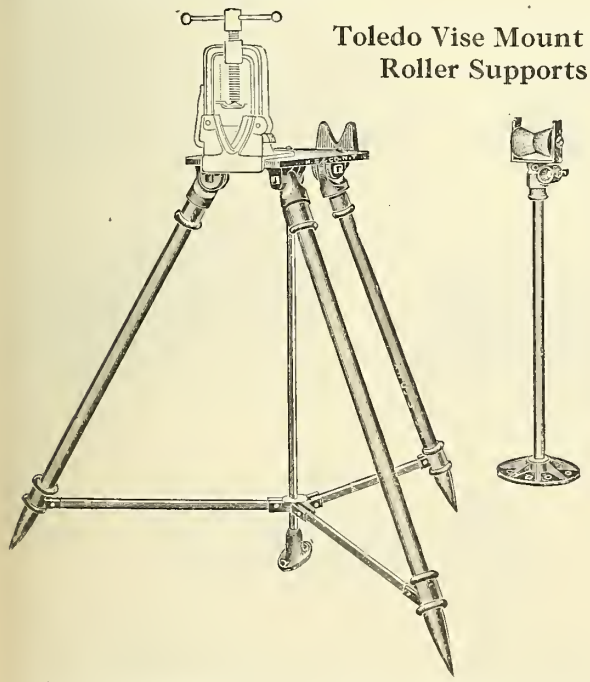


Holding ⅛-inch Pipe — Holding 1-inch Elbow — Holding 2½-inch Pipe

Toledo Vises will hold anything that will go between the jaws—pipe, fittings or valves—will not crush or mar the pipe and will grip absolutely tight with half the pressure required on ordinary vises.

No. 1. Capacity ⅛ to 2½-inch pipe..... $10.00
No. 2. Capacity ⅛ to 4½-inch pipe..... 20.00

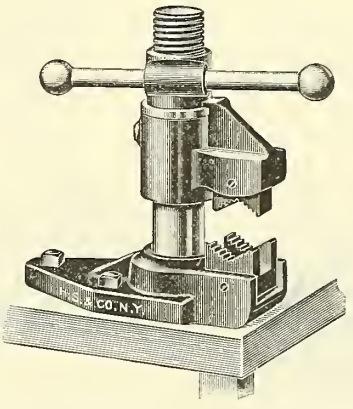
Toledo Vise Mount and Roller Supports



A most acceptable addition to a plumber's or steamfitter's outfit. It folds up and may be thrown in the wagon, taken to the job, and set up in a minute's time, saving the time required to build a bench. The roller support may be fastened to the mount by a length of ¾-inch pipe through sockets provided.

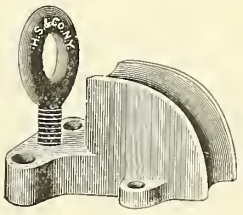
	Each
No. 0. For pipe up to 1¼ inches.....	$12.00
No. 1. For pipe up to 2 inches.....	15.00
No. 2. For pipe up to 4 inches.....	18.00
Roller Support for Nos. 1 and 2, made to fit any vise. Price does not include vise.....	5.00

Twentieth Century Open Side Vises



A strong, convenient Vise, which can be fastened to a bench, post or cart in any position. Made of best materials.

Number	Holds Pipe Inches	Weight Pounds	Each
285	⅛ to 2	8	$5.00
286	⅛ to 3	18	7.50
288	⅛ to 4	40	14.00



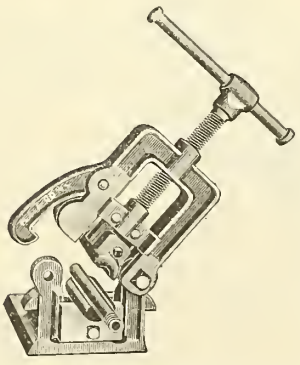
Vanderman Bending Forms

A handy fixture for a pipe bench, indestructible. The extension eyebolt holds work close to form, making a close and accurate bend.

No. 1. Takes ⅛ to 1¼-inch pipe... $3.50
No. 2. Takes 1 to 2-inch pipe..... 4.50

Armstrong Brass Pipe Jaws

For No. 1 Hinged Pipe Vise



Cut shows Jaw placed in vise

The Jaws are intended for holding brass pipe without marring the work.

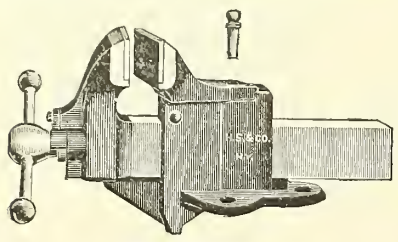
Size	Each
⅝, ¾ or ⅞ O. D. / ⅛, ¼ or ⅜ I. P. size	$ .75
1, 1⅛ or 1¼ O. D.	1.00
1⅜, 1½ or 1⅝ O. D. / ½, ¾ or 1 I. P. size	1.25
1¾, 1⅞ or 2 O. D.	1.50
2⅛, 2¼ or 2⅜ O. D. / 1¼, 1½ or 2 I. P. size	1.75

Woodworkers Vises

Parker

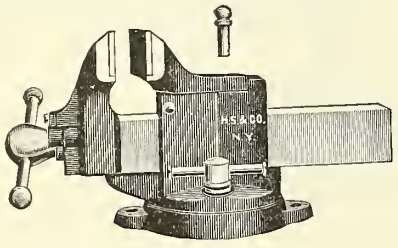
Victor, with Self-adjusting Back Jaws

Semi-steel castings. Steel strengthening bar. Solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183. Inserted steel jaw.



Stationary Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
376	4	7½	35	$8.00
377	4½	9½	59	11.00

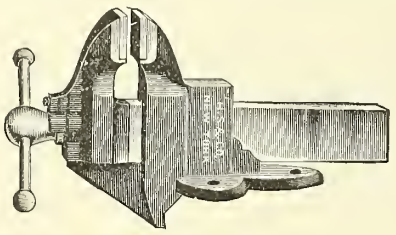


Patent Swivel Base (See Page 182)

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
276	4	7½	40	$9.50
277	4½	9½	65	13.00

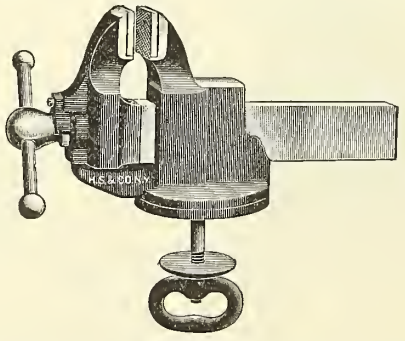
Heavy Coachmakers

Solid under portion on front jaw and one-piece collar and vise screw, as explained on page 183. Strongly made of high grade gray iron castings. Inserted hard steel jaw faces.



Stationary Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
4000	4	8	37	$10.00

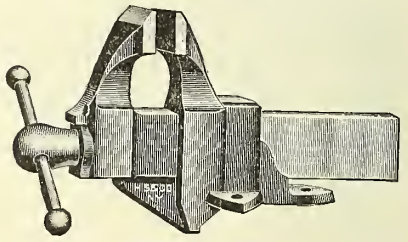


Swivel Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
4600	4	8	43	$12.50

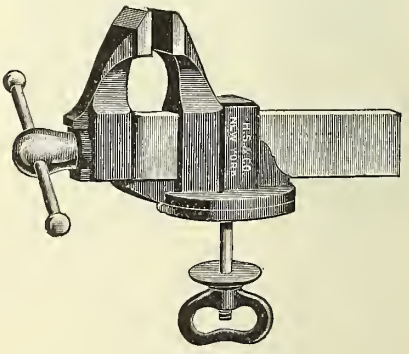
Trojan Coachmakers

A low cost line made of good material, unfinished



Stationary Base

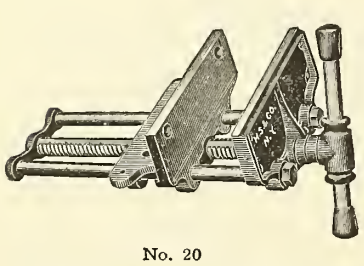
Number	Jaw Inches	Opens Inches	Weight Pounds	Each
740	4½	9⅞	47	$10.00



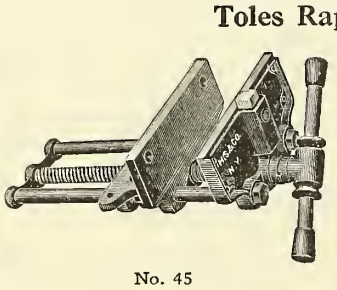
Swivel Base

Number	Jaw Inches	Opens Inches	Weight Pounds	Each
746	4½	9⅞	49	$12.50

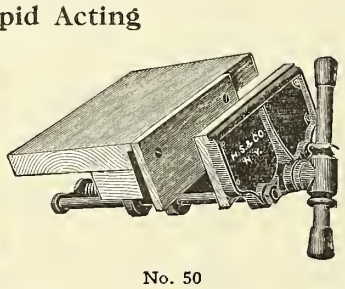
Toles Rapid Acting



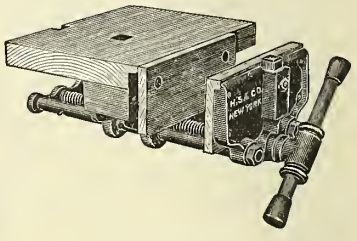
No. 20



No. 45



No. 50



No. 60

Holes through jaws permit wooden faces to be easily attached to Nos. 20 and 45.

The screw of these Vises disengages when the lever is held vertically, making it possible to open or close the Vise instantly, tightening up in the usual manner after the jaws are in contact with the work. The only part that can wear out is the bronze nut, which can be instantly replaced.

No 20. Length of jaws 10 inches; depth of jaws 4 inches; opens 12 inches; weight 36 pounds..... Each $6.50

No. 50. Length of jaws 10 inches; depth of jaws with facing 4½ inches; opens 12 inches; weight 37 pounds. The jaws are faced with maple, which prevents "edged" tools from being damaged by careless pupils, where used in manual training work..... 8.75

No. 45. Length of jaws 10 inches; depth of jaws 4 inches; opens 12 inches; weight 37 pounds; brass dog 1 inch square in front jaw..... Each $8.75

No. 60. Length of jaws 10 inches; depth of jaws with facing 4½ inches; opens 12 inches; weight 39 pounds; brass dog 1 inch square in front jaw, the jaws are faced with maple..... 9.00

These Vises can be furnished every 2-inch opening from 12 to 24 inch. For each additional 2-inch opening add 50 cents to list

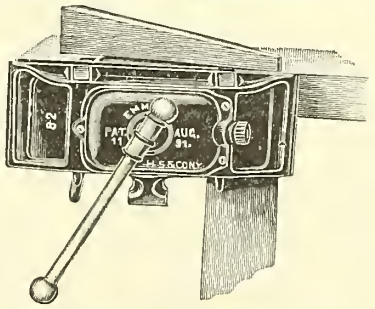
Woodworkers and Pattern Makers Vises

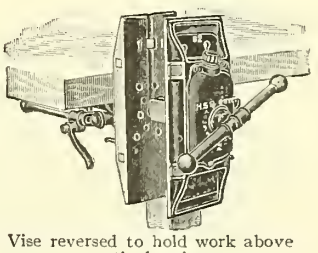
Emmert Pattern Makers Universal

This Vise, when in natural position on the side of the bench, is just flush with the top of the bench. In this position it can be unlocked in an instant and changed into a variety of fixed positions, always presenting the work in a position to enable the mechanic to work with comfort.

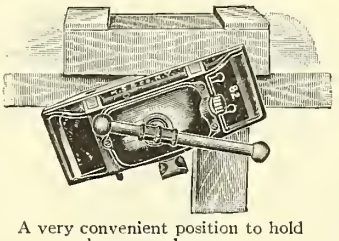
The No. 1 has seven pairs of jaws, any pair of which may be instantly adjusted to the position wanted. One pair of these jaws is 18 inches wide; three other pairs are each 7 inches wide; two others are each 1 inch wide; one 3 inches wide steel faced and slightly roughed for holding metal work. The No. 2 has one pair less of holding dogs so arranged that they may be secreted when not required for service.

Number	Size of Jaw Inches	Opens Inches	Weight Pounds	Each
1	7x18½	14	86	$15.00
2	5x14	12	56	12.50

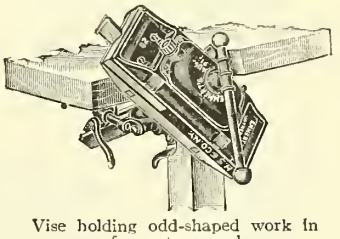




Vise reversed to hold work above the bench

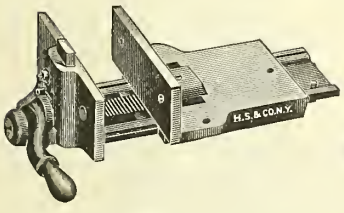


A very convenient position to hold boxes or drawers

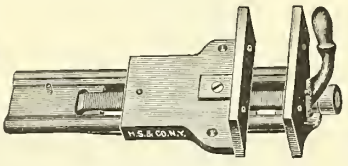


Vise holding odd-shaped work in a form at an angle

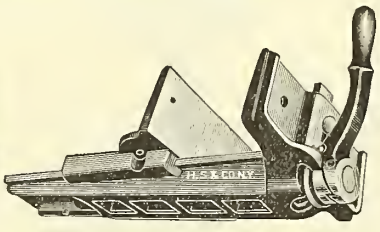
Sheldon Woodworkers, Rapid Acting



No. 3



Nos. 4 and 5

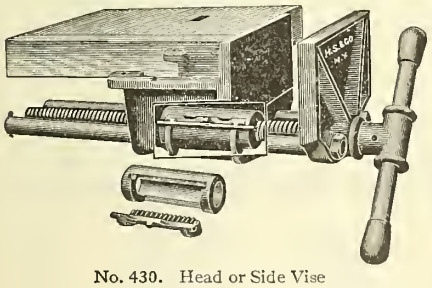


No. 6

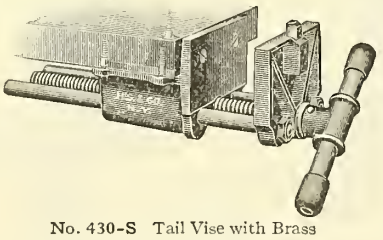
Number	Opens Inches	Jaws Inches	Weight Pounds	Each
3	8½	3x7½	27	$7.00
4	9	3x7½	25	6.00
6	12	4x9	35	9.00

This Vise is constructed on the principle of a Machinists' Vise, the outer jaw and slide being in one piece. When the vise jaw is brought in contact with the work, the first part of the movement of the handle raised the milled rack into engagement with a fourteen-tooth steel section. The following part of the movement draws the front jaw against the work by means of the cam in front of the handle. The movement of the slide is absolutely free when the handle is in a vertical position. Holes through jaws permit wooden faces to be easily attached.

Richards-Wilcox Woodworkers, Rapid Acting



No. 430. Head or Side Vise



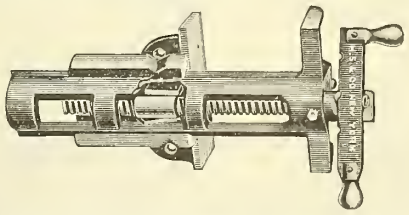
No. 430-S Tail Vise with Brass Stop in Front Jaw

Number	Size	Jaws Inches	Opens Inches	Weight Pounds	Each
430	1	4x7	10	29½	$5.00
430	2	5x10	12	39½	6.00
430-S	1	4x 7	10	29½	5.50
430-S	2	5x10	12	39½	6.50
530	..	2x 3½	5	3¾	3.00

Jaws are furnished with maple faces if desired

This Vise provides instantaneous adjustment, and is continuous in action. Phosphor Bronze Nut engages entire circumference of screw and operates entire length. No pawls, racks or triggers to break or wear. Nut is released and completely disengaged when pressure on work is removed by slight reverse movement of handle. No stripping or cutting of threads. When pressure is applied it causes the nut to engage and lock the screw more firmly and is not held in position by any external mechanism. Screw is 1-inch diameter and has single thread, four to inch, except No. 530, which is ½ inch, 8 threads. Guides are of cold rolled steel. Jaws of best grey iron with working surfaces ground and finished. Special design of ribs on jaw secures minimum deflection under pressure without great weight.

Sheldon Woodworkers, Continuous Screw

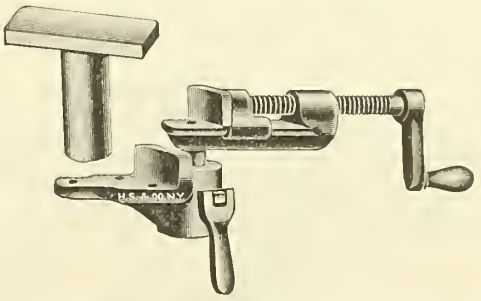


With heavy phosphor bronze nut. Crank of tempered spring steel, with polished malleable iron handles, sliding through a malleable iron collar. The crank can be instantly set to a central position for rapid turning, or to either of the outer positions for great pressure.

Number	Opens Inches	Jaws Inches	Weight Pounds	Each
10	8½	3x7½	27	$7.00
12	12	4x9	35	9.00

Maple facings attached, 25 cents extra.
Rabbetted maple facings, protecting the top as well as the face, 75 cents extra. Allow ⅜ inch to the bench top for this facing.

Sheldon Woodworkers, Swivel Tail

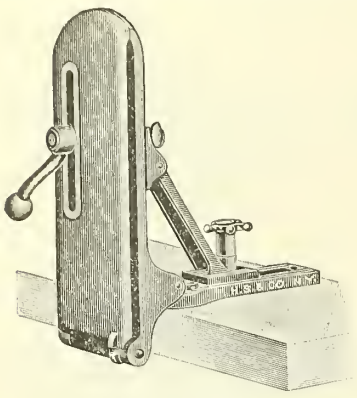


Sliding head ¾ inch high, 3 inches long, held true and rigid by T-slide. Screw 7 inches long with square thread cut from ⅝-inch cold rolled steel. Malleable iron crank. Sliding head can be raised from below to ¾ inch above surface of bench top, or can be swung around against end of bench, entirely out of the way. Weight 8 pounds. Price includes steel bench dog as shown.

Each $1.75

Saw Vises

Adjustable Circular



Vertical Position

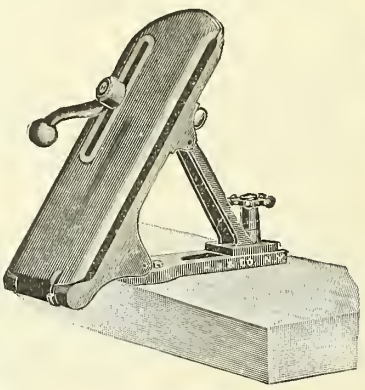
This vise is suitable for either straight or bevel filing, and is especially adapted for saws requiring a nice deep bevel, such as Groover or Dado Heads, Box Board, Matcher Cutters, Novelty Tooth Circular Saws, Mitre Saws, Trimmer Cutters, etc.

It is a very substantial tool, is rigid and firm, and will be appreciated by any one using circular saws or cutters requiring an extra bevel.

Can be used in either a vertical or tilted position, and the adjustment from one position to the other is made quickly.

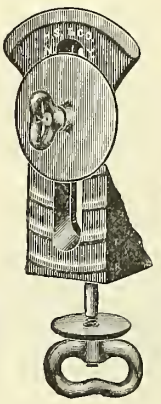
For all diameters up to 18 inches.

Each $6.00



Tilted Position

Parker Circular

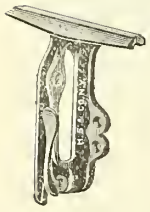


Will file from five to twenty-four-inch saws and is easily and quickly adjusted to different sizes.

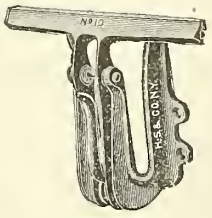
Weight 21 pounds.

No. 47, each.... $2.00

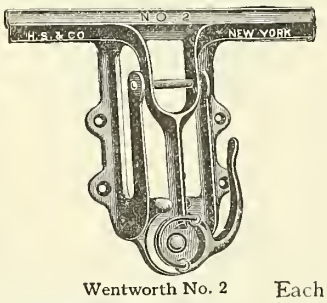
To Screw On



Stearns No. 0



Stearns No. 10



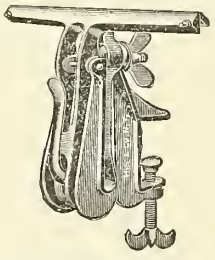
Wentworth No. 2

	Each
Stearns No. 0. Japanned, 9½-inch jaws, adjustable.....	$ .90
Stearns No. 10. Japanned, 9½-inch jaws, adjustable, planed jaw and extra rubber cushioned jaw	1.80
Wentworth No. 2. 15-inch jaws, slightly concave, with rubber cushion or muffler.....	1.50

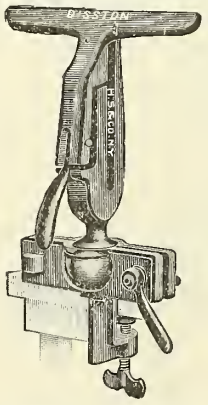
To Clamp On



Stearns No. 3



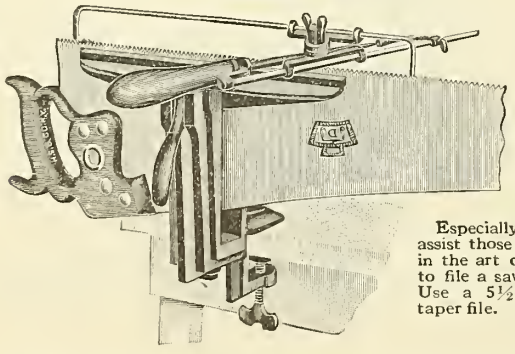
Stearns No. 33



Disston No. 1

	Each
Stearns No. 3. Japanned, 9½-inch jaws, adjustable.....	$1.20
Stearns No. 33. Japanned, 10-inch jaws, planed jaw and extra rubber cushioned jaw, ball and socket joint for adjustment, to any angle.....	2.50
Disston No. 1. Japanned, 9½-inch jaws, ball and socket joint; swivels to any angle.....	1.60

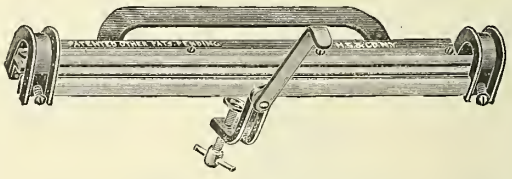
With Saw-Filing Guide
Disston



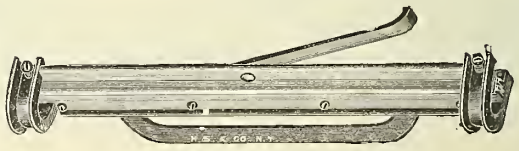
Especially designed to assist those not skilled in the art of saw-filing to file a saw correctly. Use a 5½-inch slim taper file.

No. D 3. Each..... $2.50

All-Steel Folding



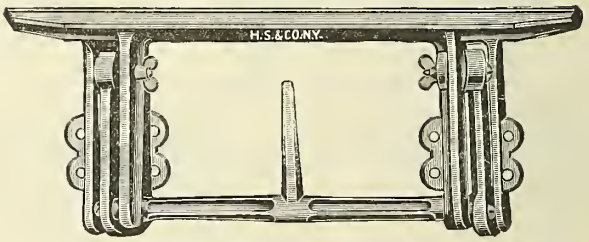
Front View—Ready for use



Back View—Folded

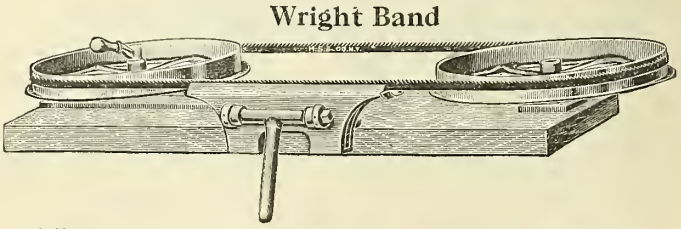
No. 77. 11⅝-inch jaw, black enamel and polished nickel; rubber pad under the back jaw, very compact, light and strong, suitable for use in portable chest or tool box, each..... $1.50

H. S. & Co.



No. 31. 23-inch jaws; for filing hand, band or any other saw, from $\frac{3}{16}$ to 7 inches in width, each..... $9.00

Wright Band

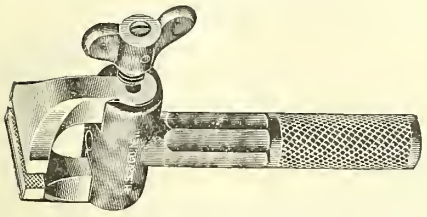


Adjustable for saws of all lengths in widths up to 202½ inches. Rubber-covered wheels, 16½-inch vise.

Vise only, each.....	$9.00
With tool steel jaws, each.....	11.00
Vise complete with wheels, standard, etc,, each.....	18.00

Hand Vises

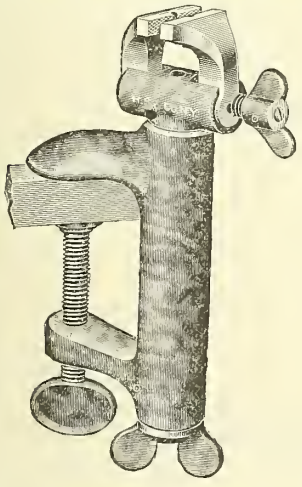
Billings and Spencer



All parts drop-forged; jaws have a positive and parallel closing and opening movement. Has hole through handle and will grasp and hold central round wire from $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter; 6 inches long.

Model BK, opens $\frac{3}{4}$ inch, each..... $4.00

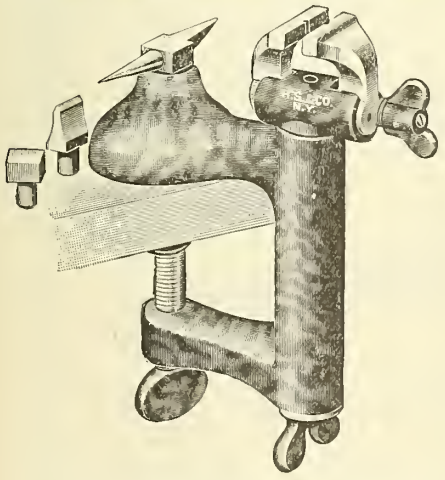
Billings and Spencer Clamp



This tool comprises the Hand Vise BK shown above, and plain clamp. The Vise is easily adjusted to and removed from the clamp. Handsomely finished.

Model BKM, complete, each..... $6.00
Model BM, Clamp only, each..... 2.00

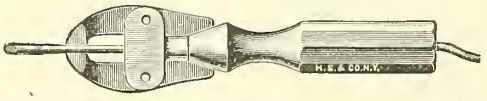
Billings and Spencer Anvil Clamp



Same as Model BKM, with the addition of anvil base, two anvils and hardy. Anvils and hardy are polished.

	Each
Model BKD, complete.....	$9.00
Model BD, without Vise.....	5.00

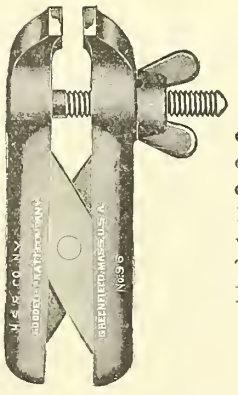
Lowell Pattern



The octagon handle can be clamped in a Vise. Pins and wire $\frac{3}{16}$-inch and smaller can be passed through the handle.

No. 50, hardened steel jaws opening $\frac{3}{8}$ inch. Carbon finish, each..... $1.50

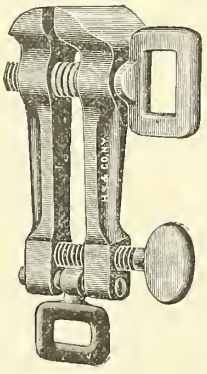
Parallel Jaw



This Vise is made from drop forgings; the faces of the jaws are scored and case-hardened. They are $1\frac{3}{16}$ inches long, $\frac{3}{8}$ inch wide and open $1\frac{3}{8}$ inches. Tool is $4\frac{1}{2}$ inches long.

No. 96, each..... $1.50

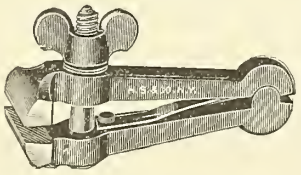
Billings and Spencer Lineman



Drop-forged from bar steel; jaws specially hardened. Movement is parallel. An opening is left in head of thumbscrew for extra purchase with lever if desired.

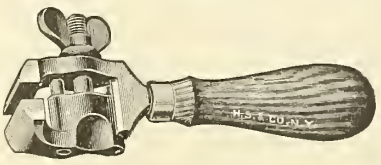
	Each
No. 1, with Loop...	$2.50
No. 2, without Loop	2.25

German



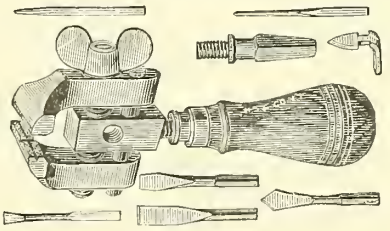
Length over all, ins.	3½	4	4½	5
No. 1230½, black per dozen.....	$7.50	7.50	7.50	9.00
No. 1230AY black best quality, per dozen.....	9.60	9.60	9.60	14.00

Boss



No. 540A, polished, $1\frac{1}{4}$-inch jaws; opens $\frac{3}{4}$ inch, each..... $ .75

Alford



No. 1

Length, $6\frac{3}{4}$ inches; width of jaws, $1\frac{1}{4}$ inches; jaws open, $1\frac{1}{8}$ inches; packed one in a pasteboard box; each..... $1.75

Cocobolo handle; jaws of forged and tempered steel; screw of steel; exposed metal surfaces polished and nickeled. Detachable, hollow handle, with screw cap, containing chisel, screw-driver, countersink, square reamer, brad awl, scratch awl, and washer cutter. Handle may be screwed into the Vise at right angles. Bit shank to be screwed into the tool either in the position of the handle, as shown in the illustration, or at right angles, permitting the vise to be used in a bit brace.

Bullock



No. 748A, 3 inches, black, $\frac{13}{16}$-inch jaws, $6\frac{1}{4}$ inches over all, each..... $ .60

Pin Vises

Starrett



Powerful jaws, hardened. Hole entirely through handle.

	Each
No. 162A, 0 to .040 inch.....	$.55
No. 162B, .030 to .062 inch.....	.55
No. 162C, .050 to .125 inch.....	.55
No. 162D, .115 to .187 inch.....	.75

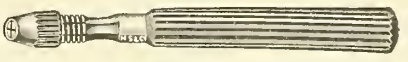


Billings

Drop-forged. Parallel movement. Hole through handle. Opens $\frac{3}{16}$ inch.

Model BKK, each..... $2.00

H. S. & Co. Ebony



Fluted Ebony Handle. Polished Steel Chucks

Length $3\frac{1}{2}$ inches; diameter of handle $\frac{5}{16}$-inch; holds drills No. 60 and smaller, each..... $ .40

Length $4\frac{1}{4}$ inches; diameter of handle $\frac{7}{16}$ inch; holds drills No. 54 and smaller, each..... .50

Lowell-Regular



Nickel-plated Forged Jaws; hole through handle, each..... $1.25

Drop-Forged Wrenches

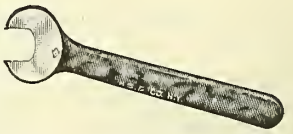
Williams



Semi-finished forgings are milled, case-hardened (no color) all over and have heads ground bright
Unless otherwise specified Finished Wrenches will be supplied



Finished forgings are milled, polished all over; case-hardened (mottled) and lacquered—heads bright



Unfinished forgings are milled only

Stock Milling. All wrenches are milled somewhat larger than stated in tables, to allow for proper clearance and variation.

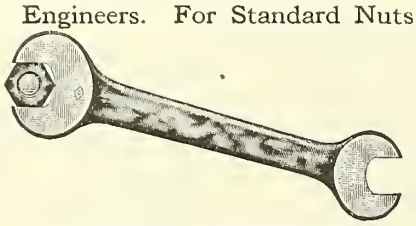
Special Milling to order, without extra charge in lots of 50 or more of a size. A sample nut or screw, as gauge, should accompany orders.

Special Wrenches made to order. Prices will be quoted upon receipt of models or drawings and specifications stating kind of finish (see above description) and quantity required.

Whitworth standard, metric measure or special openings milled to order.

When ordering please use numbers and state whether Unfinished, Semi-finished or Finished Wrenches are desired.

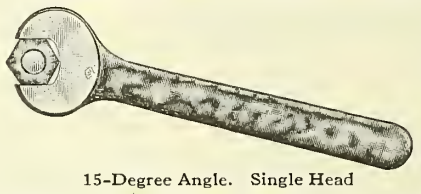
Engineers. For Standard Nuts



15-Degree Angle. Double Head

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
21	1/8 & 3/16	5/16 & 13/32	3 1/2	3/16 & 3/16	$ .12	$ .18	$ .24
22	1/8 & 1/4	5/16 & 1/2	4	3/16 & 1/4	.13	.20	.26
23	3/16 & 1/4	13/32 & 1/2	4	1/4 & 1/4	.14	.21	.28
24	3/16 & 5/16	13/32 & 19/32	4 7/8	1/4 & 9/32	.16	.24	.32
25	1/4 & 5/16	1/2 & 19/32	4 7/8	9/32 & 9/32	.18	.27	.36
26	1/4 & 3/8	1/2 & 11/16	5 7/8	9/32 & 5/16	.20	.30	.40
27	5/16 & 3/8	19/32 & 11/16	5 7/8	5/16 & 5/16	.22	.33	.44
28	5/16 & 7/16	19/32 & 25/32	6 7/8	5/16 & 11/32	.24	.36	.48
29	3/8 & 7/16	11/16 & 25/32	6 7/8	11/32 & 11/32	.26	.39	.52
30	3/8 & 1/2	11/16 & 7/8	7 3/4	11/32 & 13/32	.28	.42	.56
31	7/16 & 1/2	25/32 & 7/8	7 3/4	13/32 & 13/32	.30	.45	.60
32	7/16 & 9/16	25/32 & 31/32	8 3/4	13/32 & 7/16	.32	.48	.64
33	1/2 & 9/16	7/8 & 31/32	8 3/4	7/16 & 7/16	.36	.54	.72
34	1/2 & 5/8	7/8 & 1 1/16	9 3/4	7/16 & 1/2	.40	.60	.80
35	9/16 & 5/8	31/32 & 1 1/16	9 3/4	1/2 & 1/2	.44	.66	.88
36	9/16 & 3/4	31/32 & 1 1/4	11 1/2	1/2 & 9/16	.51	.77	1.02
37	5/8 & 3/4	1 1/16 & 1 1/4	11 1/2	9/16 & 9/16	.58	.87	1.16
38	5/8 & 7/8	1 1/16 & 1 7/16	13 1/2	9/16 & 21/32	.65	.98	1.30
39	3/4 & 7/8	1 1/4 & 1 7/16	13 1/2	21/32 & 21/32	.76	1.14	1.52
40	3/4 & 1	1 1/4 & 1 5/8	15 1/2	21/32 & 3/4	.88	1.32	1.76
41	7/8 & 1	1 7/16 & 1 5/8	15 1/2	3/4 & 3/4	1.00	1.50	2.00
42	7/8 & 1 1/8	1 7/16 & 1 13/16	17	3/4 & 27/32	1.18	1.77	2.36
43	1 & 1 1/8	1 5/8 & 1 13/16	17	27/32 & 27/32	1.36	2.04	2.72
44	1 & 1 1/4	1 5/8 & 2	19	27/32 & 29/32	1.55	2.33	3.10
45	1 1/8 & 1 1/4	1 13/16 & 2	19	29/32 & 29/32	1.80	2.70	3.60
46	1 1/8 & 1 3/8	1 13/16 & 2 3/16	21	27/32 & 1	2.05	3.08	4.10
47	1 1/4 & 1 3/8	2 & 2 3/16	21	29/32 & 1	2.30	3.45	4.60
48	1 1/4 & 1 1/2	2 & 2 3/8	23	29/32 & 1 1/16	2.65	3.98	5.30
49	1 3/8 & 1 1/2	2 3/16 & 2 3/8	23	1 & 1 1/16	3.00	4.50	6.00
50	1 3/8 & 1 5/8	2 3/16 & 2 9/16	25	1 & 1 1/8	3.35	5.03	6.70
51	1 1/2 & 1 5/8	2 3/8 & 2 9/16	25	1 1/16 & 1 1/8	3.80	5.70	7.60
52	1 1/2 & 1 3/4	2 3/8 & 2 3/4	27	1 1/16 & 1 7/32	4.25	6.38	8.50
53	1 5/8 & 1 3/4	2 9/16 & 2 3/4	27	1 1/8 & 1 7/32	4.70	7.05	9.40
53A	1 5/8 & 1 7/8	2 9/16 & 2 15/16	29	1 1/8 & 1 7/32	5.30	7.95	10.60
54	1 5/8 & 2	2 9/16 & 3 1/8	31	1 1/8 & 1 3/8	5.90	8.85	11.80
55	1 3/4 & 2	2 3/4 & 3 1/8	32	1 7/32 & 1 3/8	6.50	9.75	13.00
55A	1 7/8 & 2	2 15/16 & 3 1/8	33	1 7/32 & 1 3/8	7.35	11.03	14.70
56	1 3/4 & 2 1/4	2 3/4 & 3 1/2	34	1 7/32 & 1 17/32	8.20	12.30	16.40
56A	1 7/8 & 2 1/4	2 15/16 & 3 1/2	35	1 7/32 & 1 17/32	9.05	13.58	18.10
57	2 & 2 1/4	3 1/8 & 3 1/2	36	1 3/8 & 1 17/32	10.25	15.38	20.50
57A	2 & 2 1/2	3 1/8 & 3 7/8	37	1 3/8 & 1 5/8	11.50	17.25	23.00
58	2 1/4 & 2 1/2	3 1/2 & 3 7/8	38	1 17/32 & 1 5/8	12.75	19.13	25.50
59	2 1/4 & 2 3/4	3 1/2 & 4 1/4	39	1 17/32 & 1 5/8	14.50	21.75	29.00
60	2 1/2 & 2 3/4	3 7/8 & 4 1/4	40	1 5/8 & 1 5/8	16.25	24.38	32.50
61	2 1/2 & 3	3 7/8 & 4 5/8	42	1 5/8 & 1 7/8	18.00	27.00	36.00
62	2 3/4 & 3	4 1/4 & 4 5/8	44	1 5/8 & 1 7/8	20.50	30.75	41.00
63	2 3/4 & 3 1/2	4 1/4 & 5 3/8	46	1 5/8 & 2 1/2	23.00	34.50	46.00
64	3 & 3 1/2	4 5/8 & 5 3/8	48	1 7/8 & 2 1/2	25.50	38.25	51.00

Engineers. For Standard Nuts



15-Degree Angle. Single Head

The following Semi-finished and Finished Wrenches have hole in end of handle.

Number	17	18	19	19A	20	20A	21A	21B	21C	22A	22B
Hole, inches	5/8	3/4	7/8	7/8	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4

Wrenches of this style but with handle tapered will be furnished on orders for the larger sizes, beginning with No. 11. Tapered handle wrenches of smaller sizes and flared handle wrenches of larger sizes can also be furnished if ordered in quantities.

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
00	1/8	5/16	3	5/32	$ .08	$ .12	$ .16
0	3/16	13/32	3 1/2	3/16	.09	.13	.18
1	1/4	1/2	4	1/4	.10	.15	.20
2	5/16	19/32	4 3/4	9/32	.12	.18	.24
3	3/8	11/16	5 5/8	5/16	.14	.21	.28
4	7/16	25/32	6 1/2	11/32	.17	.25	.34
5	1/2	7/8	7 1/2	13/32	.20	.30	.40
6	9/16	31/32	8 3/8	7/16	.26	.39	.52
7	5/8	1 1/16	9 1/4	1/2	.32	.48	.64
8	3/4	1 1/4	11 1/8	9/16	.42	.63	.84
9	7/8	1 7/16	13	21/32	.58	.87	1.16
10	1	1 5/8	14 3/4	3/4	.75	1.13	1.50
11	1 1/8	1 13/16	16 1/2	27/32	1.00	1.50	2.00
12	1 1/4	2	18 1/2	29/32	1.25	1.88	2.50
13	1 3/8	2 3/16	20	1	1.62	2.43	3.24
14	1 1/2	2 3/8	22	1 1/16	2.00	3.00	4.00
15	1 5/8	2 9/16	24	1 1/8	2.50	3.75	5.00
16	1 3/4	2 3/4	25 1/2	1 7/32	3.00	4.50	6.00
16A	1 7/8	2 15/16	27	1 3/32	3.70	5.55	7.40
17	2	3 1/8	29 1/2	1 3/8	4.40	6.60	8.80
18	2 1/4	3 1/2	33	1 17/32	6.00	9.00	12.00
19	2 1/2	3 7/8	37	1 5/8	7.60	11.40	15.20
19A	2 3/4	4 1/4	39	1 5/8	10.00	15.00	20.00
20	3	4 5/8	41	1 7/8	13.00	19.50	26.00
20A	3 1/4	5	43	1 7/8	16.00	24.00	32.00
21A	3 1/2	5 3/8	45	2 1/2	22.00	33.00	44.00
21B	3 3/4	5 3/4	47	2 1/2	25.00	36.00	47.00
21C	4	6 1/8	49	2 1/2	28.00	39.00	50.00
22A	4 1/2	6 7/8	51	3	40.00	60.00	80.00
22B	5	7 5/8	53	3	45.00	65.00	85.00

Perfect Handle



No. 640. 15-Degree Angle

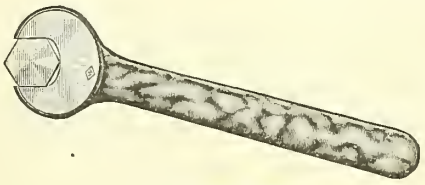
Drop-forged from one piece of steel, carefully case-hardened and finished. The opening is milled and the wooden handle locked in and waterproofed.

For United States Standard Nut Size Bolt Inch	Openings Milled Inches	Length Over all Inches	Thickness of Head Inch	Per Dozen
1/2	7/8	7 1/2	13/32	$5.00
9/16	31/32	8 3/8	27/64	5.50
5/8	1 1/16	9 1/4	1/2	6.50
3/4	1 1/4	11 1/8	9/16	8.50
7/8	1 7/16	13	21/32	11.00
1	1 5/8	14 7/8	3/4	14.00

Drop-Forged Wrenches

Williams

15-Degree Angle. For Hexagon Head Cap Screws



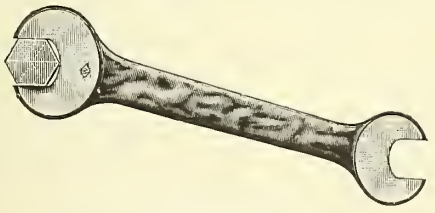
Light. Single Head



Heavy. Single Head

Number	For Hexagon Head Cap Screws Diameter Screws Inches	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
00	1/8	5/16	3	5/32	$ .08	$ .12	$ .16
700	3/16	3/8	3 1/2	3/16	.09	.13	.18
701	1/4	7/16	4	1/4	.10	.15	.20
701A	5/16	1/2	4	1/4	.10	.15	.20
702	3/8	9/16	4 3/4	9/32	.12	.18	.24
703	7/16	5/8	5 5/8	5/16	.14	.21	.28
704	1/2	3/4	6 1/2	11/32	.17	.25	.34
705	9/16	13/16	7 1/2	13/32	.20	.30	.40
705A	5/8	7/8	7 1/2	13/32	.20	.30	.40
706	3/4	1	8 3/8	7/16	.26	.39	.52
707	7/8	1 1/8	9 1/4	1/2	.32	.48	.64
708	1	1 1/4	11 1/8	9/16	.42	.63	.84
708A	1 1/8	1 3/8	11 1/8	9/16	.42	.63	.84
709	1 1/4	1 1/2	13	21/32	.58	.87	1.16
710	1 3/8	1 5/8	14 3/4	3/4	.75	1.13	1.50

Number	For Hexagon Head Cap Screws Diameter Screws Inches	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
1003	3/8	9/16	5	5/16	$ .14	$ .21	$ .28
1004	7/16	5/8	5 3/4	3/8	.16	.24	.32
1005	1/2	3/4	6 1/2	7/16	.19	.28	.38
1006	9/16	13/16	7 1/4	1/2	.23	.35	.46
1007	5/8	7/8	8	9/16	.28	.42	.56
1008	3/4	1	9 1/2	5/8	.35	.53	.70
1009	7/8	1 1/8	11	3/4	.46	.69	.92
1010	1	1 1/4	12 1/2	7/8	.60	.90	1.20
1011	1 1/8	1 3/8	14	15/16	.76	1.14	1.52
1012	1 1/4	1 1/2	15 1/2	1 1/16	.96	1.44	1.92
1013	1 3/8	1 5/8	17	1 1/8	1.20	1.80	2.40



Light. Double Head



Light. Double Head

Number	For Hexagon Head Cap Screws Diameter Screws Inches	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
721	1/8 & 3/16	5/16 & 3/8	3 1/2	5/32 & 3/16	$ .12	$ .18	$ .24
722	1/8 & 1/4	5/16 & 7/16	4	5/32 & 1/4	.13	.20	.26
723	3/16 & 1/4	3/8 & 7/16	4	3/16 & 1/4	.14	.21	.28
723A	3/16 & 5/16	3/8 & 1/2	4	3/16 & 1/4	.14	.21	.28
725	1/4 & 5/16	7/16 & 1/2	4 7/8	1/4 & 9/32	.18	.27	.36
725A	1/4 & 3/8	7/16 & 9/16	4 7/8	1/4 & 9/32	.18	.27	.36
725B	5/16 & 3/8	1/2 & 9/16	4 7/8	1/4 & 9/32	.18	.27	.36
726	5/16 & 7/16	1/2 & 5/8	5 7/8	1/4 & 5/16	.20	.30	.40
727	3/8 & 7/16	9/16 & 5/8	5 7/8	9/32 & 5/16	.22	.33	.44
728	3/8 & 1/2	9/16 & 3/4	6 7/8	9/32 & 11/32	.24	.36	.48
729	7/16 & 1/2	5/8 & 3/4	6 7/8	5/16 & 11/32	.26	.39	.52
730	7/16 & 9/16	5/8 & 13/16	7 3/4	5/16 & 13/32	.28	.42	.56
731	1/2 & 9/16	3/4 & 13/16	7 3/4	11/32 & 13/32	.30	.45	.60
731A	1/2 & 5/8	3/4 & 7/8	7 3/4	11/32 & 13/32	.30	.45	.60
731B	9/16 & 5/8	13/16 & 7/8	7 3/4	11/32 & 13/32	.30	.45	.60
732	9/16 & 3/4	13/16 & 1	8 3/4	11/32 & 7/16	.32	.48	.64
733	5/8 & 3/4	7/8 & 1	8 3/4	13/32 & 7/16	.36	.54	.72
734	5/8 & 7/8	7/8 & 1 1/8	9 3/4	13/32 & 1/2	.40	.60	.80
735	3/4 & 7/8	1 & 1 1/8	9 3/4	7/16 & 1/2	.44	.66	.88
736	3/4 & 1	1 & 1 1/4	11 1/2	7/16 & 9/16	.51	.77	1.02
737	7/8 & 1	1 1/8 & 1 1/4	11 1/2	1/2 & 9/16	.58	.87	1.16
738	7/8 & 1 1/8	1 1/8 & 1 3/8	13 1/2	1/2 & 21/32	.65	.98	1.30
739	1 & 1 1/8	1 1/4 & 1 3/8	13 1/2	9/16 & 21/32	.76	1.14	1.52
739A	1 & 1 1/4	1 1/4 & 1 1/2	13 1/2	9/16 & 21/32	.76	1.14	1.52
739B	1 1/8 & 1 1/4	1 3/8 & 1 1/2	13 1/2	9/16 & 21/32	.76	1.14	1.52

Number	For Hexagon Head Cap Screws Diameter Screws Inches	Opening Milled Inches	Extreme Length Inches	Thickness Head Inches	Unfinished Each	Semi-finished Each	Finished Each
1026	1/4 & 3/8	7/16 & 9/16	5 3/8	7/32 & 5/16	$ .20	$ .30	$ .40
1027	5/16 & 3/8	1/2 & 9/16	5 3/8	1/4 & 5/16	.21	.32	.42
1028	5/16 & 7/16	1/2 & 5/8	6 1/8	1/4 & 3/8	.23	.35	.46
1029	3/8 & 7/16	9/16 & 5/8	6 1/8	5/16 & 3/8	.24	.36	.48
1030	3/8 & 1/2	9/16 & 3/4	7	5/16 & 7/16	.26	.39	.52
1031	7/16 & 1/2	5/8 & 3/4	7	3/8 & 7/16	.27	.40	.54
1032	7/16 & 9/16	5/8 & 13/16	7 3/4	3/8 & 1/2	.30	.45	.60
1033	1/2 & 9/16	3/4 & 13/16	7 3/4	7/16 & 1/2	.32	.48	.64
1034	1/2 & 5/8	3/4 & 7/8	8 5/8	7/16 & 9/16	.35	.52	.70
1035	9/16 & 5/8	13/16 & 7/8	8 5/8	1/2 & 9/16	.38	.57	.76
1036	9/16 & 3/4	13/16 & 1	10 1/8	1/2 & 5/8	.43	.65	.86
1037	5/8 & 3/4	7/8 & 1	10 1/8	9/16 & 5/8	.47	.70	.94
1038	5/8 & 7/8	7/8 & 1 1/8	11 5/8	9/16 & 3/4	.55	.83	1.10
1039	3/4 & 7/8	1 & 1 1/8	11 5/8	5/8 & 3/4	.61	.92	1.22
1040	3/4 & 1	1 & 1 1/4	13 1/4	5/8 & 7/8	.72	1.08	1.44
1041	7/8 & 1	1 1/8 & 1 1/4	13 1/4	3/4 & 7/8	.79	1.19	1.58
1042	7/8 & 1 1/8	1 1/8 & 1 3/8	14 3/4	3/4 & 15/16	.92	1.38	1.84
1043	1 & 1 1/8	1 1/4 & 1 3/8	14 3/4	7/8 & 15/16	1.02	1.53	2.04
1044	1 & 1 1/4	1 1/4 & 1 1/2	16 1/4	7/8 & 1 1/16	1.18	1.77	2.36
1045	1 1/8 & 1 1/4	1 3/8 & 1 1/2	16 1/4	15/16 & 1 1/16	1.30	1.95	2.60

See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

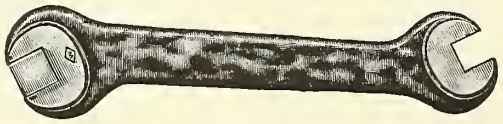
Williams

For Set Screws



22½-Degree Angle. Single Head

Number	For Set Screw Size Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
500	3/16	3	3/16	$ .08	$ .12	$ .16
501	1/4	3 3/4	1/4	.10	.15	.20
502	5/16	4 1/2	5/16	.12	.18	.24
503	3/8	5 1/4	11/32	.15	.23	.30
504	7/16	6	3/8	.20	.30	.40
505	1/2	6 3/4	7/16	.25	.38	.50
506	9/16	7 5/8	1/2	.27	.41	.54
507	5/8	8 1/2	9/16	.30	.45	.60
508	3/4	9 1/2	5/8	.35	.53	.70
509	7/8	10 1/2	11/16	.42	.63	.84
510	1	11 1/2	3/4	.50	.75	1.00
511	1 1/8	12 1/2	13/16	.60	.90	1.20



22½-Degree Angle. Double Head

Number	For Set Screws Size Inches	Extreme Length Inches	Thickness Head Inch	Unfinished Each	Semi-finished Each	Finished Each
523	3/16 & 1/4	3 3/8	7/32	$.13	$ .20	$ .26
524	3/16 & 5/16	3 3/8	7/32	.13	.20	.26
525	1/4 & 5/16	4	9/32	.15	.23	.30
526	1/4 & 3/8	4	9/32	.15	.23	.30
527	5/16 & 3/8	5	11/32	.18	.27	.36
528	5/16 & 7/16	5	11/32	.18	.27	.36
529	3/8 & 7/16	5 7/8	3/8	.22	.33	.44
530	3/8 & 1/2	5 7/8	3/8	.22	.33	.44
531	7/16 & 1/2	6 5/8	7/16	.27	.41	.54
532	7/16 & 9/16	6 5/8	7/16	.27	.41	.54
533	1/2 & 9/16	7 1/2	1/2	.33	.50	.66
534	1/2 & 5/8	7 1/2	1/2	.33	.50	.66
535	9/16 & 5/8	8 3/8	9/16	.40	.60	.80
536	9/16 & 3/4	8 3/8	9/16	.40	.60	.80
537	5/8 & 3/4	10	5/8	.48	.72	.96
538	5/8 & 7/8	10	5/8	.48	.72	.96
539	3/4 & 7/8	11 3/8	11/16	.58	.87	1.16
540	3/4 & 1	11 3/8	11/16	.58	.87	1.16
541	7/8 & 1	12 5/8	3/4	.68	1.02	1.36
542	7/8 & 1 1/8	12 5/8	3/4	.68	1.02	1.36

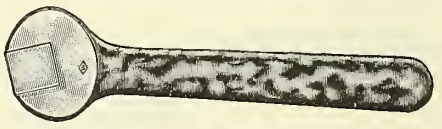
Short. For Check Nuts and Miscellaneous Uses



15-Degree Angle. Double Head

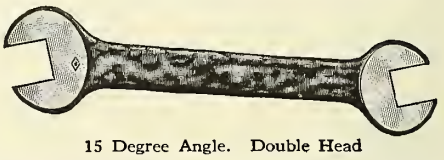
Number	For U. S. Standard Nut Size Bolts Inch	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
997	3/4 & 7/8	1 1/4 and 1 7/16	8	1/2 & 1/2	$ .43	$ .65	$ .86

Heavy. For Square Head Cap and Set Screws



15-Degree Angle. Single Head

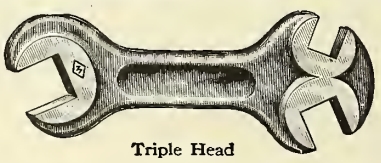
Number	For Square Head Cap Screws Diameter Inches	For Set Screws Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
1000B	....	5/16	5/16	3 1/2	3/16	$ .09	$ .13	$ .18
1001A	1/4	3/8	3/8	4	1/4	.10	.15	.20
1002A	5/16	7/16	7/16	4 3/4	9/32	.12	.18	.24
1002B	3/8	1/2	1/2	4 3/4	9/32	.12	.18	.24
1003C	7/16	9/16	9/16	5	9/16	.14	.21	.28
1004C	1/2	5/8	5/8	5 3/4	3/8	.16	.24	.32
1005C	9/16	....	11/16	6 1/2	7/16	.19	.28	.38
1006C	5/8	3/4	3/4	7 1/4	1/2	.23	.35	.46
1007B	3/4	7/8	7/8	8	9/16	.28	.42	.56
1008C	....	1	1	9 1/2	5/8	.35	.53	.70
1009A	7/8	1 1/8	1 1/8	11	3/4	.46	.69	.92
1010A	1	....	1 1/4	12 1/2	7/8	.60	.90	1.20
1011A	1 1/8	....	1 3/8	14	15/16	.76	1.14	1.62
1012A	1 1/4	....	1 1/2	15 1/2	1 1/16	.96	1.44	1.92
1013A	1 3/8	....	1 5/8	17	1 1/8	1.20	1.80	2.40



15 Degree Angle. Double Head

Number	For Square Head Cap Screws Diameter Screws Inches	For Set Screws Sizes Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inches	Unfinished Each	Semi-finished Each	Finished Each
1025C	1/4 & 5/16	3/8 & 7/16	3/8 & 7/16	4 7/8	1/4 & 9/32	$ .18	$ .27	$ .36
1025D	1/4 & 3/8	3/8 & 1/2	3/8 & 1/2	4 7/8	1/4 & 9/32	.18	.27	.36
1026C	5/16 & 3/8	7/16 & 1/2	7/16 & 1/2	5 3/8	1/4 & 5/16	.20	.30	.40
1026D	5/16 & 7/16	7/16 & 9/16	7/16 & 9/16	5 3/8	1/4 & 5/16	.20	.30	.40
1027C	3/8 & 7/16	1/2 & 9/16	1/2 & 9/16	5 3/8	1/4 & 5/16	.21	.32	.42
1028C	3/8 & 1/2	1/2 & 5/8	1/2 & 5/8	6 1/8	1/4 & 3/8	.23	.35	.46
1029C	7/16 & 1/2	9/16 & 5/8	9/16 & 5/8	6 1/8	5/16 & 3/8	.24	.36	.48
1031D	1/2 & 5/8	5/8 & 3/4	5/8 & 3/4	7	3/8 & 7/16	.27	.41	.54
1034C	5/8 & 3/4	3/4 & 7/8	3/4 & 7/8	8 5/8	7/16 & 9/16	.35	.53	.70
1038C	5/8 & 7/8	3/4 & 1 1/8	3/4 & 1 1/8	11 5/8	9/16 & 3/4	.55	.83	1.10
1038D	3/4 & 7/8	7/8 & 1 1/8	7/8 & 1 1/8	11 5/8	9/16 & 3/4	.55	.83	1.10
1040C	3/4 & 1	7/8 & 1 1/4	7/8 & 1 1/4	13 1/4	5/8 & 7/8	.72	1.08	1.44
1041C	7/8 & 1	1 1/8 & 1 1/4	1 1/8 & 1 1/4	13 1/4	3/4 & 7/8	.79	1.19	1.58
1042C	7/8 & 1 1/8	.....	1 1/8 & 1 3/8	14 3/4	3/4 & 15/16	.92	1.38	1.84
1043C	1 & 1 1/8	.....	1 1/4 & 1 3/8	14 3/4	7/8 & 15/16	1.02	1.53	2.04

For U. S. Standard Nuts and Screws



Triple Head

Number	For U. S. Standard Nut Size Bolts Inch	For Set Screws Sizes Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
894A	5/16, 3/8, 1/2	.....	5 5/8	3/8	$ .28	$ .42	$ .56
894B	5/16, 7/16, 1/2	.....	5 5/8	3/8	.28	.42	.56
894C	3/8, 7/16, 1/2	.....	5 5/8	3/8	.28	.42	.56
894D	.....	1/2, 5/8, 3/4,	5 5/8	3/8	.28	.42	.56
894E	.....	9/16, 5/8, 3/4	5 5/8	3/8	.28	.42	.56

See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

Williams

Machine



Extra Heavy for Planers, Milling Machines, Lathes, Drill Presses, etc.

Number	Large Head for United States Standard Nut Size Bolt Inch	Opening Milled Inches	Small Head for Set Screw Size Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
595	3/8	11/16	3/8	6 1/2	1/2 & 9/16	$ .27	$ .41	$ .54
595B	3/8	11/16	7/16	6 1/2	1/2 & 9/16	.27	.41	.54
595C	3/8	11/16	1/2	6 1/2	1/2 & 9/16	.27	.41	.54
595D	7/16	25/32	3/8	6 1/2	1/2 & 9/16	.27	.41	.54
595E	7/16	25/32	7/16	6 1/2	1/2 & 9/16	.27	.41	.54
595F	7/16	25/32	1/2	6 1/2	1/2 & 9/16	.27	.41	.54
596	1/2	7/8	7/16	7 1/2	9/16 & 5/8	.33	.50	.66
596B	1/2	7/8	1/2	7 1/2	9/16 & 5/8	.33	.50	.66
596C	1/2	7/8	9/16	7 1/2	9/16 & 5/8	.33	.50	.66
596D	1/2	7/8	5/8	7 1/2	9/16 & 5/8	.33	.50	.66
596E	9/16	31/32	7/16	7 1/2	9/16 & 5/8	.33	.50	.66
596F	9/16	31/32	1/2	7 1/2	9/16 & 5/8	.33	.50	.66
596G	9/16	31/32	9/16	7 1/2	9/16 & 5/8	.33	.50	.66
596H	9/16	31/32	5/8	7 1/2	9/16 & 5/8	.33	.50	.66
597	5/8	1 1/16	9/16	8 1/2	5/8 & 11/16	.41	.62	.82
597B	5/8	1 1/16	5/8	8 1/2	5/8 & 11/16	.41	.62	.82
597C	5/8	1 1/16	3/4	8 1/2	5/8 & 11/16	.41	.62	.82
598	3/4	1 1/4	3/4	10	11/16 & 13/16	.52	.78	1.04
598B	3/4	1 1/4	7/8	10	11/16 & 13/16	.52	.78	1.04
598C	3/4	1 1/4	1	10	11/16 & 13/16	.52	.78	1.04
598D	7/8	1 7/16	3/4	10	11/16 & 13/16	.52	.78	1.04
598E	7/8	1 7/16	7/8	10	11/16 & 13/16	.52	.78	1.04
598F	7/8	1 7/16	1	10	11/16 & 13/16	.52	.78	1.04

Textile Machine

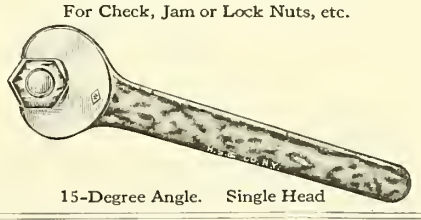


15-Degree Angle. Double Head

Number	For U. S. Standard Hexagon or Square Nuts Size Bolts Inch	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
760A	1/8 & 1/4	5/16 & 1/2	4 3/4	1/4	$ .15	$ .23	$ .30
760B	3/16 & 1/4	13/32 & 1/2	4 3/4	1/4	.15	.23	.30
760C	3/16 & 5/16	13/32 & 19/32	4 3/4	1/4	.15	.23	.30
761A	1/4 & 5/16	1/2 & 19/32	5 3/4	5/16	.20	.30	.40
761B	1/4 & 3/8	1/2 & 11/16	5 3/4	5/16	.20	.30	.40
761C	5/16 & 3/8	19/32 & 11/16	5 3/4	5/16	.20	.30	.40
762A	5/16 & 7/16	19/32 & 25/32	7	3/8	.25	.38	.50
762B	3/8 & 7/16	11/16 & 25/32	7	3/8	.25	.38	.50
762C	3/8 & 1/2	11/16 & 7/8	7	3/8	.25	.38	.50
763A	7/16 & 1/2	25/32 & 7/8	8 1/4	7/16	.30	.45	.60
763B	7/16 & 9/16	25/32 & 31/32	8 1/4	7/16	.30	.45	.60
763C	1/2 & 9/16	7/8 & 31/32	8 1/4	7/16	.30	.45	.60
764A	1/2 & 5/8	7/8 & 1 1/16	9 1/2	1/2	.38	.57	.76
764B	9/16 & 5/8	31/32 & 1 1/16	9 1/2	1/2	.38	.57	.76
764C	9/16 & 3/4	31/32 & 1 1/4	9 1/2	1/2	.38	.57	.76
765A	5/8 & 3/4	1 1/16 & 1 1/4	11	9/16	.50	.75	1.00
765B	5/8 & 7/8	1 1/16 & 1 7/16	11	9/16	.50	.75	1.00
765C	3/4 & 7/8	1 1/4 & 1 7/16	11	9/16	.50	.75	1.00

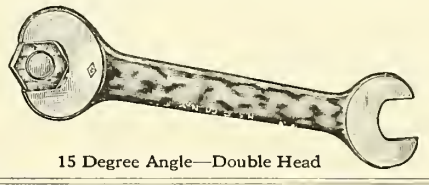
Check Nut or "Thin"

For Check, Jam or Lock Nuts, etc.



15-Degree Angle. Single Head

Number	For U. S. Standard Nuts Size Bolts Inch	Opening Milled Inches	Extreme Length Inches	Thickness Head Inch	Unfinished Each	Semi-finished Each	Finished Each
601	1/4	1/2	4	5/32	$ .10	$ .15	$ .20
602	5/16	13/32	4 1/2	11/64	.11	.17	.22
603	3/8	11/16	5 1/8	3/16	.13	.20	.26
604	7/16	25/32	5 7/8	7/32	.15	.23	.30
605	1/2	7/8	6 5/8	1/4	.18	.27	.36
606	9/16	31/32	7 1/2	9/32	.22	.33	.44
607	5/8	1 1/16	8 1/2	5/16	.28	.42	.56
608	3/4	1 1/4	10	3/8	.36	.54	.72
609	7/8	1 7/16	11 1/2	7/16	.46	.69	.92
610	1	1 5/8	13 1/4	1/2	.60	.90	1.20



15 Degree Angle—Double Head

Number	For U. S. Standard Nuts Size Bolts Inches	Opening Milled Inches	Extreme Length Inches	Thickness Head Inch	Unfinished Each	Semi-finished Each	Finished Each
623	3/16 & 1/4	13/32 & 1/2	4 3/8	9/64 & 5/32	$ .14	$ .21	$ .28
624	3/16 & 5/16	13/32 & 19/32	4 3/8	9/64 & 5/32	.14	.21	.28
625	1/4 & 5/16	1/2 & 19/32	4 3/8	9/64 & 5/32	.14	.21	.28
626	1/4 & 3/8	1/2 & 11/16	5 1/2	5/32 & 3/16	.19	.29	.38
627	5/16 & 3/8	19/32 & 11/16	5 1/2	5/32 & 3/16	.19	.29	.38
628	5/16 & 7/16	19/32 & 25/32	5 1/2	5/32 & 3/16	.19	.29	.38
629	3/8 & 7/16	11/16 & 25/32	6 7/8	3/16 & 7/32	.25	.38	.50
630	3/8 & 1/2	11/16 & 7/8	6 7/8	3/16 & 7/32	.25	.38	.50
631	7/16 & 1/2	25/32 & 7/8	6 7/8	3/16 & 7/32	.25	.38	.50
632	7/16 & 9/16	25/32 & 31/32	8 1/2	7/32 & 9/32	.33	.50	.66
633	1/2 & 9/16	7/8 & 31/32	8 1/2	7/32 & 9/32	.33	.50	.66
634	1/2 & 5/8	7/8 & 1 1/16	8 1/2	7/32 & 9/32	.33	.50	.66
635	9/16 & 5/8	31/32 & 1 1/16	10 3/8	9/32 & 5/16	.44	.66	.88
636	9/16 & 3/4	31/32 & 1 1/4	10 3/8	9/32 & 5/16	.44	.66	.88
637	5/8 & 3/4	1 1/16 & 1 1/4	10 3/8	9/32 & 5/16	.44	.66	.88
638	5/8 & 7/8	1 1/16 & 1 7/16	12 5/8	5/16 & 7/16	.60	.90	1.20
639	3/4 & 7/8	1 1/4 & 1 7/16	12 5/8	5/16 & 7/16	.60	.90	1.20
640	3/4 & 1	1 1/4 & 1 5/8	12 5/8	5/16 & 7/16	.60	.90	1.20

Tool Post

For Set Screws



Double Head

Number	Open End for Set Screw Size Inch	Closed End for Set Screw Size Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
554	7/16	7/16	5 1/2	1/2 & 1/2	$ .21	$ .32	$ .42
555	1/2	1/2	6	9/16 & 9/16	.23	.35	.46
555B	9/16	1/2	6	9/16 & 9/16	.23	.35	.46
555C	9/16	9/16	6	9/16 & 9/16	.23	.35	.46
556	5/8	5/8	6 3/4	5/8 & 5/8	.30	.45	.60
556B	11/16	5/8	6 3/4	5/8 & 5/8	.30	.45	.60
556C	11/16	11/16	6 3/4	5/8 & 5/8	.30	.45	.60
557	3/4	3/4	7 1/2	11/16 & 11/16	.35	.52	.70

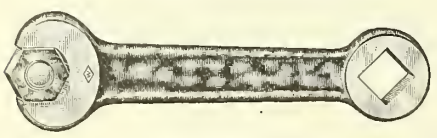
See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

Williams

Tool Post

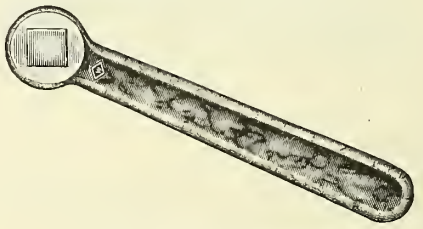
For U. S. Standard Nuts and Set Screws



Double Head

Number	Open End for U. S. Standard Nut: Size Bolt Inches	Open End for U. S. Standard Nut: Opening Milled Inches	Closed End for Set Screw: Size Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
562	3/8	11/16	9/16	6 1/2	1/2 & 5/8	$ .25	$ .38	$ .50
563	1/2	7/8	7/16	7	9/16 & 5/8	.30	.45	.60
563B	1/2	7/8	1/2	7	9/16 & 5/8	.30	.45	.60
563C	1/2	7/8	9/16	7	9/16 & 5/8	.30	.45	.60
563D	1/2	7/8	5/8	7	9/16 & 5/8	.30	.45	.60
564	5/8	1 1/16	5/8	7 1/2	5/8 & 5/8	.35	.52	.70
565	5/8	1 1/16	3/4	8	11/16 & 11/16	.40	.60	.80
566	3/4	1 1/4	3/4	9	3/4 & 3/4	.50	.75	1.00
566B	3/4	1 1/4	7/8	9	3/4 & 3/4	.50	.75	1.00
567	3/4	1 1/4	1	10	7/8 & 7/8	.60	.90	1.20
567B	7/8	1 7/16	7/8	10	7/8 & 7/8	.60	.90	1.20
567C	7/8	1 7/16	1	10	7/8 & 7/8	.60	.90	1.20
568	1	1 5/8	7/8	11	15/16 & 15/16	.75	1.13	1.50
568B	1	1 5/8	1	11	15/16 & 15/16	.75	1.13	1.50
568C	1 1/8	1 13/16	1	11	15/16 & 15/16	.75	1.13	1.50
568D	1 1/4	2	1	11	15/16 & 15/16	.75	1.13	1.50

Square Box, for Set Screws



22½-Degrees Angle Single Head

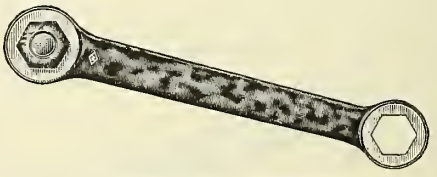
Number	For Set Screw Size Inch	Extreme Length Inches	Head Thickness Inch	Head Outside Diameter Inches	Unfinished Each	Semi-finished Each	Finished Each
580	3/16	3	1/4	17/32	$ .09	$ .12	$ .18
581	1/4	3 3/8	9/32	5/8	.10	.15	.20
582	5/16	3 3/4	5/16	23/32	.11	.17	.22
583	3/8	4 1/4	3/8	27/32	.13	.20	.26
584	7/16	4 7/8	7/16	31/32	.16	.24	.32
585	1/2	5 1/2	15/32	1 3/32	.19	.28	.38
586	9/16	6 1/4	1/2	1 7/32	.22	.33	.44
587	5/8	7	9/16	1 11/32	.26	.39	.52
588	3/4	8	5/8	1 9/16	.30	.45	.60
589	7/8	9	11/16	1 3/4	.36	.54	.72
590	1	10	3/4	2	.44	.66	.88

Hexagon Box Wrenches

For U. S. Standard Nuts



15-Degree Angle. Single Head



15-Degree Angle. Double Head

Number	For U. S. Standard Nut Size Bolt Inches	Short Diameter Opening Broached Inches	Extreme Length Inches	Head Thickness Inches	Head Outside Diameter Inches	Unfinished Each	Semi-finished Each	Finished Each
801	1/4	1/2	4	1/4	29/32	$ .10	$ .15	$ .20
802	5/16	39/64	4 7/8	9/32	1 3/32	.12	.18	.24
803	3/8	45/64	5 7/8	5/16	1 1/4	.14	.21	.28
804	7/16	51/64	6 7/8	11/32	1 3/8	.17	.25	.34
805	1/2	57/64	7 3/4	13/32	1 1/2	.20	.30	.40
806	9/16	63/64	8 3/4	7/16	1 5/8	.26	.39	.52
807	5/8	1 5/64	9 7/8	1/2	1 3/4	.32	.48	.64
808	3/4	1 17/64	11 1/2	9/16	2 1/16	.42	.63	.84
809	7/8	1 29/64	13 1/4	21/32	2 3/8	.58	.87	1.16
810	1	1 21/32	15	3/4	2 5/8	.75	1.13	1.50
811	1 1/8	1 27/32	17	13/16	2 7/8	1.00	1.50	2.00
812	1 1/4	2 1/32	19	15/16	3 1/4	1.25	1.88	2.50
813	1 3/8	2 7/32	21	1	3 1/2	1.62	2.43	3.24
814	1 1/2	2 13/32	23	1 1/16	3 3/4	2.00	3.00	4.00
815	1 5/8	2 19/32	25	1 1/8	4	2.50	3.75	5.00
816	1 3/4	2 25/32	27	1 1/4	4 1/4	3.00	4.50	6.00
817	2	3 5/32	30 1/2	1 3/8	4 3/4	4.40	6.60	8.80
818	2 1/4	3 25/64	34	1 1/2	5 1/4	6.00	9.00	12.00
819	2 1/2	3 59/64	38	1 5/8	5 7/8	7.60	11.40	15.20
819A	2 3/4	4 19/64	42	1 3/4	6 1/2	10.00	15.00	20.00
820	3	4 43/64	46	1 7/8	7	13.00	19.50	26.00

Number	For U. S. Standard Nuts Size Bolts Inches	Short Diameter Opening Broached Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
825	1/4 & 5/16	1/2 & 39/64	4 7/8	1/4 & 9/32	$ .18	$ .27	$ .36
826	1/4 & 3/8	1/2 & 45/64	5 7/8	1/4 & 5/16	.20	.30	.40
827	5/16 & 3/8	39/64 & 45/64	5 7/8	9/32 & 5/16	.22	.33	.44
828	5/16 & 7/16	39/64 & 51/64	6 7/8	9/32 & 11/32	.24	.36	.48
829	3/8 & 7/16	45/64 & 51/64	6 7/8	5/16 & 11/32	.26	.39	.52
830	3/8 & 1/2	45/64 & 57/64	7 3/4	5/16 & 13/32	.28	.42	.56
831	7/16 & 1/2	51/64 & 57/64	7 3/4	11/32 & 13/32	.30	.45	.60
832	7/16 & 9/16	51/64 & 63/64	8 3/4	11/32 & 7/16	.32	.48	.64
833	1/2 & 9/16	57/64 & 63/64	8 3/4	13/32 & 7/16	.36	.54	.72
834	1/2 & 5/8	57/64 & 1 5/64	9 7/8	13/32 & 1/2	.40	.60	.80
835	9/16 & 5/8	63/64 & 1 5/64	9 7/8	7/16 & 1/2	.44	.66	.88
836	9/16 & 3/4	63/64 & 1 17/64	11 1/2	7/16 & 9/16	.51	.77	1.02
837	5/8 & 3/4	1 5/64 & 1 17/64	11 1/2	1/2 & 9/16	.58	.87	1.16
838	5/8 & 7/8	1 5/64 & 1 29/64	13 1/4	1/2 & 21/32	.65	.98	1.30
839	3/4 & 7/8	1 17/64 & 1 29/64	13 1/4	9/16 & 21/32	.76	1.14	1.52
840	3/4 & 1	1 17/64 & 1 21/32	15	9/16 & 3/4	.88	1.32	1.76
841	7/8 & 1	1 29/64 & 1 21/32	15	21/32 & 3/4	1.00	1.50	2.00
842	7/8 & 1 1/8	1 29/64 & 1 27/32	17	21/32 & 13/16	1.18	1.77	2.36
843	1 & 1 1/8	1 21/32 & 1 27/32	17	3/4 & 13/16	1.36	2.04	2.72
844	1 & 1 1/4	1 21/32 & 2 1/32	19	3/4 & 15/16	1.55	2.33	3.10
845	1 1/8 & 1 1/4	1 27/32 & 2 1/32	19	13/16 & 15/16	1.80	2.70	3.60

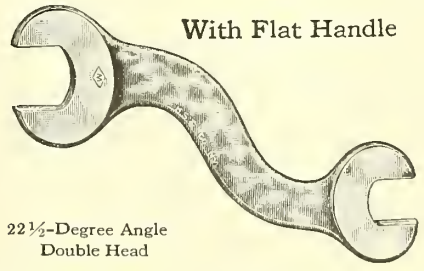
See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

Williams "S"

For U. S. Standard Nuts

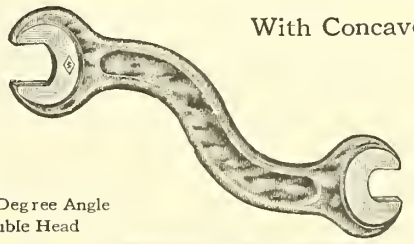
With Flat Handle



22½-Degree Angle Double Head

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
661A	1/8 & 3/16	5/16 & 13/32	4	9/32	$ .13	$ .20	$ .26
661B	1/8 & 1/4	5/16 & 1/2	4	9/32	.13	.20	.26
661C	3/16 & 1/4	13/32 & 1/2	4	9/32	.13	.20	.26
662A	3/16 & 5/16	13/32 & 19/32	5	5/16	.17	.26	.34
662B	1/4 & 5/16	1/2 & 19/32	5	5/16	.17	.26	.34
662C	1/4 & 3/8	1/2 & 11/16	5	5/16	.17	.26	.34
663A	5/16 & 3/8	19/32 & 11/16	6¼	3/8	.22	.33	.44
663B	5/16 & 7/16	19/32 & 25/32	6¼	3/8	.22	.33	.44
663C	3/8 & 7/16	11/16 & 25/32	6¼	3/8	.22	.33	.44
664A	3/8 & 1/2	11/16 & 7/8	7½	7/16	.28	.42	.56
664B	7/16 & 1/2	25/32 & 7/8	7½	7/16	.28	.42	.56
664C	7/16 & 9/16	25/32 & 31/32	7½	7/16	.28	.42	.56
665A	1/2 & 9/16	7/8 & 31/32	9	1/2	.36	.54	.72
665B	1/2 & 5/8	7/8 & 1 1/16	9	1/2	.36	.54	.72
665C	9/16 & 5/8	31/32 & 1 1/16	9	1/2	.36	.54	.72
666A	9/16 & 3/4	31/32 & 1 1/4	10½	9/16	.48	.72	.96
666B	5/8 & 3/4	1 1/16 & 1 1/4	10½	9/16	.48	.72	.96
666C	5/8 & 7/8	1 1/16 & 1 7/16	10½	9/16	.48	.72	.96
667A	3/4 & 7/8	1 1/4 & 1 7/16	12	5/8	.72	1.08	1.44
667B	3/4 & 1	1 1/4 & 1 5/8	12	5/8	.72	1.08	1.44
667C	7/8 & 1	1 7/16 & 1 5/8	12	5/8	.72	1.08	1.44
668A	7/8 & 1 1/8	1 7/16 & 1 13/16	14	3/4	1.10	1.65	2.20
668B	1 & 1 1/8	1 5/8 & 1 13/16	14	3/4	1.10	1.65	2.20
668C	1 & 1 1/4	1 5/8 & 2	14	3/4	1.10	1.65	2.20

With Concave Handle

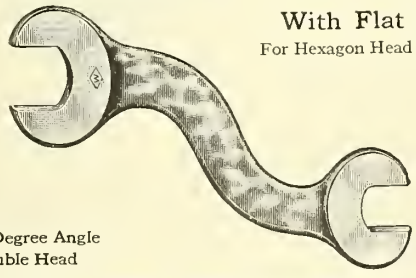


22½-Degree Angle Double Head

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
860A	1/8 & 3/16	5/16 & 13/32	3 5/8	1/4 & 9/32	$ .13	$ .20	$ .26
861A	1/8 & 1/4	5/16 & 1/2	4 7/8	9/32 & 5/16	.18	.27	.36
861B	3/16 & 1/4	13/32 & 1/2	4 7/8	9/32 & 5/16	.18	.27	.36
861C	3/16 & 5/16	13/32 & 19/32	4 7/8	9/32 & 5/16	.18	.27	.36
861X	1/4 & 5/16	1/2 & 19/32	4 7/8	9/32 & 5/16	.18	.27	.36
862A	1/4 & 3/8	1/2 & 11/16	5 3/4	5/16 & 11/32	.21	.32	.42
863A	5/16 & 3/8	19/32 & 11/16	6½	3/8 & 13/32	.25	.38	.50
863B	5/16 & 7/16	19/32 & 25/32	6½	3/8 & 13/32	.25	.38	.50
864A	3/8 & 7/16	11/16 & 25/32	7¼	13/32 & 7/16	.30	.45	.60
864B	3/8 & 1/2	11/16 & 7/8	7¼	13/32 & 7/16	.30	.45	.60
865A	7/16 & 1/2	25/32 & 7/8	8	1/2 & 17/32	.38	.57	.76
865B	7/16 & 9/16	25/32 & 31/32	8	1/2 & 17/32	.38	.57	.76
865C	1/2 & 9/16	7/8 & 31/32	8	1/2 & 17/32	.38	.57	.76
865X	1/2 & 5/8	7/8 & 1 1/16	8	1/2 & 17/32	.38	.57	.76
866A	9/16 & 5/8	31/32 & 1 1/16	10	17/32 & 9/16	.50	.75	1.00
866B	9/16 & 3/4	31/32 & 1 1/4	10	17/32 & 9/16	.50	.75	1.00
866C	5/8 & 3/4	1 1/16 & 1 1/4	10	17/32 & 9/16	.50	.75	1.00
867A	5/8 & 7/8	1 1/16 & 1 7/16	11½	5/8 & 11/16	.75	1.13	1.50
867B	3/4 & 7/8	1 1/4 & 1 7/16	11½	5/8 & 11/16	.75	1.13	1.50
868A	3/4 & 1	1 1/4 & 1 5/8	14½	3/4 & 7/8	1.15	1.73	2.30
868B	7/8 & 1	1 7/16 & 1 5/8	14½	3/4 & 7/8	1.15	1.73	2.30
868C	7/8 & 1 1/8	1 7/16 & 1 13/16	14½	3/4 & 7/8	1.15	1.73	2.30

With Flat Handle

For Hexagon Head Cap Screws

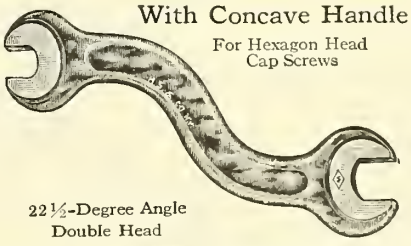


22½-Degree Angle Double Head

Number	For Hexagon Head Cap Screws, Diameter Screws, Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
661D	1/8 & 3/16	5/16 & 3/8	4	9/32	$ .13	$ .20	$ .26
661E	1/8 & 1/4	5/16 & 7/16	4	9/32	.13	.20	.26
661F	3/16 & 1/4	3/8 & 7/16	4	9/32	.13	.20	.26
661G	3/16 & 5/16	3/8 & 1/2	4	9/32	.13	.20	.26
662D	1/4 & 5/16	7/16 & 1/2	5	5/16	.17	.26	.34
662E	1/4 & 3/8	7/16 & 9/16	5	5/16	.17	.26	.34
662F	5/16 & 3/8	1/2 & 9/16	5	5/16	.17	.26	.34
662G	5/16 & 7/16	1/2 & 5/8	5	5/16	.17	.26	.34
663D	3/8 & 7/16	9/16 & 5/8	6¼	3/8	.22	.33	.44
663E	3/8 & 1/2	9/16 & 3/4	6¼	3/8	.22	.33	.44
663F	7/16 & 1/2	5/8 & 3/4	6¼	3/8	.22	.33	.44
663G	7/16 & 9/16	5/8 & 13/16	6¼	3/8	.22	.33	.44
664D	1/2 & 9/16	3/4 & 13/16	7½	7/16	.28	.42	.56
664E	1/2 & 5/8	3/4 & 7/8	7½	7/16	.28	.42	.56
664F	9/16 & 5/8	13/16 & 7/8	7½	7/16	.28	.42	.56
665D	9/16 & 3/4	13/16 & 1	9	1/2	.36	.54	.72
665E	5/8 & 3/4	7/8 & 1	9	1/2	.36	.54	.72
665F	5/8 & 7/8	7/8 & 1 1/8	9	1/2	.36	.54	.72
665G	3/4 & 7/8	1 & 1 1/8	9	1/2	.36	.54	.72
666D	3/4 & 1	1 & 1 1/4	10½	9/16	.48	.72	.96
666E	7/8 & 1	1 1/8 & 1 1/4	10½	9/16	.48	.72	.96
666F	7/8 & 1 1/8	1 1/8 & 1 3/8	10½	9/16	.48	.72	.96
667D	1 & 1 1/8	1 1/4 & 1 3/8	12	5/8	.72	1.08	1.44
667E	1 & 1 1/4	1 1/4 & 1 1/2	12	5/8	.72	1.08	1.44
667F	1 1/8 & 1 1/4	1 3/8 & 1 1/2	12	5/8	.72	1.08	1.44

With Concave Handle

For Hexagon Head Cap Screws



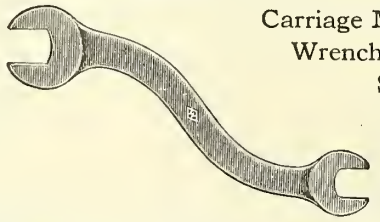
22½-Degree Angle Double Head

Number	For Hexagon Head Cap Screws, Diameter Screws, Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
861D	3/16 & 1/4	3/8 & 7/16	4 7/8	9/32 & 5/16	$ .18	$ .27	$ .36
862D	3/16 & 5/16	3/8 & 1/2	5 3/4	5/16 & 11/32	.21	.32	.42
862E	3/16 & 3/8	3/8 & 9/16	5 3/4	5/16 & 11/32	.21	.32	.42
862F	1/4 & 5/16	7/16 & 1/2	5 3/4	5/16 & 11/32	.21	.32	.42
862G	1/4 & 3/8	7/16 & 9/16	5 3/4	5/16 & 11/32	.21	.32	.42
863D	5/16 & 3/8	1/2 & 9/16	6½	3/8 & 13/32	.25	.38	.50
863E	5/16 & 7/16	1/2 & 5/8	6½	3/8 & 13/32	.25	.38	.50
864D	5/16 & 1/2	1/2 & 3/4	7¼	13/32 & 7/16	.30	.45	.60
864E	3/8 & 7/16	9/16 & 5/8	7¼	13/32 & 7/16	.30	.45	.60
864F	3/8 & 1/2	9/16 & 3/4	7¼	13/32 & 7/16	.30	.45	.60
865D	7/16 & 1/2	5/8 & 3/4	8	1/2 & 17/32	.38	.57	.76
865E	7/16 & 9/16	5/8 & 13/16	8	1/2 & 17/32	.38	.57	.76
865F	1/2 & 9/16	3/4 & 13/16	8	1/2 & 17/32	.38	.57	76
865G	1/2 & 5/8	3/4 & 7/8	8	1/2 & 17/32	.38	.57	.76
866D	1/2 & 3/4	3/4 & 1	10	17/32 & 9/16	.50	.75	1.00
866E	9/16 & 5/8	13/16 & 7/8	10	17/32 & 9/16	.50	.75	1.00
866F	9/16 & 3/4	13/16 & 1	10	17/32 & 9/16	.50	.75	1.00
866G	5/8 & 3/4	7/8 & 1	10	17/32 & 9/16	.50	.75	1.00
867D	5/8 & 7/8	7/8 & 1 1/8	11½	5/8 & 11/16	.75	1.13	1.50
867E	3/4 & 7/8	1 & 1 1/8	11½	5/8 & 11/16	.75	1.13	1.50
867F	3/4 & 1	1 & 1 1/4	11½	5/8 & 11/16	.75	1.13	1.50
867G	7/8 & 1	1 1/8 & 1 1/4	11½	5/8 & 11/16	.75	1.13	1.50
868D	7/8 & 1 1/8	1 1/8 & 1 3/8	14½	3/4 & 7/8	1.15	1.73	2.30
868E	7/8 & 1 1/4	1 1/8 & 1 1/2	14½	3/4 & 7/8	1.15	1.73	2.30
868F	1 & 1 1/8	1 1/4 & 1 3/8	14½	3/4 & 7/8	1.15	1.73	2.30
868G	1 & 1 1/4	1 1/4 & 1 1/2	14½	3/4 & 7/8	1.15	1.73	2.30
868X	1 1/8 & 1 1/4	1 3/8 & 1 1/2	14½	3/4 & 7/8	1.15	1.73	2.30

See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

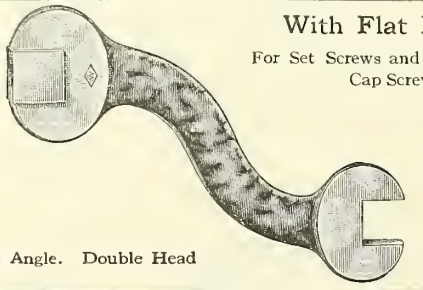
Williams "S"



Carriage Makers or Light Service Wrenches for Manufacturers Standard Nuts

22½-Degree Angle. Double Head. Long and Light

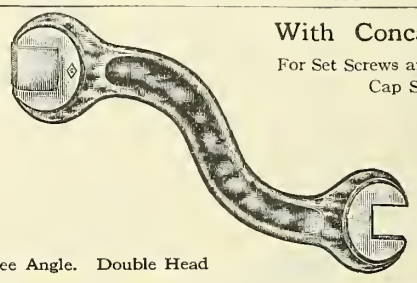
Number	Old Number	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each	Number
675B	475B	3/8 & 7/16	6 1/4	7/32	$ .13	$ .20	$ .26	675B
675A	475A	3/8 & 1/2	6 1/4	7/32	.13	.20	.26	675A
675	475	13/32 & 1/2	6 1/4	7/32	.13	.20	.26	675
677B	477B	1/2 & 9/16	7 1/8	1/4	.17	.25	.34	677B
677	477	1/2 & 5/8	7 1/8	1/4	.17	.25	.34	677
679A	479A	9/16 & 11/16	8 1/4	5/16	.22	.33	.44	679A
679	479	5/8 & 11/16	8 1/4	5/16	.22	.33	.44	679
681	481	11/16 & 27/32	9 1/4	3/8	.28	.42	.56	681
681B	481B	3/4 & 13/16	9 1/4	3/8	.28	.42	.56	681B
681A	481A	3/4 & 7/8	9 1/4	3/8	.28	.42	.56	681A
683	483	27/32 & 15/16	10 3/8	7/16	.34	.51	.68	683
683B	483B	7/8 & 1	10 3/8	7/16	.34	.51	.68	683B
683A	483A	15/16 & 1	10 3/8	7/16	.34	.51	.68	683A
685	485	1 & 1 1/8	12	1/2	.44	.66	.88	685
685A	485A	1 & 1 1/4	12	1/2	.44	.66	.88	685A
685C	485C	1 1/16 & 1 1/4	12	1/2	.44	.66	.88	685C
685B	485B	1 1/8 & 1 1/4	12	1/2	.44	.66	.88	685B



With Flat Handle

For Set Screws and Square Head Cap Screws

22½-Degree Angle. Double Head



With Concave Handle

For Set Screws and Square Head Cap Screws

22½-Degree Angle. Double Head

Number	For Set Screws Sizes Inches	For Square Head Cap Screws Diameter Screws Inches	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi finished Each	Finished Each
661H	1/4 & 5/16	.....	1/4 & 5/16	4	9/32	$ 13	$ .20	$ .26
661J	1/4 & 3/8	.....	1/4 & 3/8	4	9/32	.13	.20	.26
661K	5/16 & 3/8	.....	5/16 & 3/8	4	9/32	.13	.20	.26
661L	5/16 & 7/16	.....	5/16 & 7/16	4	9/32	.13	.20	.26
662H	3/8 & 7/16	1/4 & 5/16	3/8 & 7/16	5	5/16	.17	.26	.34
662J	3/8 & 1/2	1/4 & 3/8	3/8 & 1/2	5	5/16	.17	.26	.34
662K	7/16 & 1/2	5/16 & 3/8	7/16 & 1/2	5	5/16	.17	.26	.34
662L	7/16 & 9/16	5/16 & 7/16	7/16 & 9/16	5	5/16	.17	.26	.34
663H	1/2 & 9/16	3/8 & 7/16	1/2 & 9/16	6 1/4	3/8	.22	.33	.44
663J	1/2 & 5/8	3/8 & 1/2	1/2 & 5/8	6 1/4	3/8	.22	.33	.44
663K	9/16 & 5/8	7/16 & 1/2	9/16 & 5/8	6 1/4	3/8	.22	.33	.44
663M	.....	7/16 & 9/16	9/16 & 11/16	6 1/4	3/8	.22	.33	.44
664H	9/16 & 3/4	.....	9/16 & 3/4	7 1/2	7/16	.28	.42	.56
664M	.....	1/2 & 9/16	5/8 & 11/16	7 1/2	7/16	.28	.42	.56
664J	5/8 & 3/4	1/2 & 5/8	5/8 & 3/4	7 1/2	7/16	.28	.42	.56
664K	5/8 & 7/8	.....	5/8 & 7/8	7 1/2	7/16	.28	.42	.56
664P	.....	9/16 & 5/8	11/16 & 3/4	7 1/2	7/16	.28	.42	.56
664R	.....	9/16 & 3/4	11/16 & 7/8	7 1/2	7/16	.28	.42	.56
665H	3/4 & 7/8	5/8 & 3/4	3/4 & 7/8	9	1/2	.36	.54	.72
665J	3/4 & 1	.....	3/4 & 1	9	1/2	.36	.54	.72
665K	7/8 & 1	.....	7/8 & 1	9	1/2	.36	.54	.72
666M	.....	5/8 & 7/8	3/4 & 1 1/8	10 1/2	9/16	.48	.72	.96
666H	7/8 & 1 1/8	3/4 & 7/8	7/8 & 1 1/8	10 1/2	9/16	.48	.72	.96
666R	.....	3/4 & 1	7/8 & 1 1/4	10 1/2	9/16	.48	.72	.96
666J	1 & 1 1/8	.....	1 & 1 1/8	10 1/2	9/16	.48	.72	.96
666K	1 & 1 1/4	.....	1 & 1 1/4	10 1/2	9/16	.48	.72	.96
667H	1 1/8 & 1 1/4	7/8 & 1	1 1/8 & 1 1/4	12	5/8	.72	1.08	1.44
667M	.....	7/8 & 1 1/8	1 1/8 & 1 3/8	12	5/8	.72	1.08	1.44
667R	.....	1 & 1 1/8	1 1/4 & 1 3/8	12	5/8	.72	1.08	1.44
668M	.....	1 & 1 1/4	1 1/4 & 1 1/2	14	3/4	1.10	1.65	2.20
668R	.....	1 1/8 & 1 1/4	1 3/8 & 1 1/2	14	3/4	1.10	1.65	2.20

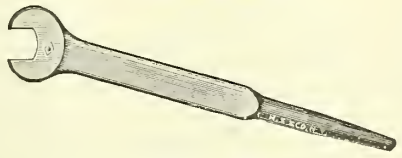
Number	For Set Screws Sizes Inches	For Square Head Cap Screws Diameter Screws Inches	Openings Milled Inches	Extreme Length Inches	Unfinished Each	Semi-finished Each	Finished Each
860H	1/4 & 5/16	.....	1/4 & 5/16	3 5/8	$ .13	$ .20	$ .26
860J	1/4 & 3/8	.....	1/4 & 3/8	3 5/8	.13	.20	.26
860K	5/16 & 3/8	.....	5/16 & 3/8	3 5/8	.13	.20	.26
861H	5/16 & 7/16	.....	5/16 & 7/16	4 7/8	.18	.27	.36
861J	3/8 & 7/16	1/4 & 5/16	3/8 & 7/16	4 7/8	.18	.27	.36
862H	3/8 & 1/2	1/4 & 3/8	3/8 & 1/2	5 3/4	.21	.32	.42
862J	7/16 & 1/2	5/16 & 3/8	7/16 & 1/2	5 3/4	.21	.32	.42
862K	7/16 & 9/16	5/16 & 7/16	7/16 & 9/16	5 3/4	.21	.32	.42
863H	1/2 & 9/16	3/8 & 7/16	1/2 & 9/16	6 1/2	.25	.38	.50
863J	1/2 & 5/8	3/8 & 1/2	1/2 & 5/8	6 1/2	.25	.38	.50
864H	9/16 & 5/8	7/16 & 1/2	9/16 & 5/8	7 1/4	.30	.45	.60
864M	.....	7/16 & 9/16	9/16 & 11/16	7 1/4	.30	.45	.60
864J	9/16 & 3/4	7/16 & 5/8	9/16 & 3/4	7 1/4	.30	.45	.60
864R	.....	1/2 & 9/16	5/8 & 11/16	7 1/4	.30	.45	.60
865H	5/8 & 3/4	.....	5/8 & 3/4	8	.38	.57	.76
865J	5/8 & 7/8	.....	5/8 & 7/8	8	.38	.57	.76
865M	.....	9/16 & 5/8	11/16 & 3/4	8	.38	.57	.76
865R	.....	9/16 & 3/4	11/16 & 7/8	8	.38	.57	.76
865K	3/4 & 7/8	5/8 & 3/4	3/4 & 7/8	8	.38	.57	.76
866H	3/4 & 1	.....	3/4 & 1	10	.50	.75	1.00
866J	7/8 & 1	.....	7/8 & 1	10	.50	.75	1.00
867H	7/8 & 1 1/8	3/4 & 7/8	7/8 & 1 1/8	11 1/2	.75	1.13	1.50
867J	1 & 1 1/8	.....	1 & 1 1/8	11 1/2	.75	1.13	1.50
867K	1 & 1 1/4	.....	1 & 1 1/4	11 1/2	.75	1.13	1.50
867L	1 1/8 & 1 1/4	7/8 & 1	1 1/8 & 1 1/4	11 1/2	.75	1.13	1.50
868M	.....	7/8 & 1 1/8	1 1/8 & 1 3/8	14 1/2	1.15	1.73	2.30
868K	.....	7/8 & 1 1/4	1 1/8 & 1 1/2	14 1/2	1.15	1.73	2.30
868R	.....	1 & 1 1/8	1 1/4 & 1 3/8	14 1/2	1.15	1.73	2.30
868U	.....	1 & 1 1/4	1 1/4 & 1 1/2	14 1/2	1.15	1.73	2.30
868Y	.....	1 1/8 & 1 1/4	1 3/8 & 1 1/2	14 1/2	1.15	1.73	2.30

See page 194 for special conditions and styles of finish

Drop-Forged Wrenches

Williams

Construction



15-Degree Angle

The tang is for bringing bolt-holes into line and for insertion into convenient openings when wrench is not in use, preventing loss and keeping tool in sight.

Number	For U. S. Standard Nut Size Bolt Inch	Opening Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
221	1/4	1/2	8	3/8	$. 16	$ .24	$ .32
222	5/16	19/32	8	3/8	.16	.24	.32
223	3/8	11/16	9 1/2	7/16	.20	.30	.40
224	7/16	25/32	9 1/2	7/16	.20	.30	.40
225	1/2	7/8	11	1/2	.35	.53	.70
226	9/16	31/32	11	1/2	.35	.53	.70
227	5/8	1 1/16	13	9/16	.50	.75	1.00
228	3/4	1 1/4	15	5/8	.65	.97	1.30
229	7/8	1 7/16	17	11/16	.85	1.28	1.70
230	1	1 5/8	19	3/4	1.10	1.65	2.20

Structural

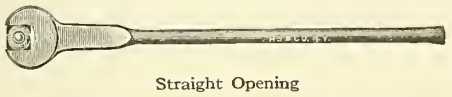


Straight Opening

The tang is for bringing bolt-holes into line and for insertion into convenient openings when wrench is not in use, preventing loss and keeping tool in sight.

Number	For U. S. Standard Nut Size Bolt Inch	Opening Inches	Extreme Length Inches	Thickness Heads Inch	Handle Offset Inches	Unfinished Each	Semi-Finished Each
901	1/4	17/32	8	3/8	13/16	$ .16	$ .24
902	5/16	9/8	8	3/8	13/16	.16	.24
903	3/8	23/32	9 1/2	7/16	7/8	.20	.30
904	7/16	13/16	9 1/2	7/16	7/8	.20	.30
905	1/2	29/32	11	1/2	1	.35	.53
906	9/16	1	11	1/2	1 1/16	.35	.53
907	5/8	1 7/64	13	5/8	1 1/8	.50	.75
908	3/4	1 19/64	15	11/16	1 1/4	.65	.97
909	7/8	1 1/2	17	3/4	1 5/16	.85	1.28
910	1	1 11/16	19	13/16	1 3/8	1.10	1.65

Track



Straight Opening

Unfinished are broached or milled.

Semi-finished are broached or milled and case-hardened all over; heads not ground. Length of handle can be varied, if desired.

Number	For U. S. Standard Nuts Size Bolt Inches	Openings Inches	Extreme Length Inches	Unfinished Each	Semi-finished Each
194	3/4	1 5/16	24	$ .60	$. 90
195	...	1 7/16	24	.60	.90
196A	7/8	1 1/2	27	.75	1.13
196	...	1 9/16	27	.75	1.13
197	1	1 11/16	27	.75	1.13
198	...	1 13/16	30	1.20	1.80
199A	1 1/8	1 7/8	30	1.20	1.80
199	...	1 15/16	30	1.20	1.80

Straight Flat Handle



Unfinished Only

Unfinished are broached only. Case-hardened Wrenches to order

Number	Kind	Outside Diameter of Nuts Inches	Openings Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each
173	Single Head	1 3/16	1 1/4	23	3/4	$ .80
174	Single Head	1 1/4	1 5/16	23	3/4	.80
175	Single Head	1 3/8	1 7/16	23	3/4	.80
176	Single Head	1 1/2	1 9/16	23	3/4	1.00
177	Single Head	1 5/8	1 11/16	23	3/4	1.00
182	Double Head	1 3/16 & 1 1/4	1 1/4 & 1 5/16	24	3/4	1.35
184	Double Head	1 1/4 & 1 3/8	1 5/16 & 1 7/16	24	3/4	1.35
186	Double Head	1 1/4 & 1 1/2	1 5/16 & 1 9/16	24	3/4	1.35
188	Double Head	1 3/8 & 1 1/2	1 7/16 & 1 9/16	24	3/4	1.35

Telegraph Lineman

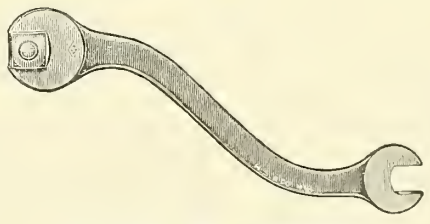


For Lag Screws, Rough Nuts, Etc.

Expecially designed for dependable service in the erection of cross-arms on telegraph, etc., poles, but equally adaptable for use about agricultural and other machinery.

Number	Forged Openings for	Extreme Length Inches	Thickness Heads Inch	Unfinished Each
999	3/8, 7/16, 1/2, 9/16, 3/4 Lag Screws 5/16, 3/8, 7/16, 1/2, 9/16, 5/8 Square Nuts 7/16, 1/2, 5/8 Hexagon Nuts	13 3/4	1/2 & 5/8	$2.00

Car



22½-Degree Angle. Double Head

Long leverage. Unfinished are broached only

Semi-finished are broached, case-hardened all over; heads not ground

Number	For U. S. Standard Nuts Size Bolts Inches	Openings Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each
367	3/8 & 1/2	23/32 & 29/32	12	7/16 & 1/2	$ .50	$ .75
370	1/2 & 5/8	15/16 & 1 1/8	19	1/2 & 1/2	.85	1.28
371	1/2 & 3/4	15/16 & 1 5/16	19	1/2 & 1/2	.85	1.28
372	1/2 & 7/8	15/16 & 1 1/2	20	1/2 & 9/16	.92	1.38
373	5/8 & 3/4	1 1/8 & 1 5/16	20	1/2 & 1/2	.92	1.38
374	5/8 & 7/8	1 1/8 & 1 1/2	21	1/2 & 9/16	1.00	1.50
375	5/8 & 1	1 1/8 & 1 11/16	21	1/2 & 9/16	1.00	1.50
376	3/4 & 7/8	1 5/16 & 1 1/2	21	1/2 & 9/16	1.00	1.50
377	3/4 & 1	1 5/16 & 1 11/16	22	1/2 & 9/16	1.10	1.65
378	3/4 & 1 1/8	1 5/16 & 1 7/8	22	1/2 & 5/8	1.10	1.65
379	7/8 & 1	1 1/2 & 1 11/16	22	9/16 & 9/16	1.10	1.65
380	7/8 & 1 1/8	1 1/2 & 1 7/8	23	9/16 & 5/8	1.23	1.85
381	7/8 & 1 1/4	1 1/2 & 2 1/16	23	9/16 & 5/8	1.23	1.85
382	1 & 1 1/8	1 11/16 & 1 7/8	23	9/16 & 5/8	1.23	1.85
383	1 & 1 1/4	1 11/16 & 2 1/16	24	9/16 & 5/8	1.40	2.10
385	1 1/8 & 1 1/4	1 7/8 & 2 1/16	24	5/8 & 5/8	1.40	2.10
387	1 1/8 & 1 1/2	1 7/8 & 2 7/16	25	5/8 & 3/4	1.70	2.55
389	1 1/4 & 1 1/2	2 1/16 & 2 7/16	25	5/8 & 3/4	1.70	2.55

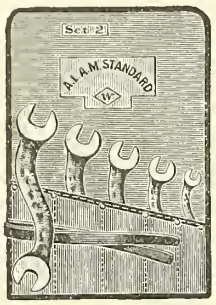
See page 194 for special conditions and styles of finish

Drop-Forged Wrench Sets

Williams



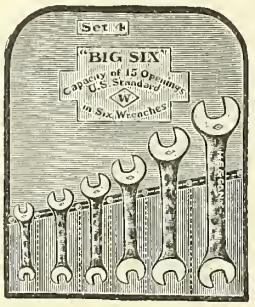
Carriage Makers



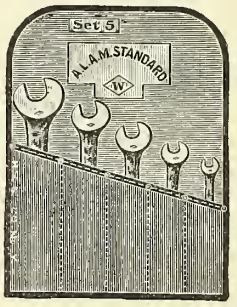
S.A.E. or A.L.A.M. Light



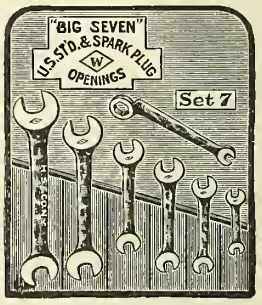
Pony Carriage Makers



Big Six



S.A.E. or A.L.A.M.



Big Seven

Unless otherwise specified Finished Wrenches will be supplied

Carriage Makers. Light

With openings for Manufacturers Standard Nuts

Number	For Manufacturers Standard Nuts Size Bolts Inch	Openings Milled Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
675	3/16 & 1/4	13/32 & 1/2	6 1/4	7/32	$ .13	$ .20	$ .26
677	1/4 & 5/16	1/2 & 5/8	7 1/8	1/4	.17	.25	.34
679	5/16 & 3/8	5/8 & 11/16	8 1/4	5/16	.22	.33	.44
681	3/8 & 7/16	11/16 & 27/32	9 1/4	3/8	.28	.42	.56
683	7/16 & 1/2	27/32 & 15/16	10 3/8	7/16	.34	.51	.68
No. 1	Set				1.14	1.71	2.28

Duck Roll, 45 cents extra

Automobile. Light

With openings for S. A. E. or A. L. A. M. Standard Nuts and Cap Screws

Number	For S. A. E. Standard Nuts and Cap Screws Size Bolt or Screw Inch	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
675A	1/4 & 5/16	3/8 & 1/2	6 1/4	7/32	$ .13	$ .20	$ .26
679A	3/8 & 7/16	9/16 & 11/16	8 1/4	5/16	.22	.33	.44
681A	1/2 & 9/16	3/4 & 7/8	9 1/4	3/8	.28	.42	.56
683A	5/8 & 11/16	15/16 & 1	10 3/8	7/16	.34	.51	.68
685B	3/4 & 7/8	1 1/8 & 1 1/4	12	1/2	.44	.66	.88
No. 2	Set				1.41	2.12	2.82

Duck Roll, 45 cents extra

Pony Carriage Makers. Light

With openings for Manufacturers Standard Nuts

Number	For Manufacturers Standard Nuts Size Bolts Inch	Openings Milled Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
675	3/16 & 1/4	13/32 & 1/2	6 1/4	7/32	$ .13	$ .20	$ .26
679	5/16 & 3/8	5/8 & 11/16	8 1/4	5/16	.22	.33	.44
683	7/16 & 1/2	27/32 & 15/16	10 3/8	7/16	.34	.51	.68
No. 21	Set				.69	1.04	1.38

Duck Roll, 35 cents extra

Original. Extra Capacity. Big Six

With openings milled for most popular United States Standard Nuts and Cap Screws

Number	For Nuts Diameter Bolts Inch Small Head	For Nuts Diameter Bolts Inch Large Head	For Cap Screws Dia. Screws Inch Small Head	For Cap Screws Dia. Screws Inch Large Head	Openings Milled U. S. Standard Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
725	..	1/4	1/4	5/16	7/16 & 1/2	4 7/8	9/32	$ .18	$ .27	$ .36
27C	..	3/8	3/8	..	9/16 & 11/16	5 7/8	5/16	.22	.33	.44
28	5/16	7/16	..	..	19/32 & 25/32	6 7/8	11/32	.24	.36	.48
729	..	..	1/16	1/2	5/8 & 3/4	6 7/8	11/32	.26	.39	.52
34	1/2	5/8	5/8	..	7/8 & 1 1/16	7 3/4	1/2	.40	.60	.80
736	..	3/4	3/4	1	1 & 1 1/4	11 1/2	9/16	.51	.77	1.02
No. 4	Set							1.81	2.72	3.62

Duck Roll, 45 cents extra

Automobile. Extra Capacity. Big Seven

With openings for United States Standard Nuts, Cap Screws and Spark Plug, Etc.

Number	For Nuts Bolts Diameter Inch Small Head	For Nuts Bolts Diameter Inch Large Head	For Cap Screws Inch Small Head	For Cap Screws Inch Large Head	Openings Milled U. S. Standard Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
725	..	1/4	1/4	5/16	7/16 & 1/2	4 7/8	9/32	$ .18	$ .27	$ .36
27C	..	3/8	3/8	..	9/16 & 11/16	5 7/8	5/16	.22	.33	.44
28	5/16	7/16	..	..	19/32 & 25/32	6 7/8	11/32	.24	.36	.48
729	..	..	7/16	1/2	5/8 & 3/4	6 7/8	11/32	.26	.39	.52
34	1/2	5/8	5/8	..	7/8 & 1 1/16	7 3/4	1/2	.40	.60	.80
736	..	3/4	3/4	1	1 & 1 1/4	11 1/2	9/16	.51	.77	1.02
S.P. 993	S.A.E. 3/8	U.S. 1/2	S. P. 3/8	1/2	9/16 & 7/8	8	5/16 & 1/2	.40	.60	.80
No. 7	Set							2.21	3.32	4.42

Duck Roll, 45 cents extra

Automobile

With openings milled for S. A. E. or A. L. A. M. Standard Nuts and Cap Screws

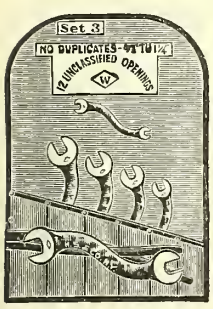
Number	For S. A. E. Standard Nuts and Cap Screws Diameter Bolts and Screws Inch	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
723	1/4 & 5/16	3/8 & 1/2	4	1/4	$ .14	$ .21	$ .28
27C	3/8 & 7/16	9/16 & 11/16	5 7/8	5/16	.22	.33	.44
731A	1/2 & 9/16	3/4 & 7/8	7 3/4	13/32	.30	.45	.60
33C	5/8 & 11/16	15/16 & 1	8 3/4	7/16	.36	.54	.72
737	3/4 & 7/8	1 1/8 & 1 1/4	11 1/2	9/16	.58	.87	1.16
No. 5	Set				1.60	2.40	3.20

Duck Roll, 45 cents extra

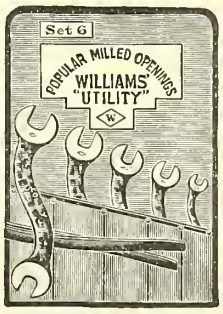
See page 194 for styles of finish

Drop-Forged Wrench Sets

Williams



General Service



Utility Five



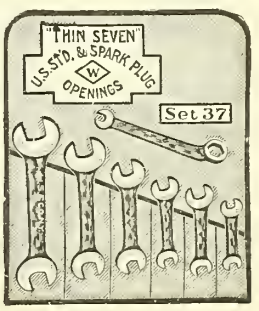
Pony Utility



Thin Six



Thin Five



Thin Seven

General Service. Light

With openings milled for twelve popular nut and screw sizes

Number	For Unclassified Nuts or Screws	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
675B	Twelve	3/8 & 7/16	6 1/4	7/32	$ .13	$ .20	$ .26
677B	Popular	1/2 & 9/16	7 1/8	1/4	.17	.25	.34
679B	Milled	5/8 & 11/16	8 1/4	5/16	.22	.33	.44
681B	Openings	3/4 & 13/16	9 1/4	3/8	.28	.42	.56
683B	No	7/8 & 1	10 3/8	7/16	.34	.51	.68
685B	Duplicates	1 1/8 & 1 1/4	12	1/2	.44	.66	.88
No. 3					1.58	2.37	3.16

Duck Roll, 45 cents extra

Utility. Light

With openings milled for nut measure instead of bolt size

Number	Openings Milled Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
675A	3/8 & 1/2	6 1/4	7/32	$ .13	$ .20	$ .26
677	1/2 & 5/8	7 1/8	1/4	.17	.25	.34
679C	5/8 & 3/4	8 1/4	5/16	.22	.33	.44
681A	3/4 & 7/8	9 1/4	3/8	.28	.42	.56
683B	7/8 & 1	10 3/8	7/16	.34	.51	.68
No. 6				1.14	1.71	2.28

Duck Roll, 45 cents extra

Pony. Utility Light

With openings milled for popular sizes, without duplication

Number	Openings Milled Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
675A	3/8 & 1/2	6 1/4	7/32	$ .13	$ .20	$ .26
679C	5/8 & 3/4	8 1/4	5/16	.22	.33	.44
683B	7/8 & 1	10 3/8	7/16	.34	.51	.68
No. 26				.69	1.04	1.38

Duck Roll, 35 cents extra

Extra Capacity. Thin Six

With openings for most popular U. S. Standard Nuts and Cap Screws

Number	Nuts Small Head Inch	Nuts Large Head Inch	Cap Screws Small Head Inch	Cap Screws Large Head Inch	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
623D	..	1/4	1/4	5/16	7/16 & 1/2	4 3/8	9/64 & 5/32	$ .14	$ .21	$ .28
626X	..	3/8	3/8	..	9/16 & 11/16	5 1/2	5/32 & 3/16	.19	.28	.38
628	5/16	7/16	..	..	19/32 & 25/32	5 1/2	5/32 & 3/16	.19	.28	.38
629D	..	..	7/16	1/2	5/8 & 3/4	6 7/8	3/16 & 7/32	.25	.38	.50
634	1/2	5/8	5/8	..	7/8 & 1 1/16	8 1/2	7/32 & 9/32	.33	.50	.66
635E	..	3/4	3/4	1	1 & 1 1/4	10 3/8	9/32 & 5/16	.44	.66	.88
No. 34	Set							1.54	2.31	3.08

Duck Roll, 45 cents extra

Automobile. With Spark Plug Wrench, Thin Seven

With openings for U. S. Standard Nuts, Cap Screws and Spark Plug, etc.

Number	Nuts Small Head Inch	Nuts Large Head Inch	Cap Screws Small Head Inch	Cap Screws Large Head Inch	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
623D	..	1/4	1/4	5/16	7/16 & 1/2	4 3/8	9/64 & 5/32	$ .14	$ .21	$ .28
626X	..	3/8	3/8	..	9/16 & 11/16	5 1/2	5/32 & 3/16	.19	.28	.38
628	5/16	7/16	..	..	19/32 & 25/32	5 1/2	5/32 & 3/16	.19	.28	.38
629D	..	..	7/16	1/2	5/8 & 3/4	6 7/8	3/16 & 7/32	.25	.38	.50
634	1/2	5/8	5/8	..	7/8 & 1 1/16	8 1/2	7/32 & 9/32	.33	.50	.66
635E		3/4	3/4	1	1 & 1 1/4	10 3/8	9/32 & 5/16	.44	.66	.88
S. P. 993	S.A.E. U.S. 3/8	1/2	SP 3/8	1/2	9/16 & 7/8	8	5/16 & 1/2	.40	.60	.80
No. 37	Set							1.94	2.91	3.88

Duck Roll, 45 cents extra

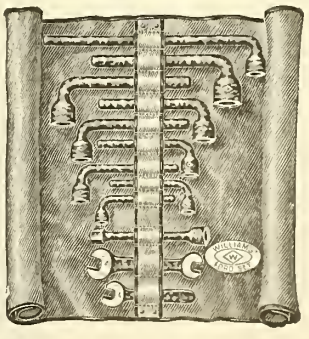
Automobile. Thin Five

With openings milled for S. A. E. or A. L. A. M. Standard Nut and Cap Screws

Number	S. A. E. Nuts and Cap Screws Inch	Openings Milled Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-Finished Each	Finished Each
623E	1/4 & 5/16	3/8 & 1/2	4 3/8	9/64 & 5/32	$ .14	$ .21	$ .28
626X	3/8 & 7/16	9/16 & 11/16	5 1/2	5/32 & 3/16	.19	.28	.38
629E	1/2 & 9/16	3/4 & 7/8	6 1/2	3/16 & 7/32	.25	.38	.50
632X	5/8 & 11/16	15/16 & 1	8 1/2	7/32 & 9/32	.33	.50	.66
635G	3/4 & 7/8	1 1/8 & 1 1/4	10 3/8	9/32 & 5/16	.44	.66	.88
No. 35	Set				1.35	2.03	2.70

Duck Roll, 45 cents extra

Ford. Set A



Number	Class	Opening Size Inch	Extreme Length Inches	Unfinished Each	Semi-Finished Each	Finished Each
27	D. H. Engineers	19/32 & 11/16	5 7/8	$ .22	$ .33	$ .44
702	S. H. Cap Screw	9/16	4 3/4	.12	.18	.24
963D	Offset Socket	29/64	4	.24	.36	.48
964A	Offset Socket	33/64	4 1/2	.26	.39	.52
965D*	Straight Socket	37/64	5 3/4	.29	.44	.58
965D	Offset Socket	37/64	5 1/4	.29	.44	.58
965A	Offset Socket	39/64	5 1/4	.29	.44	.58
966DS	Offset Socket	41/64	11	.42	.63	.84
967A*	Offset Socket	45/64	6	.36	.54	.72
967D	Offset Socket	49/64	6	.36	.54	.72
968A	Offset Socket	53/64	6 7/8	.40	.60	.80
969A	Offset Socket	57/64	7 3/4	.46	.69	.92
Ford Set				3.71	5.58	7.42

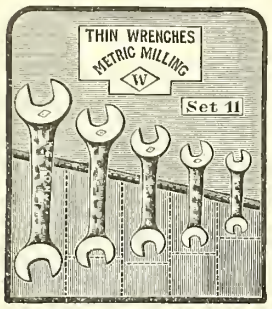
List price of Roll, 60 cents extra

*Use Wrench No. 967A as lever for Wrench No. 965D. Designed for extreme and convenient service upon the bolts and screws common to the "Ford" construction.

See page 194 for styles of finish

Metric

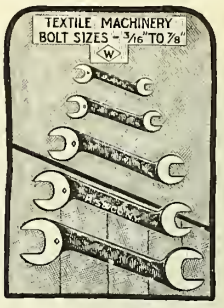
For Textile Machinery



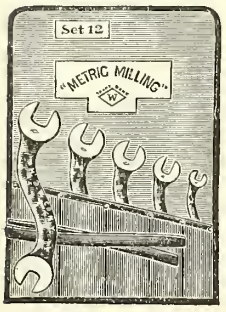
No. 11. Thin

Drop-Forged Wrench Sets

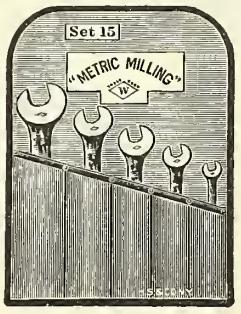
Williams



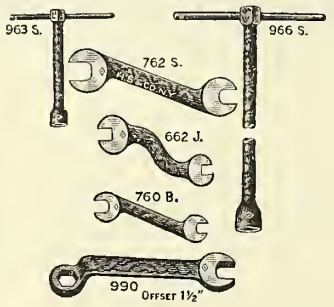
Textile



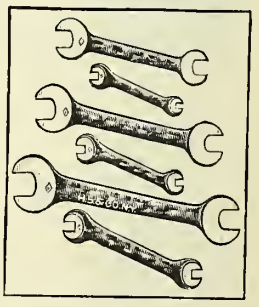
No. 12



No. 15



Draper Loom



Crompton & Knowles Loom

No. 11. Thin

Selected from standard line of Check Nut Wrenches for lighter service on thin or regular thicknesses of nuts, etc.

Number	Openings Milled mm.	Extreme Length mm.	Thickness Heads mm.	Unfinished Each	Semi-Finished Each	Finished Each
623M	10 & 12	111	3.5 & 3.9	$ .14	$ .21	$ .28
626M	14 & 16	140	3.9 & 4.7	.19	.29	.38
629M	18 & 20	174	4.7 & 5.5	.25	.38	.50
632M	22 & 25	216	5.5 & 7.1	.33	.50	.66
635M	28 & 30	264	7.1 & 7.9	.44	.66	.88
No. 11 Set				1.35	2.03	2.70

Duck Roll, 45 cents extra

No. 12

Selected from specially designed, lighter tools. Compact, convenient and serviceable.

Number	Openings Milled mm.	Extreme Length mm.	Thickness Heads mm.	Unfinished Each	Semi-Finished Each	Finished Each
675M	10 & 12	159	5.5	$ .13	$ .20	$ .26
679M	14 & 16	210	7.9	.22	.33	.44
681M	18 & 20	235	9.5	.28	.42	.56
683M	22 & 25	264	11.1	.34	.51	.68
685M	28 & 30	304	12.7	.44	.66	.88
No. 12 Set				1.41	2.12	2.82

Duck Roll, 45 cents extra

No. 15

Dependable tools selected from recognized standards of wrench-weights and design.

Number	Openings Milled mm.	Extreme Length mm.	Thickness Heads mm.	Unfinished Each	Semi-Finished Each	Finished Each
23M	10 & 12	102	6.3	$ .14	$ .21	$ .28
27M	14 & 16	149	7.9	.22	.33	.44
29M	18 & 20	175	8.7	.26	.39	.52
33M	22 & 25	222	11.1	.36	.54	.72
37M	28 & 30	292	14.2	.58	.87	1.16
No. 15 Set				1.56	2.34	3.12

Duck Roll, 45 cents extra

Textile

With openings for every bolt size from $\frac{3}{16}$ inch to $\frac{7}{8}$ inch

Number	For U. S. Standard Hexagon or Square Nuts, Size Bolts Inch	Openings Milled Inches	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
760B	$\frac{3}{16}$ & $\frac{1}{4}$	$\frac{13}{32}$ & $\frac{1}{2}$	$4\frac{3}{4}$	$\frac{1}{4}$	$ .15	$ .23	$ .30
761C	$\frac{5}{16}$ & $\frac{3}{8}$	$\frac{19}{32}$ & $\frac{11}{16}$	$5\frac{3}{4}$	$\frac{5}{16}$	.20	.30	.40
763A	$\frac{7}{16}$ & $\frac{1}{2}$	$\frac{25}{32}$ & $\frac{7}{8}$	$8\frac{1}{4}$	$\frac{7}{16}$	.30	.45	.60
764B	$\frac{9}{16}$ & $\frac{5}{8}$	$\frac{31}{32}$ & $1\frac{1}{16}$	$9\frac{1}{2}$	$\frac{1}{2}$	.38	.57	.76
765C	$\frac{3}{4}$ & $\frac{7}{8}$	$1\frac{1}{4}$ & $1\frac{7}{16}$	11	$\frac{9}{16}$	.50	.75	1.00
Per Set					1.53	2.30	3.06

Duck Roll, 45 cents extra

Draper Loom

With openings for U. S. Standard Nuts, Cap and Set Screws

Number	For	Size Openings Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
662J	$\frac{3}{8}$ & $\frac{1}{2}$ Set Screws	$\frac{3}{8}$ & $\frac{1}{2}$	5	$\frac{5}{16}$	$ .17	$ .26	$ .34
760B	$\frac{3}{16}$ & $\frac{1}{4}$ Nuts	$\frac{13}{32}$ & $\frac{1}{2}$	$4\frac{3}{4}$	$\frac{1}{4}$	.15	.23	.30
762S	$\frac{7}{16}$ Nuts & S	$\frac{5}{8}$ & $\frac{25}{32}$	7	$\frac{3}{8}$	.25	.38	.50
963S	$\frac{3}{8}$ Set Screw	$\frac{25}{64}$	$7\frac{3}{4}$	$\frac{11}{16}$*	.44	.60	.75
966S	$\frac{1}{2}$ Set Screw	$\frac{33}{64}$	$22\frac{1}{2}$	1*	.65	.90	1.15
990	$\frac{7}{16}$ & $\frac{1}{2}$ Bolt, $\frac{5}{8}$ C. S.	$\frac{7}{8}$ & $\frac{25}{32}$	$7\frac{1}{4}$	$\frac{11}{32}$	.50	.75	1.00
Per Set					2.16	3.12	4.04

*Diameter.

Crompton & Knowles Loom

With openings for Special Nuts and Screws

Number	For	Size Openings Inch	Extreme Length Inches	Thickness Heads Inch	Unfinished Each	Semi-finished Each	Finished Each
527S	Special Nuts	$\frac{11}{32}$ & $\frac{13}{32}$	5	$\frac{5}{16}$ & $\frac{11}{32}$	$ .18	$ .27	$ .36
530S	and Screws	$\frac{15}{32}$ & $\frac{17}{32}$	$5\frac{7}{8}$	$\frac{11}{32}$ & $\frac{3}{8}$	.22	.33	.44
534S	on	$\frac{19}{32}$ & $\frac{21}{32}$	$7\frac{1}{2}$	$\frac{7}{16}$ & $\frac{1}{2}$	.33	.50	.66
30S	Crompton	$\frac{25}{32}$ & $\frac{27}{32}$	$7\frac{3}{4}$	$\frac{5}{16}$ & $\frac{13}{32}$	.28	.42	.56
33S	& Knowles	$\frac{29}{32}$ & $1\frac{1}{32}$	$8\frac{3}{4}$	$\frac{13}{32}$ & $\frac{7}{16}$	.36	.54	.72
37S	Loom	$1\frac{1}{4}$ & $1\frac{13}{32}$	$11\frac{1}{2}$	$\frac{1}{2}$ & $\frac{9}{16}$	.58	.87	1.16
Per Set					1.95	2.93	3.90

Junior "Ford." Set "B"

Drop-forged, accurately milled and case-hardened, the Wrenches in this selection—all tried out for service upon a Model "T" Ford Car—are of a class most commonly used for mechanical purposes and they will provide satisfactorily for the adjustment of about twenty prominent bolts and screws—Cylinder Head Bolts included—of that popular machine.

At moderate cost, owners are assured the maximum of first-class tool-service in their use.

Number	Class	Opening Size Inches	Extreme Length Inches	Unfinished Each	Semi-finished Each	Finished Each
27C	D. H. Engineers	$\frac{9}{16}$ & $\frac{11}{16}$	$5\frac{7}{8}$	$ .22	$ .33	$ .44
729	D. H. Cap Screw	$\frac{5}{8}$ & $\frac{3}{4}$	$6\frac{7}{8}$	.26	.39	.52
33C	D. H. Engineers	$\frac{15}{16}$ & 1	$8\frac{3}{4}$	.36	.54	.72
734	D. H. Cap Screw	$\frac{7}{8}$ & $1\frac{1}{8}$	$9\frac{3}{4}$	.40	.60	.80
966DS	S. H. Socket	$\frac{41}{64}$	11	.42	.63	.84
Ford Set "B" List Price of Roll $ .45 extra				1.66	2.49	3.32



See page 194 for styles of finish

Drop-Forged Spanner Wrenches

Williams

Pin



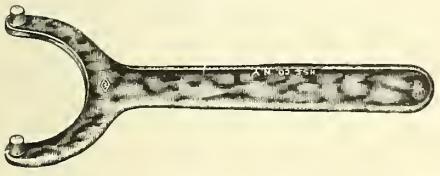
Unfinished are plain forgings.

Semi-Finished have pins milled, edges ground, and are case-hardened all over.

Finished have pins milled and are polished and case-hardened all over and lacquered.

Number	For Circle Diameter Inches	Extreme Length Inches	Finished Diameter Pin Inch	Unfinished Each	Semi-finished Each	Finished Each
452	1	4	3/16	$ .18	$ .27	$ .36
453	1 1/4	4 1/2	13/64	.19	.29	.38
454	1 1/2	5	7/32	.20	.30	.40
455	1 3/4	5 1/2	15/64	.21	.31	.42
456	2	6	1/4	.22	.33	.44
457	2 1/4	6 1/2	17/64	.23	.35	.46
458	2 1/2	7	9/32	.24	.36	.48
459	2 3/4	7 1/2	19/64	.26	.39	.52
460	3	8	5/16	.28	.42	.56
461	3 1/4	8 1/2	21/64	.30	.45	.60
462	3 1/2	9	11/32	.32	.48	.64
463	3 3/4	9 1/2	23/64	.34	.51	.68
464	4	10	3/8	.36	.54	.72
466	5	12	7/16	.48	.72	.96
468	6	14	1/2	.65	.98	1.30

Face



Unfinished are plain forgings but have pins milled.

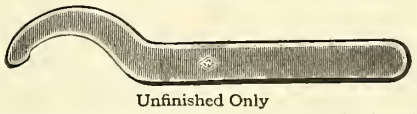
Semi-Finished have pins milled, the edges ground and are case-hardened all over.

Finished have pins milled, and are polished, case-hardened and lacquered all over.

The pins are forged integral with the wrench.

Number	Pins Distance C to C Inches	Pins Diameter Milled Inch	Pins Length Inch	Span of Jaws in Clear Inches	Length from C of Pins Inches	Thickness Inch	Unfinished Each	Semi-finished Each	Finished Each
418	1	3/16	3/16	11/16	4 1/2	3/16	$ .15	$ .22	$ .30
420	1 1/4	7/32	7/32	29/32	5	3/16	.17	.26	.34
422	1 1/2	7/32	7/32	1 1/8	5 1/2	3/16	.19	.28	.38
424	1 3/4	7/32	7/32	1 3/8	6	7/32	.22	.33	.44
426	2	1/4	1/4	1 5/8	6 1/2	7/32	.25	.38	.50
428	2 1/4	1/4	1/4	1 7/8	7	7/32	.29	.43	.58
430	2 1/2	9/32	9/32	2 3/32	7 1/2	1/4	.33	.50	.66
432	2 3/4	9/32	9/32	2 11/32	8	1/4	.38	.57	.76
434	3	5/16	5/16	2 19/32	8 1/2	1/4	.43	.64	.86
436	3 1/4	5/16	5/16	2 13/16	9 1/8	1/4	.49	.74	.98
438	3 1/2	5/16	5/16	3 1/32	9 3/4	1/4	.55	.82	1.10
440	3 3/4	3/8	3/8	3 1/4	10 3/8	1/4	.62	.93	1.24
442	4	3/8	3/8	3 7/16	11	1/4	.70	1.05	1.40

Hook



Unfinished Only

The diameter of circle which the unfinished forgings fit is given in second column of table, but wrenches will finish to sizes stated in third column.

Number	Forgings For Circle Diameter Inches	Forgings will finish for Circles Diameter Inches	Extreme Length Inches	Thickness Inch	Each
403	1 1/4	1 to 1 1/4	4 3/4	7/32	$ .20
404	1 1/2	1 3/8 to 1 5/8	6	1/4	.23
405	2	1 3/4 to 2	7 1/8	1/4	.26
406	2 1/4	2 1/8 to 2 3/8	8 7/16	1/4	.30
407	2 5/8	2 1/2 to 2 3/4	9 3/4	1/4	.34
408	3 1/8	2 7/8 to 3 1/4	10 7/8	5/16	.40
409	3 3/4	3 3/8 to 3 7/8	12	5/16	.48
410	4 3/8	4 to 4 1/2	13	5/16	.58
412	5 3/4	5 1/4 to 5 3/4	15	7/16	.85

Light Hook



Unfinished Only

Length of handle can be varied if desired

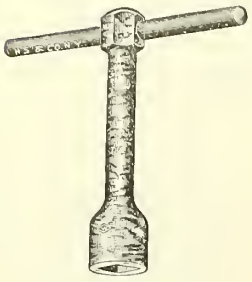
Number	Old Number	For Circle Diameter Inches	Extreme Length Inches	Hook Length Inch	Hook Width Inch	Hook Thickness Inch	Diameter Handle Inch	Each
491	308	1 3/16	6 1/2	1/16	3/8	3/16	3/8	$ .12
493	310	1 3/4	7 1/2	1/8	3/8	3/16	3/8	.14
494	311	2 1/8	8	1/8	3/8	3/16	3/8	.15
495	312	2 1/2	8 1/4	1/8	3/8	3/16	3/8	.16
496	313	2 3/4	8 1/2	1/8	3/8	3/16	3/8	.18
497	314	3	8 3/4	1/8	3/8	3/16	3/8	.20
498	315	3 1/2	9	1/8	3/8	3/16	3/8	.22

See page 194 for styles of finish

Drop-Forged Wrenches

Williams

Single Head Socket, with or without Handle. For Square Nuts, Cap Screws and Set Screws



Square Opening

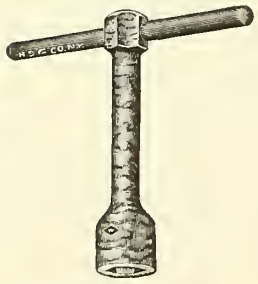
Unfinished are broached only.

Semi-Finished are broached, edges ground and case-hardened all over.

Finished are broached, polished all over, case-hardened and lacquered.

Number	Square Openings: For Set Screw Size Inches	For Cap Screw Diameter Screw Inches	For U. S. Standard Nut Size Bolt Inches	Short Diameter Broached Opening Inches	Extreme Length Inches	Diameter Head Inches	Diameter Shank Inches	Hex. End same size as U. S. Nut for Size Bolt Inches	Pin-Handle Diam. Inch	Pin-Handle Length Inches	Unfinished: Without Pin-Handle or Hole for same Each	Unfinished: With Pin-Handle and Hole for same Each	Semi-finished: Without Pin-Handle or Hole for same Each	Semi-finished: With Pin-Handle and Hole for same Each	Finished: Without Pin-Handle or Hole for same Each	Finished: With Pin-Handle and Hole for same Each
960H	1/8	...	...	1/8	3 5/8	11/32	7/32	1/8	1/8	3	$ .18	$ .26	$ .27	$ .35	$ .36	$ .44
961H	3/16	...	...	13/64	4	1/2	1/4	3/16	3/16	4	.20	.30	.30	.40	.40	.50
961J	1/4	...	...	17/64	4	1/2	1/4	3/16	3/16	4	.20	.30	.30	.40	.40	.50
962H	5/16	...	...	21/64	4 1/2	5/8	3/8	1/4	7/32	4 1/2	.22	.33	.33	.44	.44	.55
963H	3/8	1/4	...	25/64	4 7/8	11/16	3/8	5/16	9/32	5 1/8	.24	.37	.36	.49	.48	.61
965H	7/16	5/16	...	29/64	5 3/4	7/8	7/16	3/8	5/16	5 3/4	.29	.43	.44	.58	.58	.72
966H	1/2	3/8	1/4	33/64	6 1/8	1	1/2	7/16	11/32	6 1/8	.32	.47	.48	.63	.64	.79
967H	9/16	7/16	...	37/64	6 1/2	1 1/8	9/16	1/2	13/32	6 3/4	.36	.53	.54	.71	.72	.89
967X	...	...	5/16	39/64	6 1/2	1 1/8	9/16	1/2	13/32	6 3/4	.36	.53	.54	.71	.72	.89
968H	5/8	1/2	...	41/64	7	1 1/4	5/8	1/2	13/32	6 3/4	.40	.57	.60	.77	.80	.97
968M	...	9/16	3/8	45/64	7	1 1/4	5/8	1/2	13/32	6 3/4	.40	.57	.60	.77	.80	.97
969H	3/4	5/8	...	49/64	7 3/8	1 3/8	5/8	9/16	7/16	7 3/8	.46	.64	.69	.87	.92	1.10
970X	...	...	7/16	51/64	7 7/8	1 1/2	11/16	5/8	1/2	8 1/8	.52	.72	.78	.98	1.04	1.24
971H	7/8	3/4	1/2	57/64	8 1/4	1 5/8	3/4	5/8	1/2	8 1/8	.60	.80	.90	1.10	1.20	1.40
971X	...	...	9/16	63/64	8 1/4	1 5/8	3/4	5/8	1/2	8 1/8	.60	.80	.90	1.10	1.20	1.40
973H	1	...	...	1 1/64	9 1/8	1 7/8	7/8	3/4	5/8	9 1/8	.80	1.10	1.20	1.50	1.60	1.90
974X	...	...	5/8	1 5/64	9 1/2	2	15/16	7/8	11/16	9 1/2	.90	1.25	1.35	1.70	1.80	2.15
974H	1 1/8	7/8	...	1 5/32	9 1/2	2	15/16	7/8	11/16	9 1/2	.90	1.25	1.35	1.70	1.80	2.15
976H	1 1/4	1	3/4	1 9/32	10 3/8	2 1/4	1 1/16	1	3/4	10 3/8	1.15	1.55	1.72	2.12	2.30	2.70
977M	...	1 1/8	...	1 13/32	10 7/8	2 1/2	1 1/8	1 1/8	13/16	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
977X	...	...	7/8	1 15/32	10 7/8	2 1/2	1 1/8	1 1/8	13/16	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
977O	...	1 1/4	...	1 17/32	10 7/8	2 1/2	1 1/8	1 1/8	13/16	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
978M	...	1 3/8	1	1 21/32	11 3/8	2 3/4	1 3/16	1 1/8	13/16	10 7/8	1.60	2.05	2.40	2.85	3.20	3.65
979X	...	...	1 1/8	1 27/32	11 7/8	3	1 1/4	1 1/4	7/8	11 7/8	2.10	2.60	3.15	3.65	4.20	4.70
980X	...	...	1 1/4	2 1/32	12 1/2	3 5/16	1 3/8	1 3/8	1	12 1/2	2.80	3.45	4.20	4.85	5.60	6.25

Hexagon Opening





Offset form may be had of any wrench listed on this page, if so ordered, at prices same as for straight wrenches without pin, handle or hole.

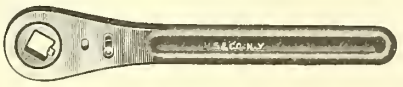
Number	Hexagon Openings: For U. S. Standard Nut Size Bolt Inches	For Cap Screw Diameter Screw Inches	Short Diameter Broached Opening Inches	Extreme Length Inches	Diameter Head Inches	Diameter Shank Inches	Hex. End same size as U. S. Nut; for Size Bolt Inches	Pin-Handle Diam. Inch	Pin-Handle Length Inches	Unfinished: Without Pin-Handle or Hole for same Each	Unfinished: With Pin-Handle and Hole for same Each	Semi-Finished: Without Pin-Handle or Hole for same Each	Semi-Finished: With Pin-Handle and Hole for same Each	Finished: Without Pin-Handle or Hole for same Each	Finished: With Pin-Handle and Hole for same Each
961A	1/8	...	21/64	4	1/2	1/4	3/16	3/16	4	$ .20	$ .30	$ .30	$ .40	$ .40	$ .50
962D	...	3/16	25/64	4 1/2	5/8	3/8	1/4	7/32	4 1/2	.22	.33	.33	.44	.44	.55
963A	3/16	...	27/64	4 7/8	11/16	3/8	5/16	9/32	5 1/8	.24	.37	.36	.49	.48	.61
963D	...	1/4	29/64	4 7/8	11/16	3/8	5/16	9/32	5 1/8	.24	.37	.36	.49	.48	.61
964A	1/4	5/16	33/64	5 1/4	3/4	3/8	5/16	9/32	5 1/8	.26	.39	.39	.52	.52	.65
965D	...	3/8	37/64	5 3/4	7/8	7/16	3/8	5/16	5 3/4	.29	.43	.44	.58	.58	.72
965A	5/16	...	39/64	5 3/4	7/8	7/16	3/8	5/16	5 3/4	.29	.43	.44	.58	.58	.72
966D	...	7/16	41/64	6 1/8	1	1/2	7/16	11/32	6 1/8	.32	.47	.48	.63	.64	.79
967A	3/8	...	45/64	6 1/2	1 1/8	9/16	1/2	13/32	6 3/4	.36	.53	.54	.71	.72	.89
967D	...	1/2	49/64	6 1/2	1 1/8	9/16	1/2	13/32	6 3/4	.36	.53	.54	.71	.72	.89
968A	7/16	...	51/64	7	1 1/4	5/8	1/2	13/32	6 3/4	.40	.57	.60	.77	.80	.97
968D	...	9/16	53/64	7	1 1/4	5/8	1/2	13/32	6 3/4	.40	.57	.60	.77	.80	.97
969A	1/2	5/8	57/64	7 3/8	1 3/8	5/8	9/16	7/16	7 3/8	.46	.64	.69	.87	.92	1.10
970A	9/16	...	63/64	7 7/8	1 1/2	11/16	5/8	1/2	8 1/8	.52	.72	.78	.98	1.04	1.24
970D	...	3/4	1 1/64	7 7/8	1 1/2	11/16	5/8	1/2	8 1/8	.52	.72	.78	.98	1.04	1.24
971A	5/8	...	1 5/64	8 1/4	1 5/8	3/4	5/8	1/2	8 1/8	.60	.80	.90	1.10	1.20	1.40
971D	...	7/8	1 5/32	8 1/4	1 5/8	3/4	5/8	1/2	8 1/8	.60	.80	.90	1.10	1.20	1.40
973A	3/4	1	1 9/32	9 1/8	1 7/8	7/8	3/4	5/8	9 1/8	.80	1.10	1.20	1.50	1.60	1.90
974D	...	1 1/8	1 13/32	9 1/2	2	15/16	7/8	11/16	9 1/2	.90	1.25	1.35	1.70	1.80	2.15
975A	7/8	...	1 15/32	10	2 1/8	1	7/8	11/16	9 1/2	1.00	1.35	1.50	1.85	2.00	2.35
975D	...	1 1/4	1 17/32	10	2 1/8	1	7/8	11/16	9 1/2	1.00	1.35	1.50	1.85	2.00	2.35
976A	1	...	1 21/32	10 3/8	2 1/4	1 1/16	1	3/4	10 3/8	1.15	1.55	1.72	2.12	2.30	2.70
977A	1 1/8	...	1 27/32	10 7/8	2 1/2	1 1/8	1 1/8	13/16	10 7/8	1.30	1.75	1.95	2.40	2.60	3.05
978A	1 1/4	...	2 1/32	11 3/8	2 3/4	1 3/16	1 1/8	13/16	10 7/8	1.60	2.05	2.40	2.85	3.20	3.65
979A	1 3/8	...	2 7/32	11 7/8	3	1 1/4	1 1/4	7/8	11 7/8	2.10	2.60	3.15	3.65	4.20	4.70
980A	1 1/2	...	2 13/32	12 1/2	3 5/16	1 3/8	1 3/8	1	12 1/2	2.80	3.45	4.20	4.85	5.60	6.25

Unless otherwise specified, wrenches with pin-handles will be sent

See page 194 for styles of finish

Wrenches

Socket Ratchet



No. 350

This Wrench is intended for use in conjunction with steel sockets listed below. It is 10 inches long, with adjustable ratchet arrangement and finished in full nickel-plate.

Without socket, each..... $2.00

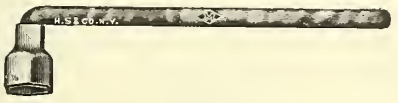
Allen-Friction



Made of drop-forged high carbon steel, carefully finished and pack-hardened. It has instant grip and no lost motion. It does the work of a ratchet wrench, without teeth, springs, pawls, etc. Simple, durable and fast. Works in less space than a ratchet wrench. Uses sockets listed below.

No. 10. 8½ inches over all, without sockets, each..... $3.00

Offset

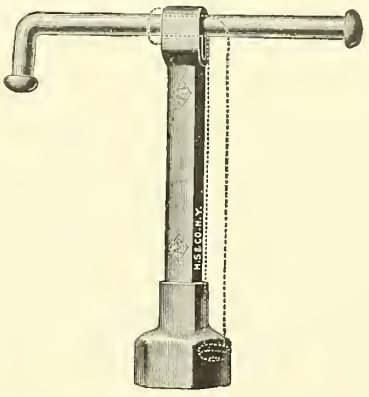


No. 320

Uses sockets listed below. Sockets are held on handle by ball friction. Furnished regularly 10 inches long, but can be supplied any length.

Without sockets, each..... $ .25

Folding



No. 310

This Wrench uses sockets listed below. Sockets are held on handle by ball friction.

When Wrench is not in use handle can be folded down so as to lie flat along the body, requiring little room in kit or tool box.

Without sockets, each..... $ .50

Pressed Steel Sockets for Wrenches

Fitting hexagon or square nuts, cap screws, set screws, etc. They are hardened, with mottled finish. They are used with all Wrenches shown on this page and first two on next page.

Hexagon

Sizes of Sockets Hexagon Inches	Fitting U. S. Standard Hexagon Nuts and Bolts Bolt Size Inch	Fitting S. A. E. Standard Nuts and Screws Screw Size Inch	Fitting Manufacturers Standard Head Bolts Bolt Size Inch	Fitting Hexagon Head Cap Screws Screw Size Inch	Fitting Hexagon Head Coach Screws Screw Size Inch
5/16					
11/32					
3/8					
13/32		1/4	1/4		1/4
7/16					
15/32				1/4	
1/2			5/16		5/16
17/32	1/4	5/16		5/16	
9/16					
19/32		3/8	3/8	3/8	3/8
5/8	5/16				
21/32				7/16	
11/16			7/16		7/16
23/32	3/8	7/16			
3/4					
25/32		1/2	1/2	1/2	1/2
13/16	7/16				
27/32				9/16	
7/8			9/16		9/16
29/32	1/2	9/16		5/8	
15/16					
31/32		5/8	5/8		5/8
1	9/16				
1 1/32		11/16		3/4	
1 3/32	5/8				
1 5/32		3/4	3/4	7/8	3/4
1 9/32	3/4	7/8		1	



Hexagon

	Each
Regular Sizes.....	$ .20
Spark Plug.....	.25



Square

Square

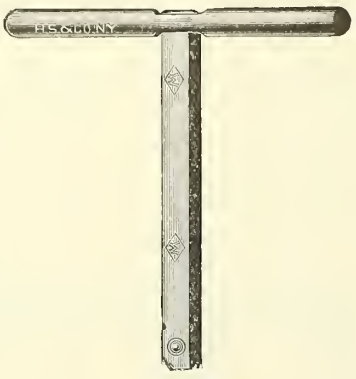
Sizes of Sockets Square Inches	Fitting Square Head Cap Screws Screw Size Inch	Fitting Square Head Set Screws Screw Size Inch	Fitting Square Head Coach Screws Screw Size Inch	Fitting U. S. Standard Square Nuts Screw Size Inch
13/32	1/4	3/8	1/4	
17/32	3/8	1/2	5/16	1/4
19/32	7/16	9/16	3/8	
21/32	1/2	5/8		5/16
25/32	5/8	3/4	1/2	
27/32			9/16	
29/32	3/4	7/8		1/2
1 1/32		1		9/16
1 5/32	7/8		3/4	

Special Spark Plug Sockets—fitting Standard Spark Plugs

Opening 29/32 inch. Length 4 inches
Opening 31/32 inch. Length 4 inches
Opening 1 1/32 inches. Length 4 inches
Opening 1 1/8 inches. Length 4 inches
Opening 1 1/2 inches. Length 4 inches

Wrenches

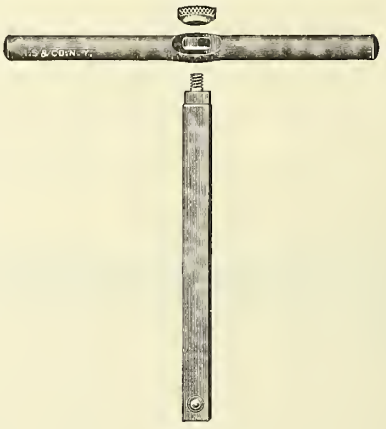
Socket



No. 330

Uses sockets listed on preceding page. Sockets are held on handle by ball friction. This Wrench is intended for use on machinery on which the bolts, nuts or screws are placed in otherwise inaccessible positions. Wrench is regularly furnished 10 inches long, but can be furnished to order in any length. Crossbar is securely riveted on.
Without sockets, each ..... $ .30

Detachable Handle



No. 340

This Wrench is similar to the No. 330 except that the handle is detachable. Regular length of Wrench is 10½ inches.
Without sockets, each ..... $ .35

Bent



Size	Fits United States Standard Hexagon Nuts, Inch	Fits United States Standard Cap Screws, Inch	Number 20 Dozen
6	..	1/4	$4.30
7	1/4	5/16	5.30
8	..	3/8	6.50
9	5/16	7/16	7.70
10	3/8	..	8.15
11	..	1/2	8.40
12	7/16	9/16	8.90
13	1/2	5/8	9.60

Straight



No. 10

Size	Fits United States Standard Hexagon Nuts, Inch	Fits United States Standard Hexagon Cap Screws, Inch	Dozen
1	1/4	1/4	$3.10
2	5/16	3/8—7/16	4.30
3	3/8	1/2	5.50
4	7/16—1/2	9/16—5/8	7.70
5	9/16—5/8	3/4	10.80

Socket Brace

Steel Tube

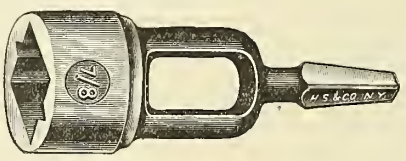


Blued. Cut Shows Hexagon

In ordering, state whether wanted for Square or Hexagon Nuts

Size of Nut for Bolt, inch.	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
Square opening, inches...	7/16	9/16	5/8	3/4	7/8	1	1 1/16	1 3/16
Hexagon opening, inches.	1/2	5/8	11/16	13/16	7/8	1	1 1/16	1 1/4
Dozen	$3.00	3.50	4.00	5.00	6.00	6.50	7.00	8.40

Cast Steel



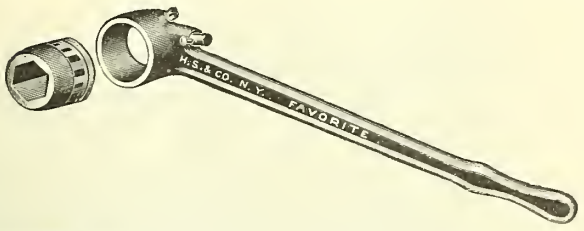
Japanned. For Square and Hexagon Nuts

Size opening Inches	3/8	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1	1 1/8	1 1/4
Size of Nut for Bolt, inch....	3/16		1/4	5/16	3/8		7/16	1/2	5/8		3/4
Dozen	$1.75	2.00	2.00	2.50	2.50	3.00	3.00	3.50	4.00	5.00	6.00

Wrenches

Ratchet Socket

Favorite



Nut encompassed on all sides by head, cannot slip and become injured
Reverse motion instantaneous by turning pawl from right to left or vice versa.
Its motion is continuous until nut is seated or removed.
Opening through head allows bolt to pass clear through.
Can be used in narrower places than an ordinary wrench.

Wrench	Length of Handle Inches	Take Heads	Head Sent Unless Otherwise Specified	Handle and One Head
No. 1	15	A B C	A	$4.50
No. 2	28	D E F G M	E	5.50
No. 2½	28	Z	Z	6.50
No. 3	28	H K L	H	7.50

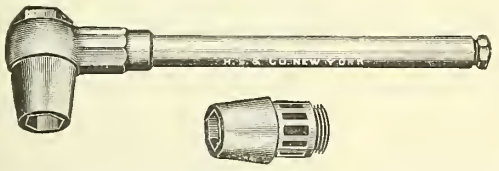
Heads Only

Showing Heads that have square and hexagon openings, and those having hexagon openings only.

Head	Openings for U. S. S. Nuts Square Inches	Hexagon Inches	Exact Size of Openings Square Inches	Hexagon Inches	Each	Fit Handles Number
A	½	½	$\frac{15}{16}$	$\frac{15}{16}$	$2.50	1
B	⅝	⅝	1⅛	1⅛	2.50	1
C	..	⅝x¾	...	1⅛x1$\frac{5}{16}$	2.50	1
D	...	¾x⅞	...	1$\frac{5}{16}$x1½	3.00	2
E	¾	¾	1$\frac{5}{16}$	1$\frac{5}{16}$	3.00	2
F	⅞	⅞	1½	1½	3.00	2
G	...	⅞xI	...	1½x1$\frac{11}{16}$	3.00	2
M	...	1x1⅛	...	1$\frac{11}{16}$x1⅞	3.00	2
Z	...	1⅛x1¼	...	1⅞x2$\frac{1}{16}$	3.00	2½
H	1	1	1$\frac{11}{16}$	1$\frac{11}{16}$	4.00	3
K	1⅛	1⅛	1⅞	1⅞	4.00	3
L	1¼	1¼	2$\frac{1}{16}$	2$\frac{1}{16}$	4.00	3

Keystone

(Reversible)



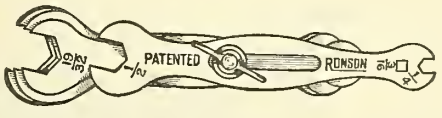
The body of this Wrench is made of drop-forged steel, the socket of forged steel; the handle is made of cold-drawn tubing, thereby insuring the greatest possible strength. These Wrenches are made with handles from 10 inches long and upwards as ordered, other parts being in proportion, and for use on either square or hexagon nuts.

In making sockets we work according to U. S. standard size nuts. Special sockets made to order. In ordering sockets other than U. S. standard size, it is advisable to have sample of nuts to insure accuracy.

Number	Length of Handle, Inches	For Nuts, Bolt Size, Inches	Wrench with One Socket	Extra Sockets Each
171	10	¼ to ⅝	$4.75	$1.75
172	14	⅜ to ⅞	5.50	2.00
173	16	½ to 1⅛	6.50	2.50
174	18	¾ to 1½	7.50	3.00
175	22	¾ to 1½	7.75	3.00
176	24	¾ to 1½	8.00	3.00
177	28	¾ to 1½	8.50	3.00

Order Sockets by bolt sizes, and state whether square or hexagon

Ronson Combination



Made of carbon plate steel, carefully tempered. Wing nut and bolt are drop-forged. Can be taken apart by loosening thumb-screw. The range is sufficient for most of the work around automobiles and small machines generally. An additional feature is the Prest-O-Lite key embodied in one of these wrenches.

Four Wrenches with nine openings sizes, as follows: $\frac{3}{16}$, ¼, $\frac{5}{16}$, ⅜, $\frac{7}{16}$, ½, $\frac{19}{32}$, $\frac{11}{16}$ and $\frac{25}{32}$ inch. Nickel-plated.
Each $1.50

A Handbook for Mechanics

By Franklin E. Smith, M. E.

324 Pages. 127 Illustrations. 12 Mo. Cloth Bound. Each, $1.50

Contents

Part. I. Arithmetic

Numeration. Notation. Addition. Subtraction. Multiplication. Division. Tables of Weights and Measures used by Mechanics. Reduction. Fractions. Addition of Fractions. Arithmetical Signs. Subtraction, Multiplication and Division of Vulgar Fractions. Decimal Fractions. Reduction of Decimal Fractions. Addition, Subtraction, Multiplication and Division of Decimals. Proportion. Compound Proportion. Interest. Involution. Evolution. Cube Root.

Part II. Arithmetical Signs and Characters and Explanation of Solving Formulæ

Arithmetical Signs. Examples on the use of Addition, Minus, Multiplication and Division signs. Examples showing how Brackets are used. Examples on signs representing the Power of numbers and the Roots of numbers. Law of signs in Multiplication and Division. Formulæ.

Part III. Mensuration

Table of Decimal Equivalents. Explanation of Terms. The Circle. Ellipse. Triangle. Rhomboid. Trapezium. Sphere. Volume Measure and contents of Solids. Rectangular Solids. The Cylinder. Pyramid. Cone. Frustum.

Part IV. Weight. Specific Gravity

How the Dimensions, Measurements and Weight of different shaped vessels and the Weight of different parts are found. Specific Gravity. Table of Specific Gravities of Liquids and Solids. Circular Measure. Square Measurements. Circular Areas. Measurements and Weights of Tanks. Measurements of Circular Tanks. How to calculate the Weight of Different Materials and the Weight of the Different Parts of a machine or structure of any kind. Tables of Weights of various Metals.

Part V. The Primary or Simple Machines

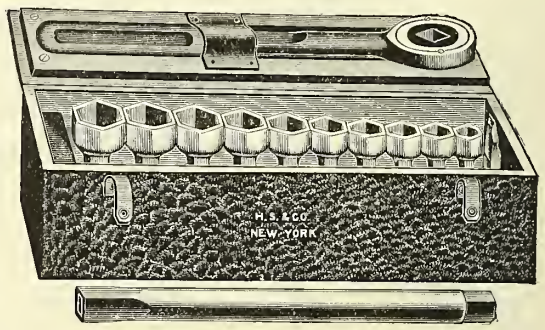
The Lever. Compound Lever. Pulley. Strength of a Rope. Wheel and Axle. Inclined Plane. Wedge. Screw.

Part VI. Strength of Materials and Questions Relating to Stress

Table showing Ultimate and Elastic Strength, Safe Working Stress and Factors of Safety of Materials. Tensile Stress. Compressive Stress. Shearing Stress.

Ratchet Socket Wrench Sets, for Automobiles, Etc.

B. M. Co.



Contains

One Improved Ratchet Wrench
Ten Hexagon Steel Tube Socket Wrenches
One Wrench Extension
One Steel Screwdriver Bit

Capacity

U. S. Standard Hexagon Nuts, $\frac{1}{4}$ to $\frac{5}{8}$ inclusive
U. S. Standard Hexagon Cap Screws, $\frac{1}{4}$ to $\frac{3}{4}$ inclusive
S. A. E. or A. L. A. M. Hexagon Nuts and Cap Screws, $\frac{5}{16}$ to $\frac{9}{16}$ inclusive

Handsome and attractive wood case, covered with imitation leather, 11 inches long by $2\frac{3}{4}$ inches deep by $2\frac{1}{2}$ inches wide.

The simplicity of this ratchet makes it the best and most popular on the market. There are no screws to adjust to change the action—no intricate mechanism to get out of order. The action of the ratchet is reversed by simply placing the socket in the reverse side of the handle. Sockets are made of the highest grade of tubing procurable.

No. 3 Per Set $5.50

Mossberg

This is an exceptionally complete set. The tools are all of very fine quality in wooden case, as follows:



Ratchet Wrench Handle No. 350
Take Down Handle No. 340, and Extension Bar
Offset Socket Handle No. 320.
One Pipe Grip
No. 1 General Service Set of Double End Wrenches, Extra Finish, End Openings $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$ $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{16}$, $1\frac{1}{8}$, $1\frac{1}{4}$ inches
Universal Joint
Three Special Spark Plug Sockets, Hexagon opening $\frac{29}{32}$, $1\frac{1}{32}$, $1\frac{1}{8}$ inches—all 4 inches long
Three Sizes Screwdriver Bits
One Cotter Pin Extractor
Mottled, thoroughly hardened, sockets

Twenty-three Hexagon openings

$\frac{5}{16}$, $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{15}{32}$, $\frac{1}{2}$, $\frac{17}{32}$, $\frac{19}{32}$, $\frac{5}{8}$, $\frac{21}{32}$, $\frac{11}{16}$, $\frac{23}{32}$
$\frac{25}{32}$, $\frac{13}{16}$, $\frac{27}{32}$, $\frac{7}{8}$, $\frac{29}{32}$, $\frac{31}{32}$, 1, $1\frac{1}{32}$, $1\frac{3}{32}$, $1\frac{5}{32}$, $1\frac{9}{32}$ inches

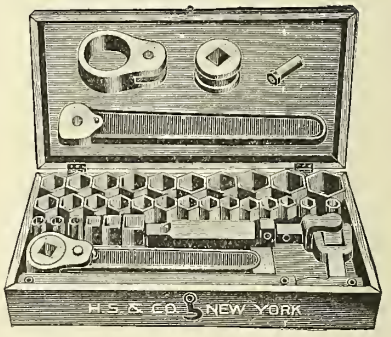
Eleven Square openings

$\frac{13}{32}$, $\frac{15}{32}$, $\frac{17}{32}$, $\frac{19}{32}$, $\frac{21}{32}$, $\frac{23}{32}$, $\frac{25}{32}$, $\frac{29}{32}$, $1\frac{1}{32}$, $1\frac{5}{32}$, $1\frac{9}{32}$ inches

No. 14 Per Set..... $12.00

Allen

This Set is furnished with the Allen-Friction Socket Wrench, made from the best drop-forged high carbon steel, carefully machined, pack-hardened and finished.



The Set, in wooden case, comprises:

One Allen-Friction Wrench No. 10
Twenty-seven Hexagon Hardened Steel Sockets Openings, $\frac{5}{16}$ to $1\frac{1}{32}$x32nds; also $1\frac{3}{32}$-$1\frac{5}{32}$-$1\frac{9}{32}$
Three Square Hardened Steel Sockets Openings, $\frac{13}{32}$-$\frac{17}{32}$-$\frac{21}{32}$
One Spark Plug Socket
One Short Extension
One Long Extension
One Screwdriver
One Universal Joint

No. 31 Per Set..... $10.00

Spark Plug Wrench

Williams No. 993

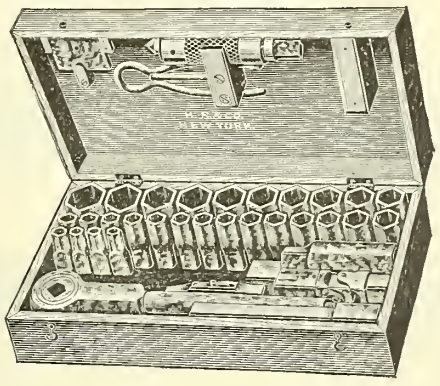
Drop-forged from steel and designed for convenient service about automobiles, motor boats, gas engines, etc.



Open End	Box End	
For Tire Lug	$\frac{7}{8}$-inch opening, for $\frac{1}{2}$-inch Spark Plug	
$\frac{3}{8}$-inch U. S. Standard Cap Screw	$\frac{1}{2}$-inch U. S. Standard Nut	
$\frac{3}{8}$-inch S. A. E. or A. L. A. M. Standard Nut	Unfinished, each.....	$ .40
$\frac{3}{8}$-inch S.A.E. or A.L.A.M. Stand. Cap Screw	Semi-Finished, each.....	.60
$\frac{9}{16}$-inch Set Screw	Finished, each.....	.80

Socket Wrench Sets for Automobiles, Etc.

Starrett



This Wrench is made from drop-forged and other steel—all finished in a workmanlike manner, case-hardened and strong where strength is needed, yet light and convenient to handle. The ratchet can be instantly reversed by simply rotating between thumb and finger the stem end of the dog in the end of the handle half a turn. Hexagon drawn steel sockets varying by 32ds from $\frac{5}{16}$ to $1\frac{1}{4}$ inches, have duplicate shanks to fit the square opening through the ratchet head, also the end of a square extension piece which fits the ratchet where they are frictionally held, and will reach otherwise inaccessible places. A universal joint is also made to fit this extension piece to turn a nut otherwise difficult to get at. A screw-driver with reversible blades of two sizes also fits the extension and may be used with or without the wrench.

A first-class drilling fixture is made to fit the ratchet head, which will hold any size of twist drill from $\frac{1}{8}$ inch to $\frac{1}{2}$ inch, with which drilling can be done in difficult places to best advantage, the feed being done with our special friction wrench sent with each.

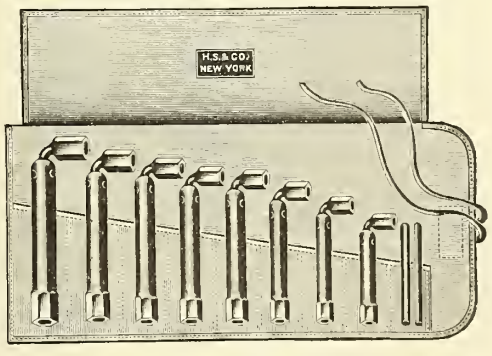
This Wrench, with a full set of sockets and other accessories, will be found of inestimable value to engineers and machinists in every plant where nuts and bolts are used, as well as to the automobilist.

No. 443A, complete.....Each $15.00

No. 443B, without Drill Fixture.....Each 12.00

Sent complete unless otherwise ordered

B. M. Co. Bent



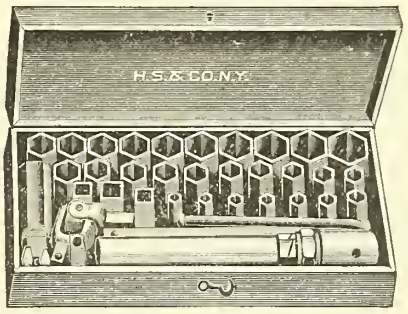
No. 2. Eight Pieces

Made of seamless steel tubing. One solid piece. Strong, light and handy; especially for close offset and deep work. No adjusting. Very popular with automobilists.

Kit when closed is 9 inches long by 4 inches wide and weighs 4 pounds. Capacity U. S. S. Hexagon Nuts—$\frac{1}{4}$ to $\frac{1}{2}$ inclusive. U. S. S. Hexagon Cap Screws $\frac{1}{4}$ to $\frac{5}{8}$ inclusive. S. A. E. or A. L. A. M. Hexagon Nuts and Cap Screws $\frac{5}{16}$, $\frac{9}{16}$ inclusive.

In Imitation Leather Roll, per set..... $6.00

Large Auto Cle



The Large Auto Cle Set consists of the following:

One take-down reversible ratchet handle, nickel-plated

One swivel or Universal joint, which permits using the wrench at any angle

One $9\frac{1}{2}$-inch extension bar

One $1\frac{3}{4}$-inch extension bar

Two sizes of screwdriver bits

Thirty-one sizes of Mottled Case-hardened Pressed Steel sockets

Sizes of sockets furnished:

Hexagon

$\frac{5}{16}$, $\frac{11}{32}$, $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{15}{32}$, $\frac{1}{2}$, $\frac{17}{32}$, $\frac{9}{16}$, $\frac{19}{32}$, $\frac{5}{8}$, $\frac{21}{32}$, $\frac{11}{16}$, $\frac{23}{32}$, $\frac{3}{4}$, $\frac{25}{32}$, $\frac{13}{16}$, $\frac{27}{32}$, $\frac{7}{8}$, $\frac{29}{32}$, $\frac{15}{16}$, $\frac{31}{32}$, 1, $1\frac{1}{32}$, $1\frac{3}{32}$, $1\frac{5}{32}$, $1\frac{9}{32}$ inches.

Special Spark Plug Socket $\frac{29}{32}$ inch hexagon, 4 inches long

Square

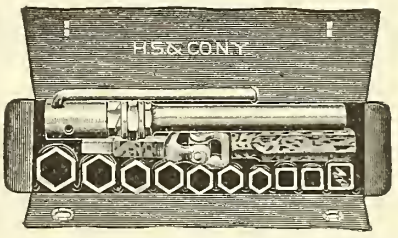
$\frac{13}{32}$, $\frac{17}{32}$, $\frac{21}{32}$ inch

These sockets will fit all set screws, bolts and nuts in general use on automobiles whether of American or foreign manufacture.

The above parts and sockets are contained in a compact hardwood case fitted with pegs on which to place the sockets, thus making loss of parts unlikely and preventing rattle or noise.

In Wooden Case, per set..... $10.00

Small Auto Cle



The Small Auto Cle Set is the same as the Large Auto Cle Set, with the exception that twelve sizes of Mottled Case-hardened Pressed Steel sockets are furnished instead of thirty-one. Sizes of sockets furnished:

Hexagon

$\frac{13}{32}$, $\frac{17}{32}$, $\frac{19}{32}$, $\frac{21}{32}$, $\frac{23}{32}$, $\frac{13}{16}$, $\frac{29}{32}$, $1\frac{3}{32}$ inches

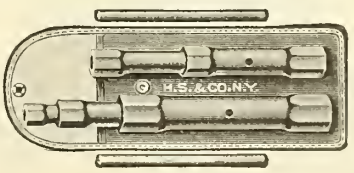
Special Spark Plug Socket $\frac{29}{32}$ inch hexagon, 4 inches long

Square

$\frac{13}{32}$, $\frac{17}{32}$, $\frac{21}{32}$ inch

In Leather Case, per set..... $7.50

B. M. Co. Straight



No. 1

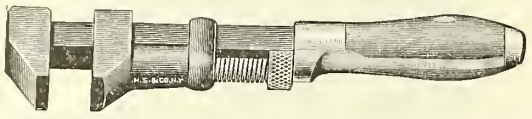
Five Pieces. 10 openings. Capacity:

All Spark Plugs, U. S. S. Hexagon Nuts $\frac{1}{4}$ to $\frac{5}{8}$ inch inclusive. U. S. S. Hexagon Cap Screws $\frac{1}{4}$ to $\frac{3}{4}$ inch inclusive. S. A. E. or A. L. A. M. Hexagon Nuts and Cap Screws $\frac{5}{16}$ to $\frac{9}{16}$ inclusive.

Per set..... $3.10

Screw or Monkey Wrenches

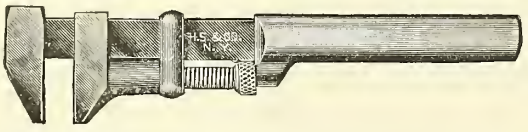
Genuine Coes Knife Handle



Cast semi-steel frame handle, hardwood sides secured at both ends by insertion under metal and riveted up under pressure. The screw is of hardened steel and in one piece.

Length, inches.	6	8	10	12	15	18	21
Opens, inches.	1	1¼	1¾	2¼	2⅝	3	4
Black, dozen. .	$9.00	10.00	12.00	14.00	24.00	30.00	36.00

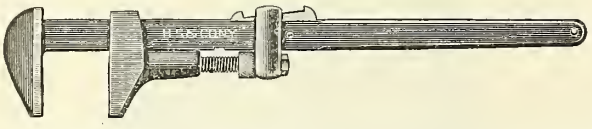
Genuine Coes Steel Handle



Made for heavy work, and especially adapted to railroad work. Made of steel with all working parts hardened. The handle is internally supported and retained by cross riveting and by extension of bar through handle. The 12 to 21 inches have ball bearing screws and extended screw support.

Length, inches.	4	6	8	10	12	15	18	21
Opens, inches.	⅞	1	1¼	1¾	2¼	2⅝	3	4
Black, dozen. .	$8.00	9.00	10.00	12.00	14.00	24.00	30.00	36.00

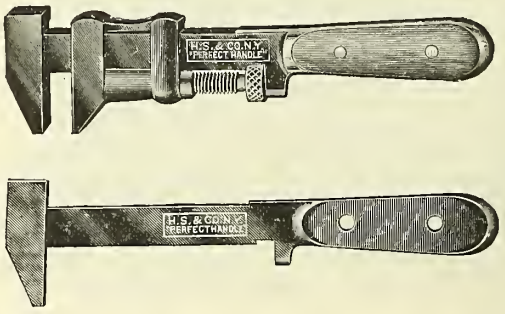
Genuine Coes Key Model



This Wrench is designed especially for large nuts, and finished work where the regular wrench is too small or not suited on account of short leverage. The strap has two positions for large and small work.

28-inch weighs about 19 pounds, opens 5⅛ inches. . . . . Each, $9.75
36-inch weighs about 27 pounds, opens 6¼ inches. . . . . Each, 19.00
48-inch weighs about 62 pounds, opens 9½ inches. . . . . Each, 47.00

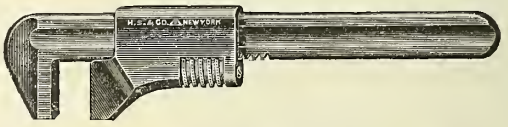
Perfect Handle



This Wrench is made from a drop forging which includes handle, bar and head in one piece. Top and bottom straps of sliding jaw are rigidly yoked together. Back of bar is reinforced to compensate for screw head cut-out on front of bar. The wooden handle pieces are waterproofed, locked in and riveted under pressure. Cut shows the drop-forged "one piece" bar.

Length, inches. .	6	8	10	12	15	18	21
Opens, inches. . .	1 1/16	1¼	1⅞	2 3/16	2¾	3⅛	4
Dozen.	$9.00	10.00	12.00	14.00	24.00	30.00	36.00

Billings and Spencer Automobile

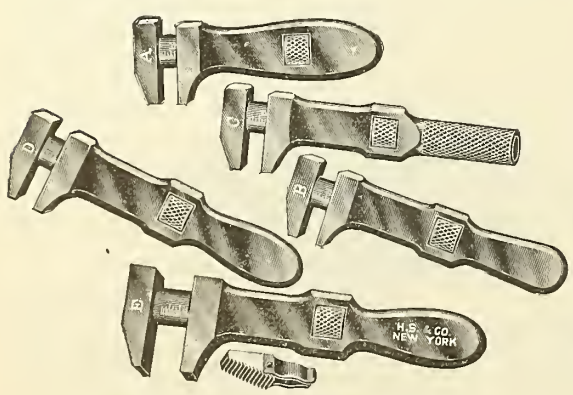


Drop-forged from bar steel and case hardened

Length, inches.	6	8	10	12	14	18
Opens, inches.	1 11/16	1½	2 7/16	2¾	2 13/16	3 3/16
Thickness of Jaw, inches	5/16	3/8	7/16	7/16	9/16	¾
Depth of Jaw, inches. .	1	1¼	1½	1½	1¾	2⅛
Weight, pounds.	⅝	1	1¾	2	4	7
Rustless Blue, dozen. .	$7.00	9.00	10.00	15.00	20.00	28.00
Nickel-plated, dozen.	10.00	12.00	16.00	24.00	34.00	42.00

Billings and Spencer Pocket

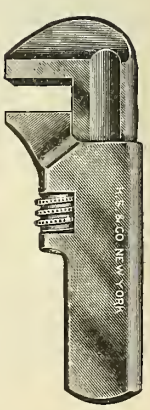
Drop-Forged. Finely Finished



Sliding Bar Graduated to 32nds of an Inch

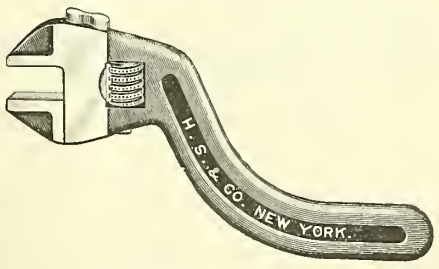
	Length Closed Inches	Opens Inches	Weight Ounces	Black Dozen	Nickel Dozen
Model A.	4¼	1	7¼	$9.00	$10.00
Model B.	5	1	7½	9.00	10.00
Model C.	5	1	7	10.00	11.00
Model D.	6	1¼	11¼	10.00	12.00
Model E, without pipe attachment.	7	1¾	19	12.00	15.00
Model E, with pipe attachment.	7	1¾	19¼	16.20	19.20
Model 97.	4¼	1⅜	5½	6.50	8.00

By the use of the Attachment shown in the illustration, the Model E Wrench can be instantly converted into a Pipe Wrench.
The Attachment consists of a serrated tool-steel jaw with a tempered steel spring, which serves to hold the jaw in place on the wrench. Can be used on pipe up to and including ¾-inch in diameter.



Adjustable "S" Wrenches

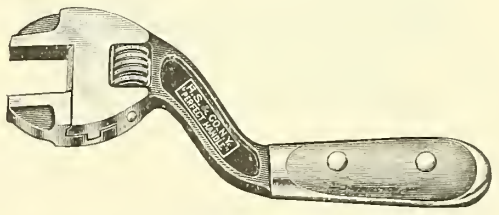
Billings & Spencer



This Wrench combines the advantages of a solid machine wrench with the convenience of an adjustable wrench. Every part is a drop-forging, and the sliding jaw is fitted in a double groove, which greatly adds to the strength of the tool. By tightening the thumb screw on the adjusting knurl, the Wrench may be securely locked to the desired opening.

Number	Size Inches	Opens Inches	Thickness of Jaw Inch	Depth of Jaw Inches	Weight	Dozen
5	6	1	13/32	7/8	8 oz.	$8.00
6	8	1 1/4	17/32	1 1/8	1 lb. 1 oz.	9.00
7	10	1 1/2	5/8	1 1/4	1 lb. 11 oz.	10.00
8	12	1 3/4	13/16	1 7/16	2 lb. 5 oz.	11.00

Perfect Handle



No. 641

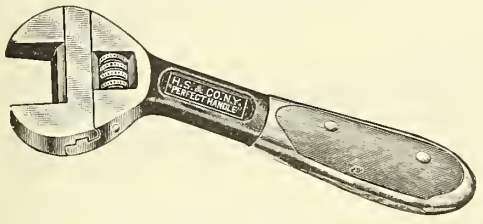
Drop-forged steel, with the Perfect Handle, is scientifically constructed and has great leverage.

Absolutely Guaranteed

Length, inches	6	8	10
Opening, inches	7/8	1 1/8	1 3/8
Dozen	$10.00	12.50	15.00

Adjustable 15-Degree Angle Wrenches

Perfect Handle

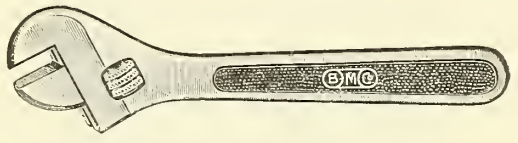


No. 642 Drop-Forged, Light and Strong

Unqualifiedly Guaranteed

Length, inches	6	8	10
Opening, inches	7/8	1 1/8	1 3/8
Dozen	$10.00	12.50	15.00

B. M. Co.

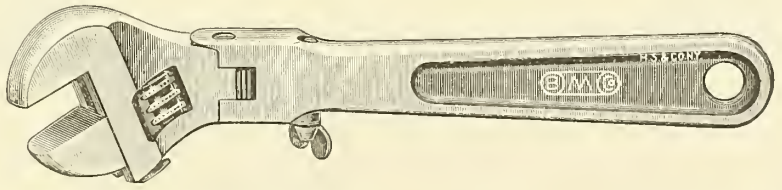


Drop-forged of a high grade tool steel, especially adaptable for wrenches and pliers. The jaws are carefully and accurately milled to fit and are properly hardened.

The popularity and merit of the Angle Wrench is so well established that nothing need be said on that point. Finished in Full Natural Polish and Polished Nickel.

Length, inches	6	8	10
Opening of Jaw, inches	3/4	15/16	1 1/8
Natural Polish	$7.80	9.60	12.00
Polished Nickel	9.60	11.60	14.00

B. M. Co. Duplex



The "Duplex" represents the latest and most practical adjustable wrench yet devised.

Embodying all of the advantageous features of the open-end adjustable angle wrench, the "Duplex" has, directly back of the jaws, an adjustable break in the handle which permits the head to be adjusted and set at nine different angles, right or left from the handle.

The advantages of this improved feature are obvious and require no detailed explanation.

Work which is inaccessible with any other type of wrench can be conveniently done with the "Duplex."

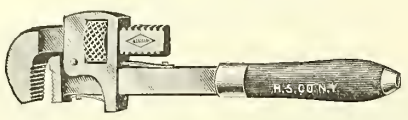
All parts are drop-forged of good tough steel, accurately and carefully machined and are fully guaranteed against any defects in either workmanship or material.

A distinctively handsome high grade tool.

Length 6 inches, opening of jaw 3/4 inch, per dozen	$16.80
Length 8 inches, opening of jaw 15/16 inch, per dozen	22.80
Length 10 inches, opening of jaw, 1 1/8 inches, per dozen	26.40

Pipe Wrenches

Genuine Stillson



Wood Handle, 6 to 14 Inches



Steel Handle, 8 to 48 Inches

Length Open Inches	Takes Pipe Inches	Each	Extra Jaws Each	Extra Nuts Each	Extra Frames Each	Extra Wood Handles Each	Extra Steel Handles Each	Extra Springs Each
6	⅛ to ½	$2.00	$ .75	$ .11	$ .35	$ .16	.....	$ .10
8	⅛ to ¾	2.00	.75	.11	.35	.16	.....	.10
10	⅛ to 1	2.25	.80	.14	.40	.18	.....	.10
14	¼ to 1½	3.00	1.00	.17	.50	.25	.....	.10
18	¼ to 2	4.00	1.33	.22	.55	.28	$2.10	.10
24	¼ to 2½	6.00	2.10	.35	.80	.....	3.20	.11
36	¼ to 3½	12.00	4.75	.55	1.30	.....	6.40	.13
48	1 to 5	18.00	7.25	.95	1.50	.....	9.25	.13

Genuine Stillson Automobile

Polished



8 Inches, holds pipe ⅛ to ¾-inch ..... Each, $2.00
10 Inches holds pipe ⅛ to 1-inch ..... Each, 2.25

Perfect Handle



No. 643. Drop-Forged

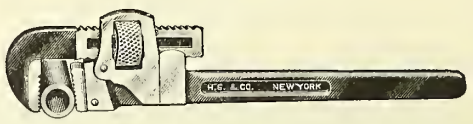
A handsome and strong tool, with Perfect Handle; comfortable in all weather and conditions. The spring is protected and the movable jaw and bar are drop-forgings.

Length when open, inches...	8	10	14	18
Grips Rounds, inches.....	⅛ to ¾	⅛ to 1	¼ to 1½	¼ to 2
Each.....	$2.00	$2.25	$3.00	$4.00

Parts

Inches.....	8	10	14	18
Movable Jaw	$ .75	$ .80	$1.00	$1.33
Nut.....	.11	.14	.17	.22
Frame.....	.35	.40	.50	.55
Spring.....	.03	.03	.03	.04
Frame Pin.....	.03	.04	.04	.04
Spring Pin.....	.03	.04	.04	.04

Trimo



Length Open Inches	Capacity Inches	Each	Movable Jaw Each	Nut Each	Insert Jaw Each	Frame Each	Springs Each	Frame Pins Each	Jaw Pins Each
6	⅛ to ½	$2.00	$ .75	$ .11	$ .35	$ .35	$ .03	$ .03	$ .03
8	⅛ to ¾	2.00	.75	.11	.35	.35	.03	.03	.03
10	⅛ to 1	2.25	.80	.14	.45	.40	.03	.04	.04
14	¼ to 1½	3.00	1.00	.17	.55	.50	.03	.04	.04
18	¼ to 2	4.00	1.33	.22	.65	.55	.04	.04	.04
24	¼ to 2½	6.00	2.10	.35	.75	.80	.04	.04	.04
36	½ to 3½	12.00	4.75	.55	1.05	1.30	.04	.05	.05
48	1 to 5	18.00	7.25	.95	1.35	1.50	.04	.05	.05

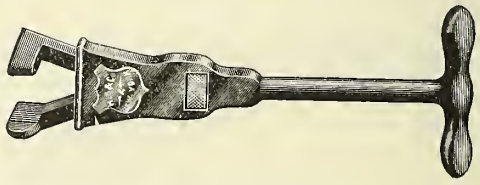
Trimo, Narrow Jaw



This Wrench is designed for "close-quarter" work. The jaws are narrower than on the regular wrenches; particularly desirable for automobile use.

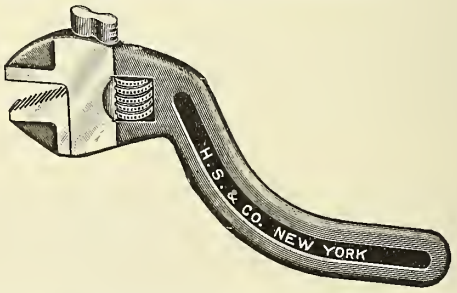
Length, inches	6	8	10
Holds pipe up to, inches	½	¾	1
Each	$2.00	2.00	2.25

Trimo, Basin



Length 10 inches. All parts interchangeable ..... Each $1.25
Extra Jaws ..... Each .50
Extra Screws ..... Each .20
Extra Nuts ..... Each .20
Extra Springs ..... Each .10

Billings & Spencer Adjustable "S"



In general design this Wrench follows the lines of the regular Adjustable "S," but has a serrated jaw for use on pipe. The Wrench is of drop-forged steel throughout, and the parts are carefully hardened and are interchangeable. The thumb screw at side securely locks the nut at any desired opening.

Number	Size Inches	For Pipe Inches	Thickness of Jaw Inch	Depth of Jaw Inches	Weight	Dozen
10	6	⅛ to ½	13/32	7/8	8 oz.	$10.00
11	8	⅛ to ¾	17/32	1 1/8	1 lb. 1 oz.	12.00
12	10	⅛ to 1	5/8	1 1/4	1 lb. 11 oz.	14.00
13	12	⅛ to 1¼	13/16	1 7/16	2 lb. 5 oz.	16.00

SEE DISCOUNT SHEET

Alligator Wrenches

Adjustable

Triplet



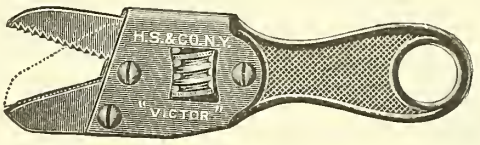
Combines three Wrenches as follows:

Plain Wrench	0 to 7/8 inch
Alligator Wrench	0 to 5/8 inch
Tap Wrench	1/8 to 1/2 inch

Tool is 5½ inches long. Drop-forged, with hardened jaws, and has improved screw adjustment.

Each $1.00

Victor



Drop-forged from best tool steel, 7 inches long; holds pipe up to ¾ inch and rods and nuts up to 1 inch.

Full Nickel-plated ..... Each $1.20

Black, polished jaws ..... Each 1.00

Solid

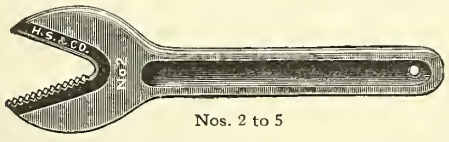
Wrenches Nos. 2 to 5, 10 to 20 and Twin are forged solid in one piece, from best refined iron, with tempered steel jaws. No. 1 Pocket and Pony are plate steel. They all have ratchet teeth cut diagonally across one jaw, thus enabling them to bite with three teeth at once. A single wrench will hold many sizes of nuts or bolts without the necessity for adjustment.



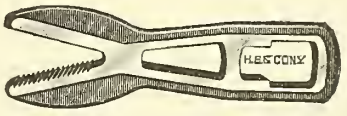
No. 1



Pocket



Nos. 2 to 5



Nos. 10 and 20



Twin



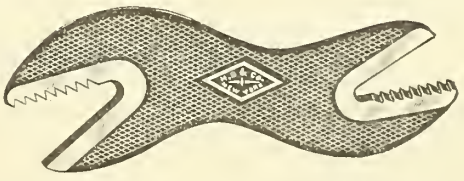
Pony

Number	1	2	3	4	4½	5	Twin	Pocket	10	20	Pony
Holds Pipe, inches	1/8 to 3/8	3/8 to 3/4	1/2 to 1 1/4	1 1/4 to 2	1 1/2 to 2 1/2	2 to 3	1/8 to 3/4	1/8 to 1/4	1/8 to 3/8	1/4 to 1	1/4 to 9/16
Holds Round Iron, inches	1/4 to 3/4	1/2 to 1	3/4 to 1 3/8	1 1/2 to 2 1/2	1 7/8 to 3 1/4	2 1/4 to 3 1/2	1/4 to 1	1/4 to 9/16	1/4 to 3/4	1/2 to 1 1/4	1/4 to 3/4
Length, inches	5 5/8	8 7/8	15 3/4	21 1/2	24 3/4	27 1/2	10	4	5 5/8	7	5 5/8
Dozen	$4.00	$12.00	$24.00	$36.00	$50.00	$60.00	$18.00	$4.00	$4.50	$8.00	$6.50

Always Ready

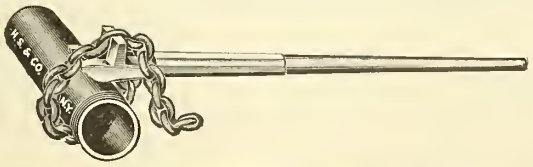
Forged from high carbon steel, oil tempered. Black finish. Polished jaws

Number	Length Over all Inches	Holds Square or Round Iron Diameter Inches	Weight Per Dozen	Per Dozen
1	5	1/4 to 3/4	5 pounds 8 ounces	$4.60
2	7	1/4 to 1 1/4	9 pounds 11 ounces	6.30
2½	9½	1/4 to 1 3/4	20 pounds 5 ounces	10.00
3	11½	3/4 to 2	28 pounds 2 ounces	15.25



Chain Tongs

Robbins



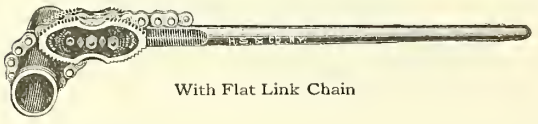
Number	2	3	4	5	6	7
Length of Lever, inches	27	36	48	60	72	84
Size of Chain, inches	5/16	5/16	3/8	1/2	5/8	3/4
For pipe, inches	1 to 2	1 1/4 to 4	2 to 6	2 1/8 to 8	4 to 10	4 to 16
Weight, pounds	7	12	24	33	50	100
Each	$5.50	$6.25	$9.00	$12.50	$16.00	$30.00

Drop-Forged Chain Pipe Wrenches

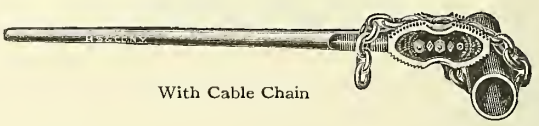
Vulcan Improved

With Double-Ended Reversible Jaws for Turning or Holding Pipe, Pipe Fittings, Etc.

From ⅛ to 12 Inches Diameter



With Flat Link Chain



With Cable Chain

Wholly made from drop-forged and otherwise wrought steel. These tools are fully guaranteed and recommended as the most efficient and serviceable chain pipe wrenches made.

The Double-ended Reversible Jaws, which may be quickly changed end for end as teeth first in use wear, greatly extend the life of the wrench and assure the service of "two tools at the price of one."

The fastening of jaws to handle with two unusually tough steel studs makes repairs possible in emergencies, insures uninterrupted service of tool and prevents the jaws from spreading. One stud will withstand full working strength of tool, when necessary.

In the "straight-cut" teeth there is thorough distribution of gripping pressure; the tearing of pipe and one-spot wear of teeth will therefore be wholly prevented.

The chains, actually proof-tested to two-thirds of their breaking strain, are hand-made from steel manufactured expressly for them; they swing from the center and can be used on either side of the jaws, thus reducing to the minimum the wear upon specific teeth.

The handle design provides for the maximum of strength in the minimum of weight.

Number	30	31	32	33	33½	34	35
Capacity Size pipe	⅛ to ¾	⅛ to 1½	¼ to 2½	¾ to 4	1 to 6	1½ to 8	2 to 12
Ex. Length, inches	13¾	20	27	37	44½	50½	64½
Weight, lbs.	1¾	5¾	10	16	24	31	50
Flat Link Chain Length	9½	13½	17½	22½	31	39	54½
Breaking strain, lbs.	3,600	6,700	9,800	12,500	14,300	15,700	21,600
Cable Chain Length	9¾	14½	18	27	33½	42	57
Size iron	3/16	9/32	11/32	7/16	15/32	23/64	31/64
Breaking strain, lbs.	1,200	4,000	6,000	10,500	12,500	15,000	19,000
Complete Wrench	$2.50	$3.50	$5.00	$7.00	$9.00	$11.00	$18.00
Extra Chain	.75	1.00	1.50	2.50	3.25	4.00	6.00
Ex. Jaws pair	1.00	1.75	2.75	4.00	4.75	5.50	7.50
Extra Nuts and Studs for Jaws, per set	.20	.25	.35	.45	.55	.70	.90

Wrenches for pipe sizes larger than 12 inches are only supplied in the non-reversible jaw form—see No. 16 below.

Drop-Forged Chain Pipe Wrenches

Vulcan Old Style

For Turning or Holding Pipe, Pipe Fittings, Etc.

From ⅛ to 18 Inches Diameter



With Flat Link Chain



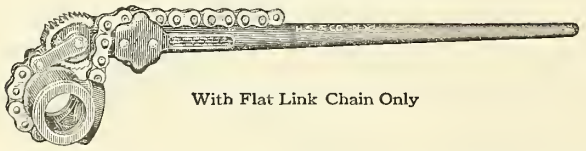
With Cable Chain

The design and manufacture of this tool are identical in every respect with Bijaw Tools listed above, except that jaws are not reversible.

Number	10	11	12	13	13½	14	15	16
Capacity Size pipe	⅛ to ¾	⅛ to 1½	¼ to 2½	¾ to 4	1 to 6	1½ to 8	2 to 12	4 to 18
Ex. Length, inches	13¾	20	27	37	44½	50½	64½	87
Weight, lbs.	1¾	5¾	10	16	24	31	50	137
Flat Link Chain Length	9½	13½	17½	22½	31	39	54½	74½
Breaking, Strain, lbs.	3,600	6,700	9,800	12,500	14,300	15,700	21,800	40,000
Cable Chain Length	9¾	14½	18	27	33½	42	57	76
Size Iron	3/16	9/32	11/32	7/16	15/32	33/64	37/64	13/16
Breaking, Strain, lbs.	1,200	4,000	6,000	10,500	12,500	15,000	19,000	40,000
Complete Wrench	$2.50	$3.50	$5.00	$7.00	$9.00	$11.00	$18.00	$40.00
Ex. Chain	.75	1.00	1.50	2.50	3.25	4.00	6.00	13.00
Ex. Jaws, pair	1.00	1.75	2.75	4.00	4.75	5.50	7.50	16.00
Ex. Screws and Pins, per set	.20	.22	.25	.30	.35	.40	.50	1.30

Agrippa

For Pipe and Fittings



With Flat Link Chain Only

An unsurpassed tool for cramped and irregular fittings or pipe that cannot be effectively reached with broader wrenches. It is particularly serviceable on flanges, short nipples and R. & L. hand fittings. The Wrench is made entirely from wrought steel; the single jaw is tempered for file sharpening; all parts are interchangeable.

Number	20	21	22	23	23½	24	25
Capacity Fittings	⅛ to ¾	⅛ to 1½	¼ to 2½	¾ to 4	1 to 6	1½ to 8	2 to 12
Ex. Length inches	13¾	20	27	37	44½	50½	64½
Weight, lbs.	2½	5¾	9¾	17	24	32	56
Chain Length, ins.	10	15	19½	26	34	45	61
Breaking strain, lbs.	3,600	6,700	9,800	12,500	14,300	15,700	21,800
Complete Wrench	$2.50	$3.50	$5.00	$7.00	$9.00	$11.00	$18.00
Extra Chain	1.00	1.25	1.75	2.75	3.75	4.50	6.75
Extra Jaws, each	1.00	1.75	2.75	4.00	4.75	5.50	7.50

Drop-Forged Strap Pipe Wrenches

Warnock

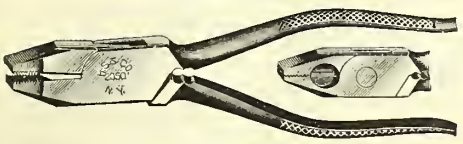


For Brass or Nickel-plated Pipe. Will not mar the pipe

Size, inches	12	18
Takes Pipe, inches	⅛ to 2	1 to 5
Each	$1.50	$2.50
Extra Straps	.25	.50

Side Cutting Pliers

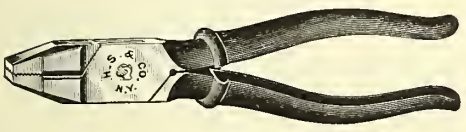
Box Joint



Utica, Nos. 2050 and 2250

Drop-forged steel, with checkered handles
Splicing Clamp or Sleeve Twister between the handles

Inches	5	6	7	8
No. 2050, Blue, dozen	$19.20	21.60	26.40	30.00
No. 2250, Nickel, dozen	22.80	25.20	30.00	33.60

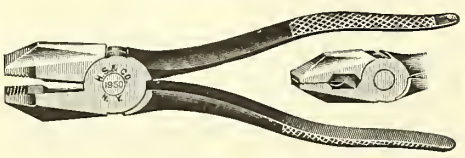


P. S. & W., No. 300
Insulated

Handles are covered with a patent insulation which is not brittle and will not flake off. Tested to insulate against 2,500 volts.

Inches	6	7	8
Dozen	$24.50	29.25	34.00

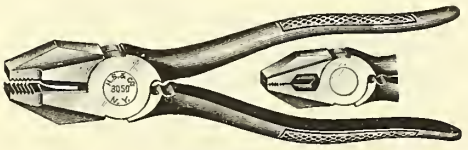
Linemen's



Utica, No. 1950

Heavy drop-forged steel, with checkered handles. Blue finish.

Inches	6	7	8	9
Dozen	$20.40	24.00	30.00	42.00

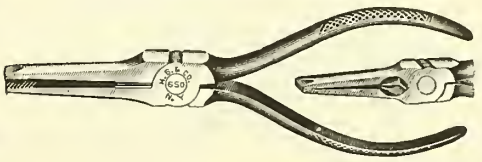


Utica, No. 3050

Heavy drop-forged steel, with checkered handles, blue finish, with splicing clamp or sleeve twister between the handles, that will take the regular or combination sleeve without bruising or crushing wire or sleeve. This feature does away with the necessity of carrying an extra tool.

Inches	6	7	8	9
Dozen	$21.60	27.60	32.40	48.00

Long Reach Flat Nose

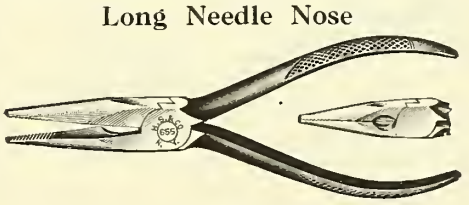


Utica, No. 650

Used by telephone and switchboard builders and electrical workers. Indispensable for working in deep and narrow places. Drop-forged steel.

Inches	5½	6½
Blue, dozen	$18.00	24.00
Nickel, dozen	21.60	27.60

Long Needle Nose

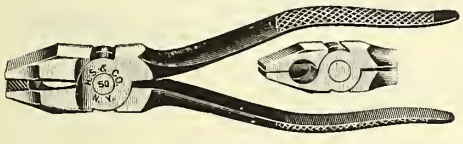


Utica, No. 655

Drop-forged steel, with checkered handles, spring tempered nose, and strong cutting edges.

Inches	5½	6½
Blue, dozen	$20.40	24.00
Nickel, dozen	24.00	27.60

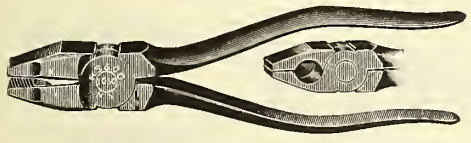
Lap Joint



Utica, No. 50

Drop-forged steel, with checkered handles

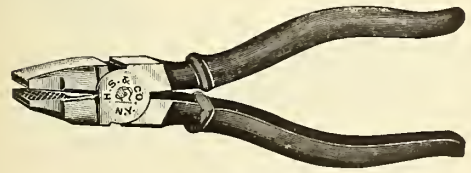
Inches	4	5	6	7	8
Blue, dozen	$13.20	14.40	15.60	19.20	21.60
Nickel dozen	16.80	18.00	19.20	22.80	25.20



H. S. & Co., Nos. 1050 and 1250

Same as No. 50, except smooth handles

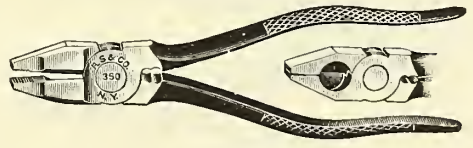
Inches	4	5	6	7	8
No. 1050, Black Dozen	$9.60	10.80	13.20	15.60	19.20
No. 1250, Nickel Dozen	$13.20	14.40	16.80	19.20	22.80



P. S. & W., No. 400
Insulated

Handles are covered with a patent insulation, which is not brittle and will not flake off. Tested to insulate against 2,500 volts.

Inches	6	7	8
Dozen	$15.25	17.00	19.75



Utica, No. 350

Same as No. 3050, except lighter construction

Inches	6	7	8
Dozen	$16.80	21.60	24.00

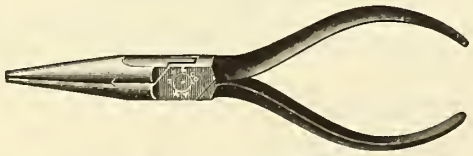


Vulcan, No. 502

Drop-forged steel, with compound lever, making it possible to cut heavy wire with slight pressure. Black handles, polished jaws.

Inches	4	5	6	7	8
Dozen	$12.00	15.00	19.00	22.00	26.00

Electricians

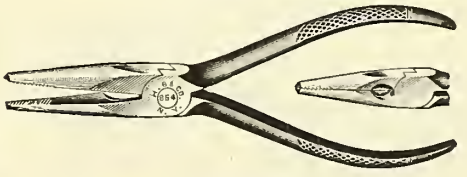


H. S. & Co., No. 1215

Black. A handy tool for light work only

Inches	5	5½	6
Dozen	$10.50	11.20	12.60

Long Chain Nose

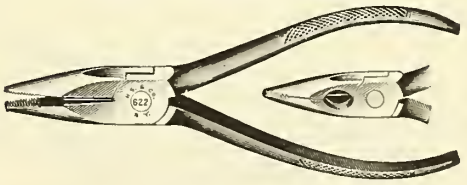


Utica, No. 654

Drop-forged steel, with spring tempered nose.

Inches	5½	6½
Blue, dozen	$19.20	24.00
Nickel, dozen	22.80	27.60

Short Chain Nose

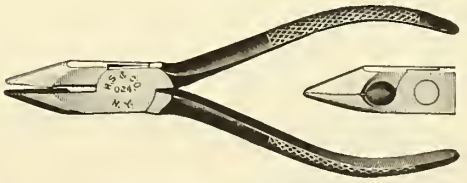


Utica, No. 622

Same as No. 654, except shorter nose

5 inches Blue, dozen	$15.60
5 inches Nickel, dozen	19.20

Milliners



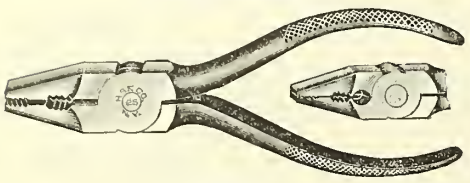
H. S. & Co., Nos. 024 and 0224

This Plier has a special cutting edge which will cut silk-covered wire without drawing the silk or bruising the wire. Hole in handle for hanging from the waist.

Inches	4	5
No. 024, Blue, dozen	$9.00	9.25
No. 0224, Nickel, dozen	12.00	13.00

Pliers

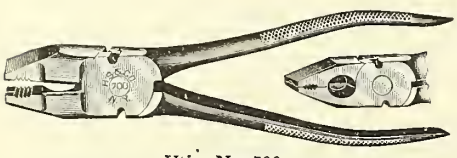
Combination



Utica No. 25

Drop-forged steel, blue handles. Combines a burner, flat nose and side-cutting pliers.

5½-inch, dozen $14.40



Utica No. 700

Drop-forged steel, with blue checkered handles. Burner teeth are milled. Combines a wire cutter, side cutter, flat nose and gas pliers, and screwdriver.

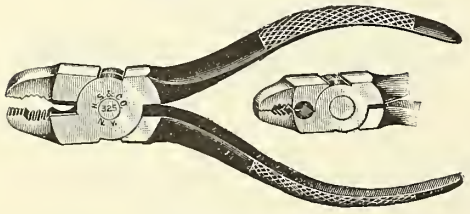
7-inch, dozen $20.40

H. S. & Co. No. 1880

Polished steel, same general design as No. 700, without checkered handles.

7-inch, dozen $15.00

Round End

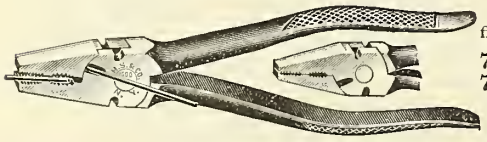


Utica No. 325

Drop-forged steel. Milled teeth. Blue handles

Inches	5	5½
Dozen	$13.20	14.40

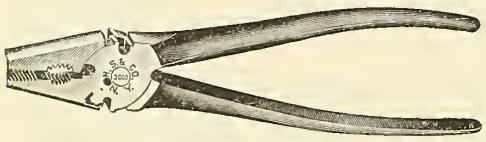
Button



Utica No. 1000

Drop-forged steel, with four wire cutters. The two cutters between the jaws are so designed that the wire is held after it is cut. Blue checkered double roll handles.

Inches	4½	6	8	10
Dozen	$8.40	9.60	12.00	18.00

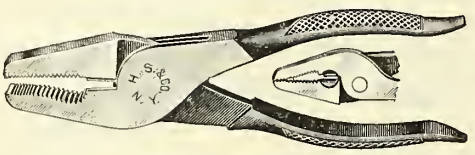


H. S. & Co. No. 3000

Drop-forged, black smooth handles

Inches	4½	6	8	10
Dozen	$5.70	7.65	9.60	11.70

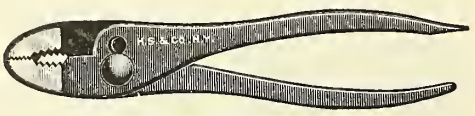
Combination



Utica No. 6006 Line

Drop-forged steel with blue checkered handles. The slip joint is of the box type, distributing the strain to both sides, avoiding side and twisting strains. It also does away with the large headed bolt and nut, and the annoyance that goes with them.

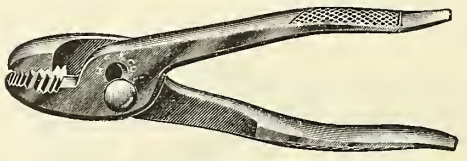
No. 6006	6½-inch, dozen	$12.00
No. 6008	8-inch, dozen	16.00
No. 6010	10-inch, dozen	21.35



Billings & Spencer

Drop-forged from tool steel. Finely finished. A powerful wire cutter is located near the bolt. An ⅛-inch wire may be cut with ease.

Inches	6	8	10	14
Black, No.	1	2	3	4
Black, per dozen	$13.50	16.00	18.00	24.00
Nickel, No.	1 N	2 N	3 N	4 N
Nickel, per dozen	$15.00	18.00	21.00	30.00



Utica No. 4000

Heavy drop-forged. Blue double roll checkered handles, extra strong. Milled teeth.

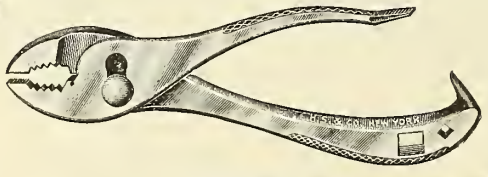
Inches	6	8
Dozen	$8.40	12.00



H. S. & Co. No. 305

A high grade tool in quality and finish. Forged from fine steel. Knurled handles.

7-inch Black, dozen $13.50
7-inch Nickel, dozen 15.00



Knight Patent Auto

Combines the following tools most used on automobiles, motor boats and cycles into one good pair of pliers:

Screwdriver	Gas and Air Tank Keys
Wire Cutters	Cotter Pin Puller
Pipe Wrench	Two Tap Wrenches

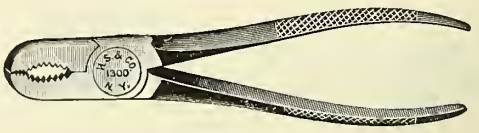
Made of the best grade of tool steel, properly tempered and fitted, heavily nickel-plated and shaped to fit the hand.

The Cotter Pin Extractor will pull large or small cotter pins easily and quickly, and is a great labor saver in taking off and on anti-skid chains.

The two tap wrenches form gas and air tank keys, and are handy for tightening up loose auto lamps and for removing and replacing them.

No. 50 7-inch, dozen $10.00

Gas and Burner



Utica No. 1300

5 and 6-inch burner

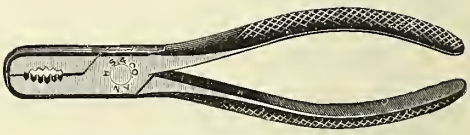


Utica No. 1300

7, 8 and 10-inch gas

Drop-forged steel, with checkered handles. Milled teeth, giving a firm grip with little pressure. Blued.

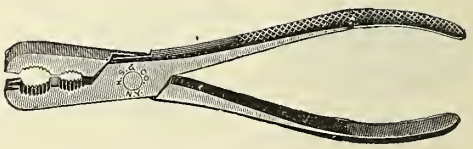
Inches	5	6	7	8	10
Dozen	$8.40	9.60	10.80	12.00	18.00



H. S. & Co. Nos. 118 and 326 Burner

Cast steel, polished. No. 326 has knurled handle, extra fine quality.

Inches	5	6
No. 118, dozen	$6.70	7.00
No. 326, dozen	8.00	9.00



H. S. & Co. No. 327 Burner

Cast steel, polished, knurled handle, extra fine quality.

7-inch, dozen $10.00



H. S. & Co. Nos. 119 and 325 Gas

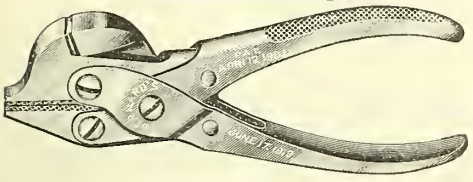
No. 119. Cast steel, polished.
No. 325. Cast steel, japanned handle, polished jaw, extra fine quality.

Inches	7	8	9	10	12	14
No. 119 Dozen	$8.00	9.70	10.50	13.00	15.00	
No. 325 Dozen	$12.00	14.00	15.00	18.00	24.00	

Pliers

Combination

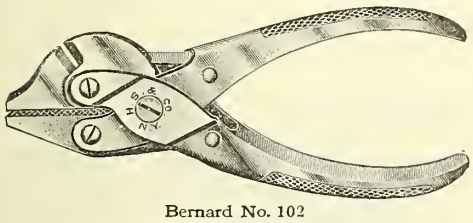
Side and end cutting



Bernard No. 122

Inches	5	6
Dozen	$21.00	$26.00

Side Cutting



Bernard No. 102

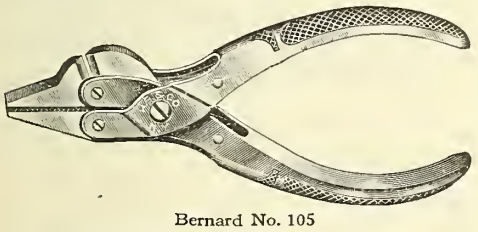
Warranted crucible steel, open throat, parallel jaws, full nickel-plated.

Inches	Dozen	Inches	Dozen
4½	$11.50	6½	$17.50
5	13.00	7	19.00
5½	14.50	8	23.50
6	16.00		

Bernard No. 102½

Same design as No. 102, but will cut tempered steel wire.

5½-inch, dozen $14.50

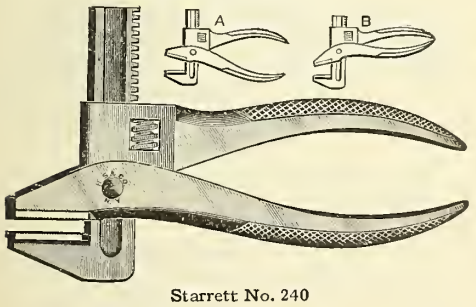


Bernard No. 105

Same as No. 102, except lighter construction

Inches	5	6
Dozen	$12.00	15.00

Patent Expansion

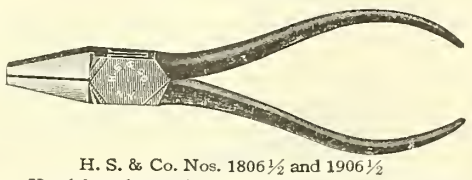


Starrett No. 240

A most useful Plier. It is made from drop-forged steel with handles struck up from heavy stock to give ample strength for all requirements. The handles move together and are always the right distance apart to grip with the hand, while the jaws adjust themselves to fit the work between them, whatever its shape may be, and will hold it firmly. The jaws will take anything between them and fit any straight or taper piece from 0 to 1¼ inches. The hinged jaw having a short fulcrum will hold with a tremendous grip, making it a very effective pipe wrench. It will hold to turn any nut or bolt within its limit; will grip and hold to pull a headless nail that nothing else will hang to, making altogether one of the most efficient tools in its line ever produced.

Plain, each	$2.00
Nickel, each	2.25

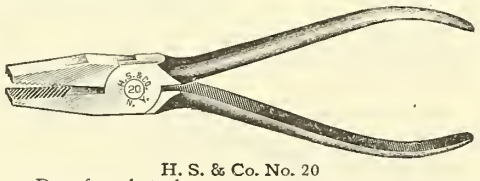
Flat Nose



H. S. & Co. Nos. 1806½ and 1906½

Hand-forged steel; best quality box joint. No. 1806½, black; No. 1906½, polished.

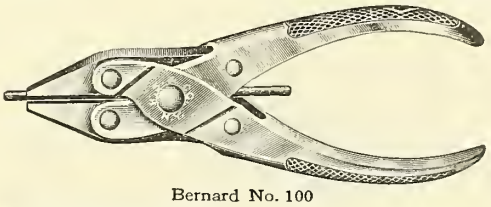
Inches	3½	4	4½	5	5½
No. 1806½, dozen	$5.20	5.20	5.70	6.30	7.40
No. 1906½, dozen	5.80	5.80	6.50	7.10	8.00
Inches	6	6½	7		8
No. 1806½ dozen	$8.60	10.10	12.10		15.00
No. 1906½ dozen	9.20	10.90	12.90		15.60



H. S. & Co. No. 20

Drop-forged steel

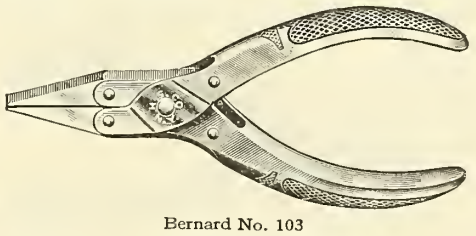
Inches	3½	4	4½	5	5½
Blue, dozen	$7.20	8.20	9.60	9.60	10.80
Nickel, dozen	10.80	12.00	13.20	13.20	14.40
Inches			6	7	8
Blue, dozen			$10.80	$12.00	$13.20
Nickel			14.40	15.60	16.80



Bernard No. 100

Warranted crucible steel. Open throat, parallel jaws. Full nickel-plated.

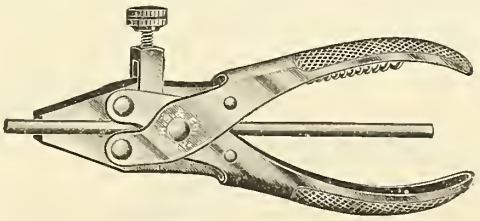
Inches	4½	5	5½
Dozen	$6.00	7.00	8.00
Inches	6	7	8
Dozen	$9.00	10.00	11.00	14.00



Bernard No. 103

Same as No. 100, but lighter construction

Inches	3½	4	4½	5	6
Dozen	$5.00	5.50	6.00	7.00	8.00

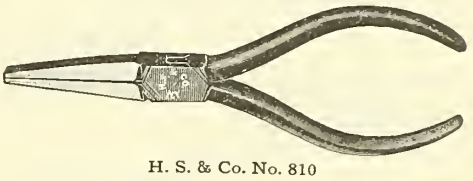


Bernard No. 113

Open throat, parallel jaws. Full Nickel-plated. Warranted crucible steel. Can be used as a Plier Wrench and Hand Vise. Provided with a spring in the handle, which will throw and maintain them open.

Inches	5	6½
Dozen	$10.00	13.00

Flat Nose

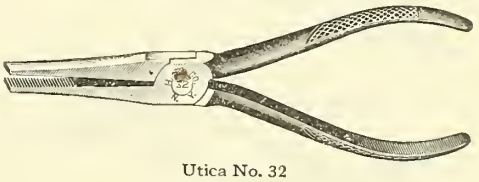


H. S. & Co. No. 810

Cast steel, black, long nose

Inches	3½	4½	5½
Dozen	$5.20	5.60	7.20

Flat Jaw Loom Fixer

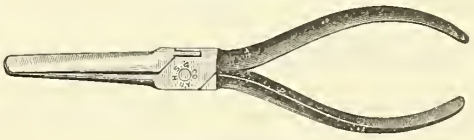


Utica No. 32

Drop-forged steel, with spring tempered nose

Inches	5½	6½
Blue, dozen	$18.00	24.00
Nickel, dozen	21.60	27.60

Swan Bill

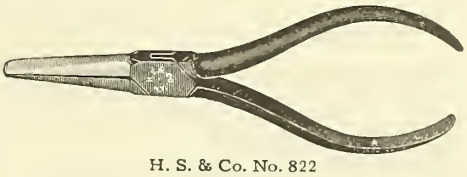


H. S. & Co. No. 4110

Box joint, polished

Length Inches	5	6	6	8	8	9
Nose Inches	¼	¼	⅜	⅜	½	½
Dozen	$7.20	9.25	9.25	15.50	15.50	19.20

Weavers

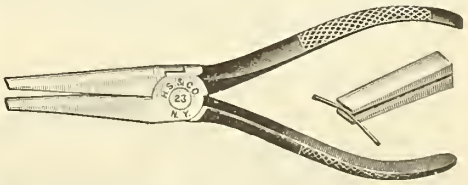


H. S. & Co. No. 822

Cast steel, black, box joint

Inches	5	6
Dozen	$6.30	8.20

Concave and Convex Nose



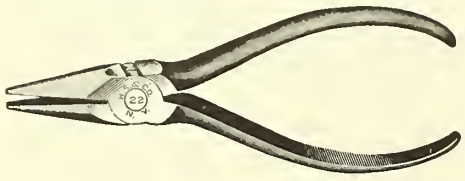
Utica No. 23

Drop-forged steel. Will straighten reed without twisting the hand.

Inches	5½	6½
Blue, dozen	$18.00	24.00
Nickel, dozen	21.60	27.60

Pliers and Nippers

Short Nose Chain Pliers

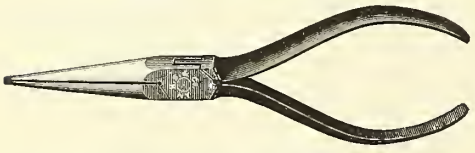


H. S. & Co. No. 22

Drop-forged Steel

Inches	3½	4	4½	5	5½	6
Blue Dozen	$7.20	8.40	9.60	9.60	10.80	10.80
Nickel Dozen	10.80	12.00	13.20	13.20	14.40	14.40

Long Nose Chain Pliers

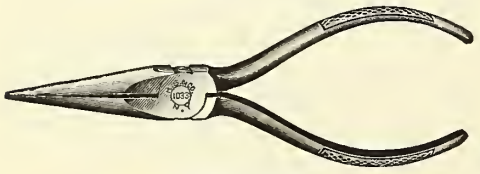


H. S. & Co. No. 912

Cast steel. Black. Box joint

Inches	4½	5	5½	6
Dozen	$5.70	6.40	7.00	8.20

Long Needle Nose Chain Pliers

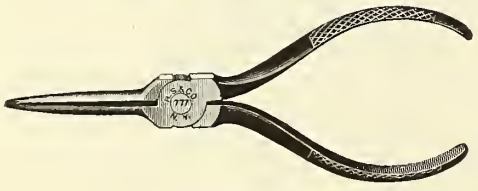


Utica No. 1033

Drop-forged steel, with spring tempered nose

Inches	5½	6½
Blue, dozen	$18.00	24.00
Nickel, dozen	21.60	27.60

Long Needle Nose Pliers

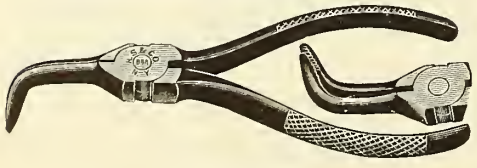


Utica No. 777

Drop-forged steel, with long thin spring tempered nose.

Inches	5½	6½
Blue, dozen	$19.20	24.00
Nickel, dozen	22.80	27.60

Curved Needle Nose Pliers

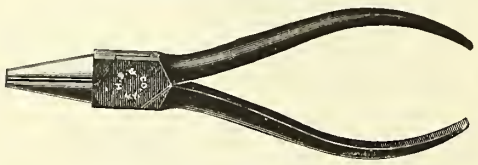


Utica No. 888

Drop-forged steel. The curved spring tempered nose makes it easy to reach deep, narrow places.

5½-inch, Blue, dozen $21.60

Round Nose Pliers

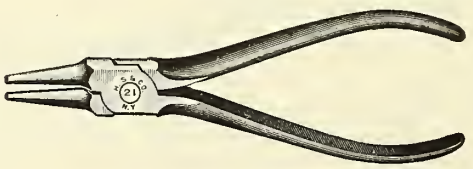


H. S. & Co. Nos. 1806¾ and 1906¾

Hand-forged steel; best quality. Box joint.

Inches	3½	4	4½	5	5½
No. 1806¾ Black	$5.20	5.20	5.70	6.30	7.40
No. 1906¾ Polished	5.80	5.80	6.50	7.10	8.00

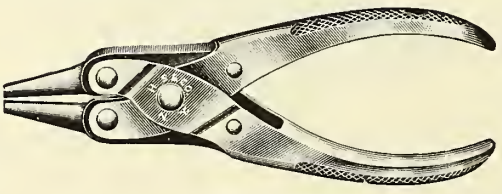
Inches	6	6½	7	8
No. 1806¾ Black	8.60	10.10	12.10	15.00
No. 1906¾ Polished	9.20	10.90	12.90	15.60



H. S. & Co. No. 21

Drop-forged steel. Lap joint. Blued

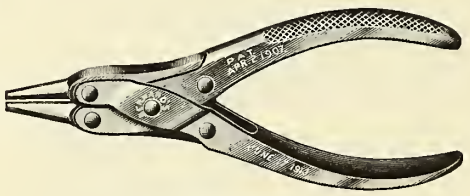
Inches	3½	4	4½	5	6	7	8
Dozen	$7.20	8.40	9.60	9.60	10.80	12.00	13.20



Bernard No. 101

Warranted crucible steel. Open throat, parallel jaws. Full nickel-plated.

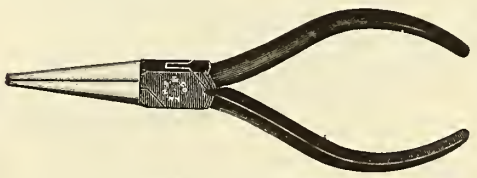
Inches	4½	5	5½	6	6½	7	8
Dozen	$6.00	7.00	8.00	9.00	10.00	11.00	14.00



Bernard No. 104

Same as No. 101, except lighter in construction

Inches	4	4½	5
Dozen	$5.50	6.00	7.00

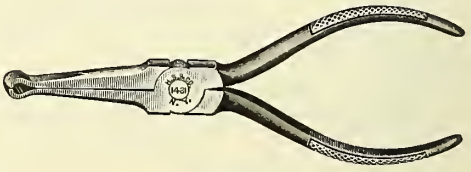


H. S. & Co. No. 810¼

Cast steel. Black, with long nose

Inches	3½	4½	5½
Dozen	$5.20	5.60	7.20

Heat Coil Pliers



Utica No. 1431

Drop-forged steel, with special shaped spring tempered jaws. Blued

Inches	5½	6½
Dozen	$21.60	24.00

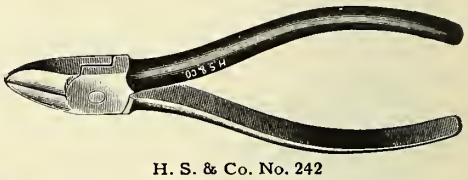
Side-Cutting or Diagonal Nippers



No. 149. Genuine Stubs. Best English steel, box joint. Black.

No. 5639. Swiss. Polished for light work.

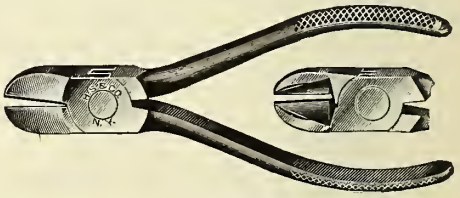
Inches	4½	5	5½	6
No. 149 Dozen	$10.50	11.50	14.00	
No. 5639 Dozen	$10.90	12.00		



H. S. & Co. No. 242

Polished lap joint

Inches	4½	5
Dozen	$11.20	11.20

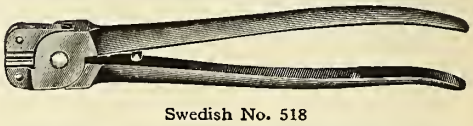


Utica No. 42

Drop-forged steel. Box joint. Checkered handles

Inches	3½	4	4½	5	5½	6	6½
Blue Doz.	$16.80	18.00	19.20	21.60	24.00	27.60	30.00

Straight Cutting Nippers



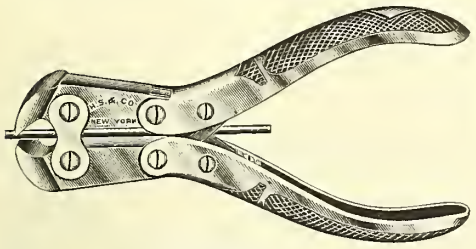
Swedish No. 518

Heavy, with detachable cutters, made of finest Swedish steel. Will cut regular or tempered steel wire to $\frac{1}{16}$ inch with equal facility.

9-Inch, dozen	$21.60
Extra cutters, dozen pairs	3.00

Nippers, Pliers and Pincers

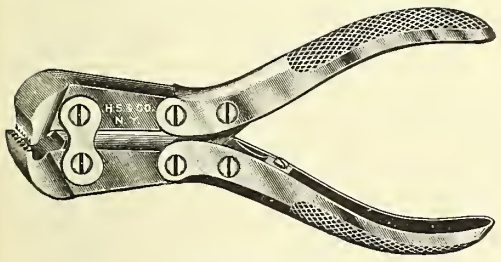
Compound End Cutting Nippers



Bernard No. 125

Open throat. Full nickel-plated. Spring in handle. Not for music wire.

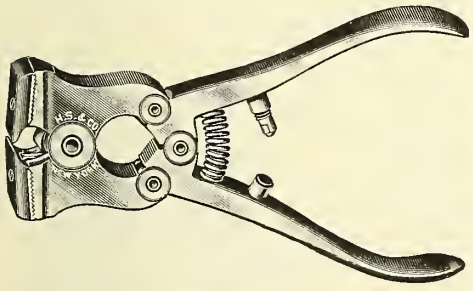
Inches	4	5	6	7	8
Cuts wire, inch.	1/16	3/32	1/8	5/32	3/16
Dozen	$11.00	14.00	17.00	20.00	25.00



Bernard No. 135

Will cut music wire up to No. 32. Open throat. Full nickel-plated, spring in handle.

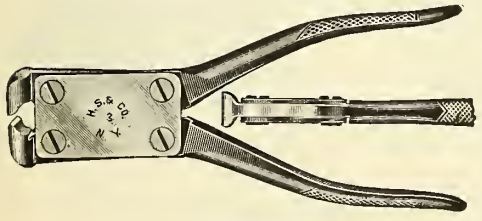
5-Inch, dozen $17.00



Starrett

Head and handles drop-forged steel, finely finished. All parts case-hardened, except the jaws, which are properly tempered for their work. Jaws are detachable and can be ground and replaced. No. 1M will cut music wire up to No. 25.

Inches	5½	7
No. 1 Regular, each	$2.00	$2.50
No. 1M For music wire, each.	2.00	2.50
Extra jaws, pair	.50	.50
Extra screws, dozen	.25	.25
Extra splines, dozen	.25	.25
Extra springs, dozen	.25	.25

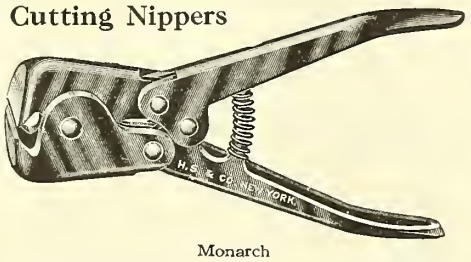


Utica No. 3

Blue checkered handle

Inches	4½	5½	7½	9
Each	$2.00	2.30	2.90	3.50
Extra jaws, each	.60	.70	.80	.90
Extra plates, each	.40	.50	.60	.70
Extra springs, each	.20	.20	.20	.20

No. 3M for music wire will be furnished if desired, at regular prices.

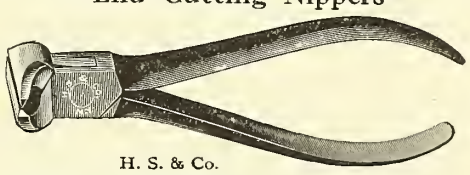


Monarch

5½-inch will cut music wire up to No. 25; 6½-inch up to No. 32.

5½-inch, Black, dozen	$15.00
6½-inch, Black, dozen	20.00

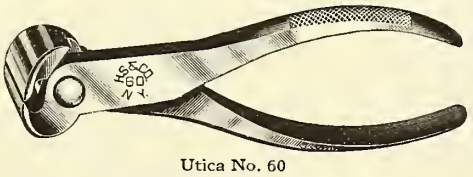
End Cutting Nippers



H. S. & Co.

No. 1306A. German, Black.
No. 1306AY Best German, highly tempered. Black.
No. 5533 Swiss, polished, for light work.

Inches	No. 1306 A Dozen	No. 1306 AY Dozen	No. 5533 Dozen
3½	....	$20.00	
4	$8.30	20.00	
4½	9.00	20.00	$10.90
5	9.70	20.00	12.00
5½	10.40	22.00	
6	11.70	24.00	
6½	....	27.00	
7	....	30.00	
8	....	39.00	



Utica No. 60

Forged steel, carefully tempered

Inches	5	6	7	8
Dozen	$16.80	19.20	21.60	25.20

No. 60M, for music wire, will be furnished at regular prices.



Carew

Forged steel. Interchangeable jaws

Inches	8	10	12	14
Each	$2.00	2.25	2.60	3.00
Jaws, pair	.55	.60	.65	.70

Todd Improved

(Similar to Carew)

The Cutters are forged from the best steel and tempered in the most approved manner.

They can be taken off to be ground and when worn out can be replaced at a slight expense, making the tool as good as new.

Number	0	1	2	3	4
Inches	15	12	11	10	8
Each	$3.00	2.25	2.00	1.75	1.50
Cutters, pair	.70	.65	.60	.60	.50

Swedish No. 519

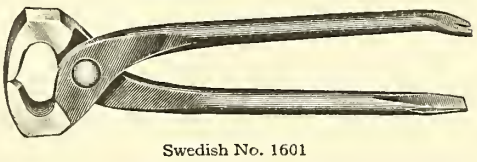
(Similar to Carew)

Extra strong. Detachable Cutters, made of finest Swedish steel. The 7-inch size will cut regular or tempered steel wire to ¼-inch; the 9-inch to ⅜-inch.

Inches	7	9
Dozen	$24.00	30.00

Extra Cutters, dozen pairs. $5.00

Carpenters Pincers



Swedish No. 1601

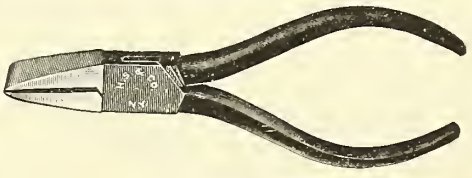
Genuine Swedish steel of finest quality. Drop-forged. Polished jaws. Hammer head.

Inches	6	7	8	10
Dozen	$9.00	10.50	12.00	18.00

German No 475. Cast steel. Polished jaws

Inches	6	7	8	10
Dozen	$3.25	3.85	4.60	7.60

Umbrella Pliers

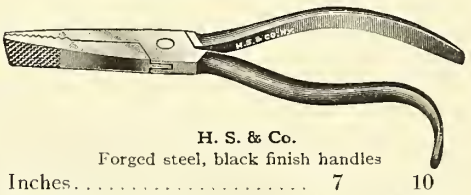


H. S. & Co. No. 830

Cast steel, black

5½-inch, dozen $9.60

Furriers Pliers



H. S. & Co.

Forged steel, black finish handles

Inches	7	10
Dozen	$16.00	$18.00

Glass Pliers



H. S. & Co. No. 450. Regular, Flat Jaw

Forged steel. Black finish handles. Polished flots and jaws.

Inches	8	10
Dozen	$10.00	12.00



H. S. & Co. No. 455. Roller, Round Jaw

Forged steel. Black finish handles. Polished flots and jaws

11-Inch, dozen $20.00

Basket Pliers



H. S. & Co. Nos. 1 and 2

Forged steel, nail driver

No. 1, 9½ inches long, 1¾-inch jaw, dozen	$22.00
No. 2, 10 inches long, 2-inch jaw, dozen	22.00



H. S. & Co. No. 3

Forged-steel, flat

10 inches long, 2½-inch jaw, dozen .. $18.00

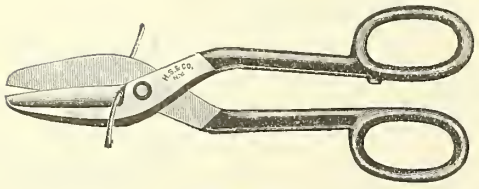
Metal or Tinner Snips

Reliance Brand

Every Reliance Snip is Guaranteed to be Satisfactory in Every Particular

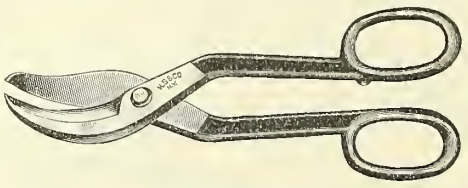
The Length of Cut is the Standard Cutting Edge of Blade

Drop-forged steel, with bar tool steel laid polished blades. Blued handles. For use by right-handed mechanics



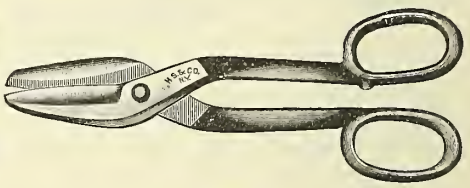
Regular

Number	Full Length Inches	Length of Cut Inches	Pair
6½	15½	4½	$3.00
7	14	4	2.50
8	13	3½	2.00
9	12	3	1.50
10	11	2½	1.40
11	9	2¼	1.20
12	8	2	1.05



Circular Blade

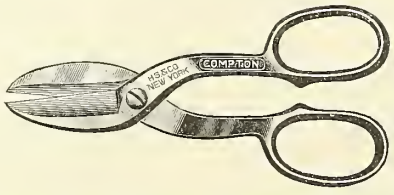
Number	Full Length Inches	Length of Cut Inches	Pair
6½CB	15½	4½	$4.25
7CB	14	4	3.50
8CB	13	3½	3.00
9CB	12	3	2.50
10CB	11	2½	2.25
11CB	9	2¼	1.95
12CB	8	2	1.80



Handy

A convenient, all-around tool, cutting straight, curved and irregular shapes.

Number	Full Length Inches	Length of Cut Inches	Pair
17	14	4	$3.00
18	13	3½	2.50
19	12	3	2.00
110	11	2½	1.90



No. 111 Same quality as regular Reliance (line shown above), but made shorter and very powerful, small in size, but unusually large in range of work. Length over all, 7 inches.

Length of cut, 2 inches, pair..... $1.05

Left-Handed, with Reversed Bows

Number	8 L. H.	9. L. H.
Full length, inches	13	12
Length of cut, inches	3½	3
Regular Blades, per pair	$3.00	$2.50
Circular Blades, per pair	4.00	3.50

For use by left-handed mechanics. Bows shaped to be used with the left hand.

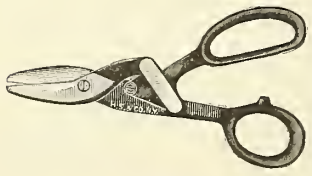
Searight Compound Lever

These Snips are forged from a solid bar of high grade crucible tool steel. They are carefully made, tempered and ground, are scientifically designed and correctly built to withstand the strain of heavy work without injury. The compound leverage is so arranged as to distribute the cutting power equally the full length of the blades.

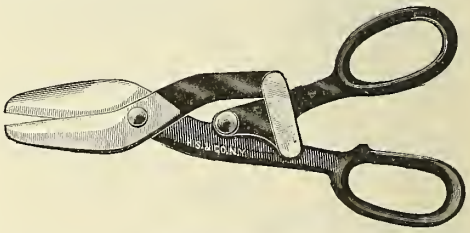
Temper Finished Blades. Japanned Handles

Number	Full Length Inches	Length of Cut Inches	Pair
*7	7	1½	$1.00
8	8	1¾	1.50
10	10½	2½	2.25
12	12	3	3.00
14	14	3¾	3.50

*No. 7 is pocket size, similar to No. 8 Except pressed from crucible sheet steel

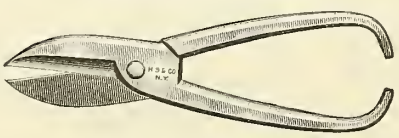


No. 8



Nos. 10, 12 and 14

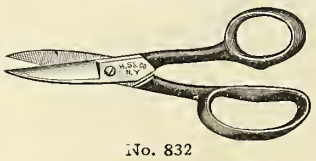
Reliance Jewelers



No. 29. Polished
For all light metal work

Full length, inches.	5	5½	6	6½	7	7½	8
Dozen	$11.00	11.00	11.00	11.80	12.80	13.80	15.00

Reliance Dental



No. 832

For cutting very light metal. Japanned handles, 8 inches long, polished blades, cut 2½ inches. With screw and nut.

Dozen..... $22.00

Tweezers



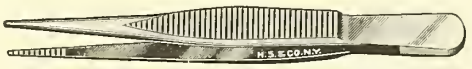
Piano

		Dozen
No. 56	6 inches	$ 7.20
No. 57	7 inches	8.40
No. 57A	8 inches	9.60



Imported

		Dozen
No. 57B	5 inches	$1.50
No. 57D	5½ inches	2.25
No. 57C	6 inches	3.60

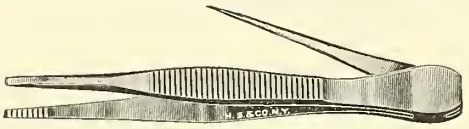


Printers, with Coarse Serrated Flat Points

No. 291 3½ inches, Nickel, dozen.. $4.50

Same with Shim and Back Pin
Length, 4 inches

No. 340 Nickel, dozen..... 11.30



Over all including Bodkin 6¼ inches

No. 350 4 inches, Nickel-plated, with movable bodkin, extra quality, dozen..... $18.00



Jewelers No. 240

4¾ inches, Nickel-plated, with bent points, dozen..... $9.00



Jewelers

No. 15 4¼ inches, Nickel-plated, dozen..... $3.00



Jewelers

No. 18 4½ inches, Nickel-plated, dozen..... $3.00

No. 40 4½ inches, Polished, dozen. 2.40



Flower Makers No. 180

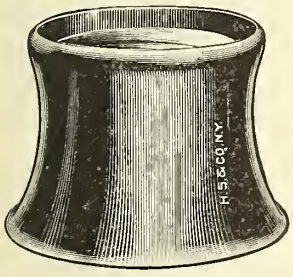
4¼ inches long, 5½ inches over all

Nickel-plated, dozen..... $2.00

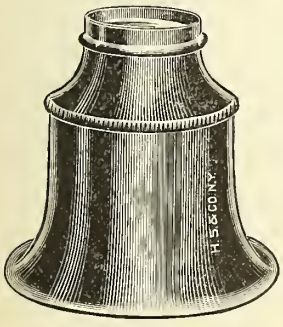
Plain, dozen..... 2.40

Eyeglasses

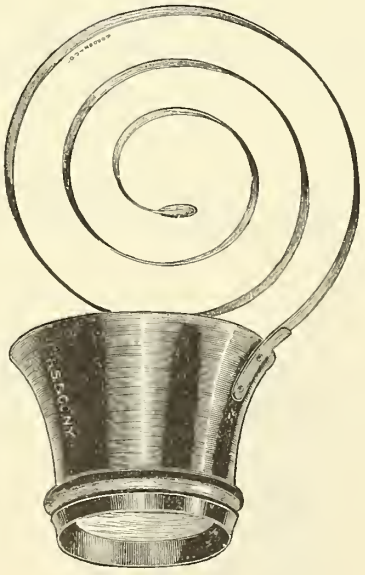
Watchmakers Loupes



No. 144-2



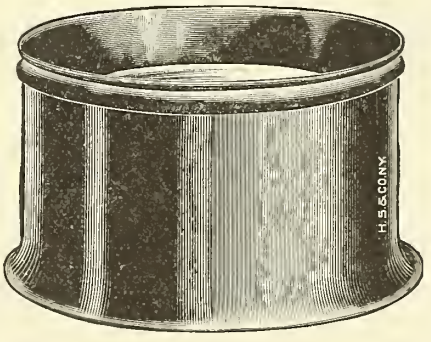
No. 144A



No. 144-2 LP

Number	Diameter of Lens Inch	Range of Magnifications	Each
144-2	1	2 to 10X	$ .40
144-A	½ and 1	4 to 10X	.60
144-2 LP	1	2 to 5X	.55

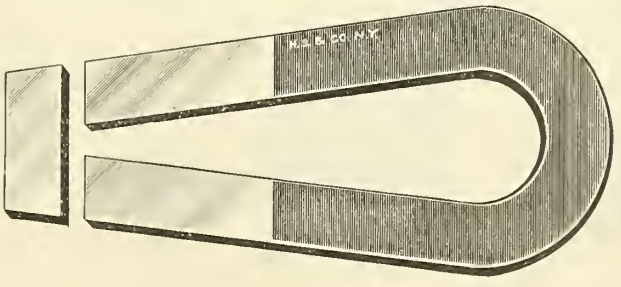
Engravers



No. 146A. 1⅝ inches diameter lens. Magnification 3.5x
Each $ .75

No. 148A. 2⅛ inches diameter lens. Magnification 2.5x
Each $1.25

Horseshoe Magnets

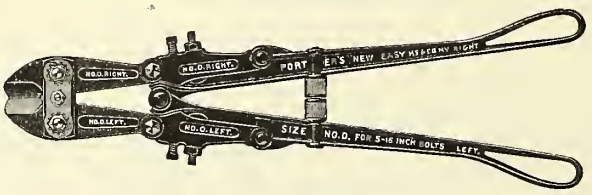


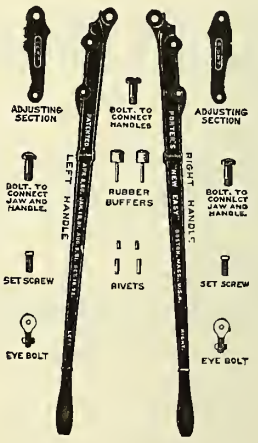
Inches	3	4	5	6
Each	$ .10	.20	.30	.60

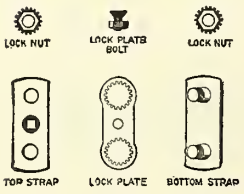
Bolt or Rivet Clippers

New Easy









Number	0	1	2	3
Length, inches	18	24½	30	36
Cuts up to, inch	5/16	3/8	½	5/8
Weight, pounds	3	5¾	9	13
Porter's "New Easy," each	$3.75	5.00	7.00	9.00

Cutter Heads and Parts

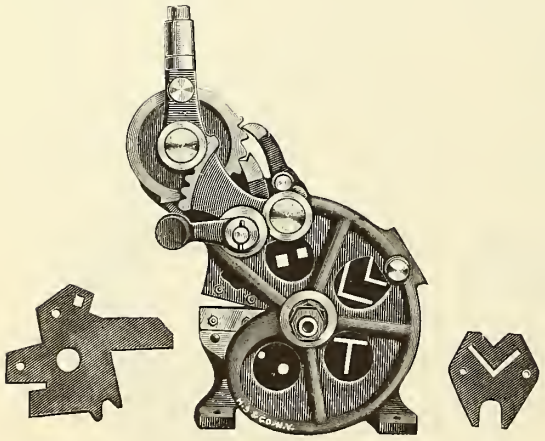
Number	0	1	2	3
Cutter Head, complete	$2.10	$2.70	$3.70	$4.65
Pair Cutting Jaws, ready for use	1.35	1.65	2.35	3.00
One Cutting Jaw, ready for use	.68	.83	1.18	1.50
Bottom Strap, with two steel bolts	.40	.50	.60	.70
Top Strap	.10	.20	.30	.40
Lock Nuts, pair	.10	.15	.20	.25
Lock Plate	.10	.15	.20	.25
Lock Plate Bolt	.05	.05	.05	.05

Handles and Parts

Number	0	1	2	3
Pair of Handles, complete	$1.90	$2.30	$3.30	$4.35
One Handle, complete	.95	1.15	1.65	2.20
One Handle, without parts, long piece only	.40	.50	.90	1.35
Adjusting Sections, with one rivet, each	.25	.30	.35	.40
Steel Adjusting Screws, pair	.10	.10	.10	.10
Steel Bolts, to connect jaws and handles, pair	.10	.10	.10	.10
Eye Bolts, with nuts and rivets, pair	.20	.25	.30	.35
Rubber Buffers, with rivets and washers, pair	.20	.25	.30	.35

Universal Shears for Profiles and Bars

Niagara



For cutting angle and T-iron, round, square and flat bars.

The frame is made of two steel castings, with inserted tool steel dies. One part is stationary, the other can be given a limited rotary motion around the center pivot.

The angle iron cutters are removable; the cutters for T-iron, also for round and square bars, are fixed.

Has a compound mechanism for heavier work, or can be operated direct, with greater speed, in cutting lighter stock.

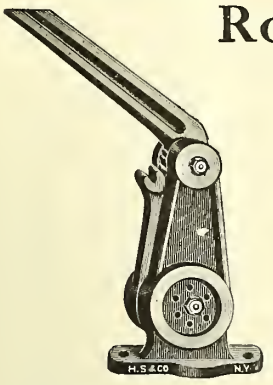
Hold-down plates on the side of the machine hold and guide the stock while being cut off.

Dies are furnished for:

Angle iron—2½ x ⅜ inches
Angle iron—2 x ¼ inches
T-iron—2½ x ⅜ inches
Round Bars—¾ and 1 inch
Square Bars—¾ and 1 inch
Straight Knives—4½ x ⅝ inch flat

Universal Shears for Profiles and Bars..... 360 pounds, each $125.00

Rod Cutters

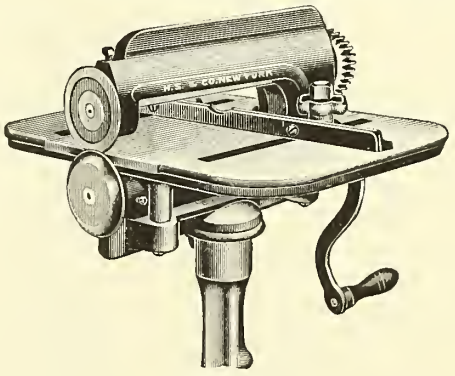


Nos. 1 and 2

No. 1 will cut rods $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$ and $\frac{3}{8}$ inch diameter.
Each $5.00

No. 2 will cut rods $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$ and $\frac{5}{8}$ inch diameter.
Each 16.00

Rotary Slitting Shears



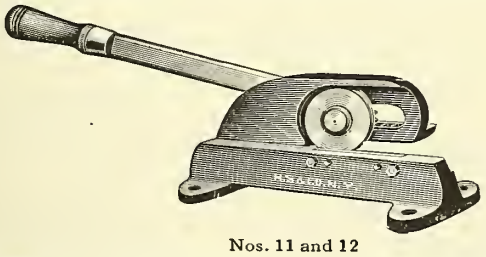
No. 121

These Shears are constructed with gauge table and will cut strips up to 9 inches in width.

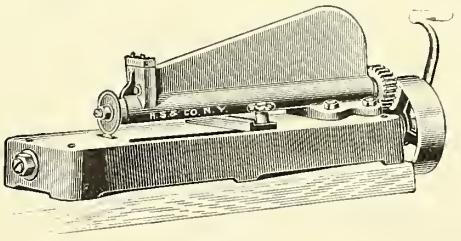
For No. 20 Iron and lighter. Weight 100 pounds.

With Stand ... $27.00
Extra Cutters, pair 6.00

Rolling Cutter Shears



Nos. 11 and 12



No. 251

These Shears are operated by a pinion lever engaging in a rack and cutting with the forward roll of the cutting disc. The advantage of this construction is that the power travels with the cutter, the resistance and power being the same all along the cut.

No. 11 Will cut No. 20 Iron $5.00
No. 12 Will cut No. 16 Iron 7.50

These Shears will cut No. 20 Iron up to 15½ inches in width with gauge, or 16¾ inches with the gauge taken out. Bed plate 9 x 22 inches. Lower cutter is inserted in bed plate. Hand or power drive. Weight, 150 pounds.

Complete as shown $60.00
Extra Cutters 6.00

Combined Punch, Shear and Rod Cutting Machine

Union

Is the only machine which combines all three operations.

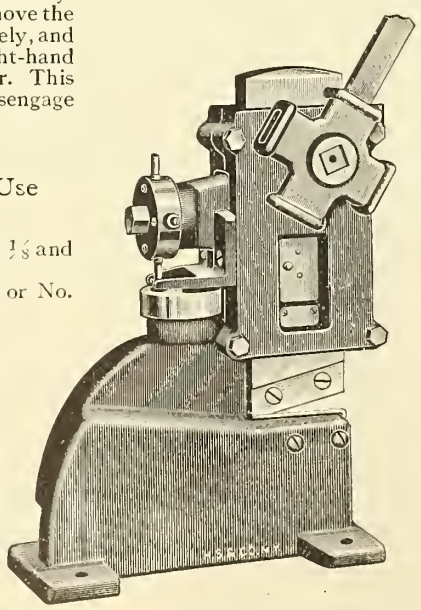
Parts are made of the best quality of material, and the machine work is of the best. The Rotary Punch is easy of adjustment and when in position for the Rotary Die is locked firmly in place by means of a strong nut and screw.

The machine is always set up and ready for use, and has many handy features which will appeal to all workers in metal.

Operation

The tension latch should always be locked in position unless it is desired to cut strips from a sheet, in which case it may be disengaged and will drop down out of the way.

To use the wire gauge, remove the graduated punch gauge entirely, and feed the wire from the right-hand side when facing the shear. This allows the piece cut off to disengage itself from the gauge.



Size No. 1

For Bench or Vise Use

Capacity

Cuts wire or rods $\frac{1}{4}$, $\frac{3}{16}$, $\frac{5}{32}$, $\frac{1}{8}$ and $\frac{3}{32}$ inch round.
Shears $\frac{1}{8}$ x 1 inch flat bar or No. 14 gauge plate.
Punches $\frac{1}{4}$ inch hole in stock $\frac{3}{32}$ inch thick.

Equipment

Combination wire and punch gauge, four regular punches and dies, $\frac{1}{4}$, $\frac{3}{16}$, $\frac{5}{32}$ and $\frac{1}{8}$ inch.
Also operating lever.

Weight, pounds 22
Price $30.00
Extra Punches, each ..... .50
Extra Dies, each ..... .50
Extra Blades, each ..... .65

Size No. 2

Larger than No. 1 and mounted on floor stand.

This is the size most used for general work, and will be found to be the most useful size for the general manufacturer and tool maker.

Capacity

Cuts wire or rods $\frac{7}{16}$ inch square and ½ or $\frac{3}{8}$ inch round.
Shears $\frac{5}{16}$ x 2 inches flat bar or No. 8 gauge plate.
Punches $\frac{3}{8}$ inch hole in ¼ inch thick plate.

Equipment

Combination wire and punch gauge, four regular punches and dies, $\frac{3}{8}$, $\frac{5}{16}$, ¼ and $\frac{3}{16}$ inch, also operating lever and spider.

Weight, pounds 190
Price $66.00
Extra Punches, each ..... .50
Extra Dies, each ..... .50
Extra Blades, each ..... .65

Size No. 3

This is the largest size made, and will be found useful in the blacksmith or machine shop. Note the capacity of this machine as outlined below.

Capacity

Cuts wire or rods $\frac{5}{8}$ inch square and $\frac{5}{8}$, ½, $\frac{3}{8}$ inch round.
Shears ½ x 3 inch flat bar or ¼ inch plate.
Punches ½ inch hole in ½ inch thick plate.

Equipment

Combination wire and punch gauge, four regular punches and dies, ½, $\frac{3}{8}$, $\frac{5}{16}$ and ¼ inch, one 48-inch forged steel operating lever with reversible ratchet, and quick return lever.

The quick return lever may be used when cutting or punching thin stock, and for feeding the punch down to the work before applying the full power.

It also facilitates the quick return of the plunger.

Complete, with 4 to 1 power reduction and mounted on floor stand. Weight complete with lever and attachments, 750 pounds.

Price $160.00
Extra Punches, each ..... .85
Extra Dies, each ..... .85
Extra Blades, each 1.00

Files and Rasps

Nicholson Increment Cut Files

THESE Files are made in the regular grades of cut, viz.: Rough, Coarse, Bastard, Second Cut, Smooth and Dead Smooth, but because of the peculiar arrangement of the teeth are universally known as the Increment Cut Files.

The arrangement of the teeth of the Increment Cut may be described as follows:

1st. The rows of teeth are spaced progressively wider from the point toward the middle of the File, by regular increments of spacing, and progressively narrower from the middle toward the heel, by regular decrements of spacing.

2nd. This general law of the spacing of the teeth is modified by introducing, as they are cut, an element of controllable irregularity as to their spacing, which irregularity is confined within maximum and minimum limits, but is not a regular progressive increment or decrement.

3rd. In arranging the teeth of files so that the successive rows shall not be exactly parallel, but cut slightly angular with respect to each other, the angle or inclination is reversed (during the operation of cutting) as necessity requires.

In addition to the above the tooth is so formed as to have a keen edge and special shape, designed to withstand pressure and to free itself from chips.

Files possessing these characteristics do not produce channels or furrows in the work, but effect a shearing cut, for the reason that no two successive teeth in any longitudinal row of a cross-cut file are in alignment; the file is thereby able to cut more smoothly and more rapidly and possesses greater endurance than any file whose teeth are not disposed upon the same principle.

Kearney & Foot Files and Rasps

The Kearney & Foot Files and Rasps are recommended for general shop use. They are a little cheaper in price than the Nicholson Files, but will stand tests as to quality, durability, etc.

We have been handling and selling Files since 1848, and during that time we have had an exceptional chance to study the characteristic points of many makes, and we know from experience that the K. & F. brand can be absolutely depended upon for quality, cutting speed and general satisfaction.

We urge a trial, guaranteeing satisfaction.

Nicholson "XF" Swiss Pattern Files

"XF" is a term given to a brand of Nicholson Files, and signifies extra fine. In general it applies to that class of files used by jewelers, watch and tool makers, and for similar fine work, in which the best material and superior workmanship are required. The cut is designated by numbers ranging from No. 00, the coarsest, to No. 8, the finest. On pages 233 to 236 we illustrate and list this line.

Vautier Genuine Imported Swiss Files



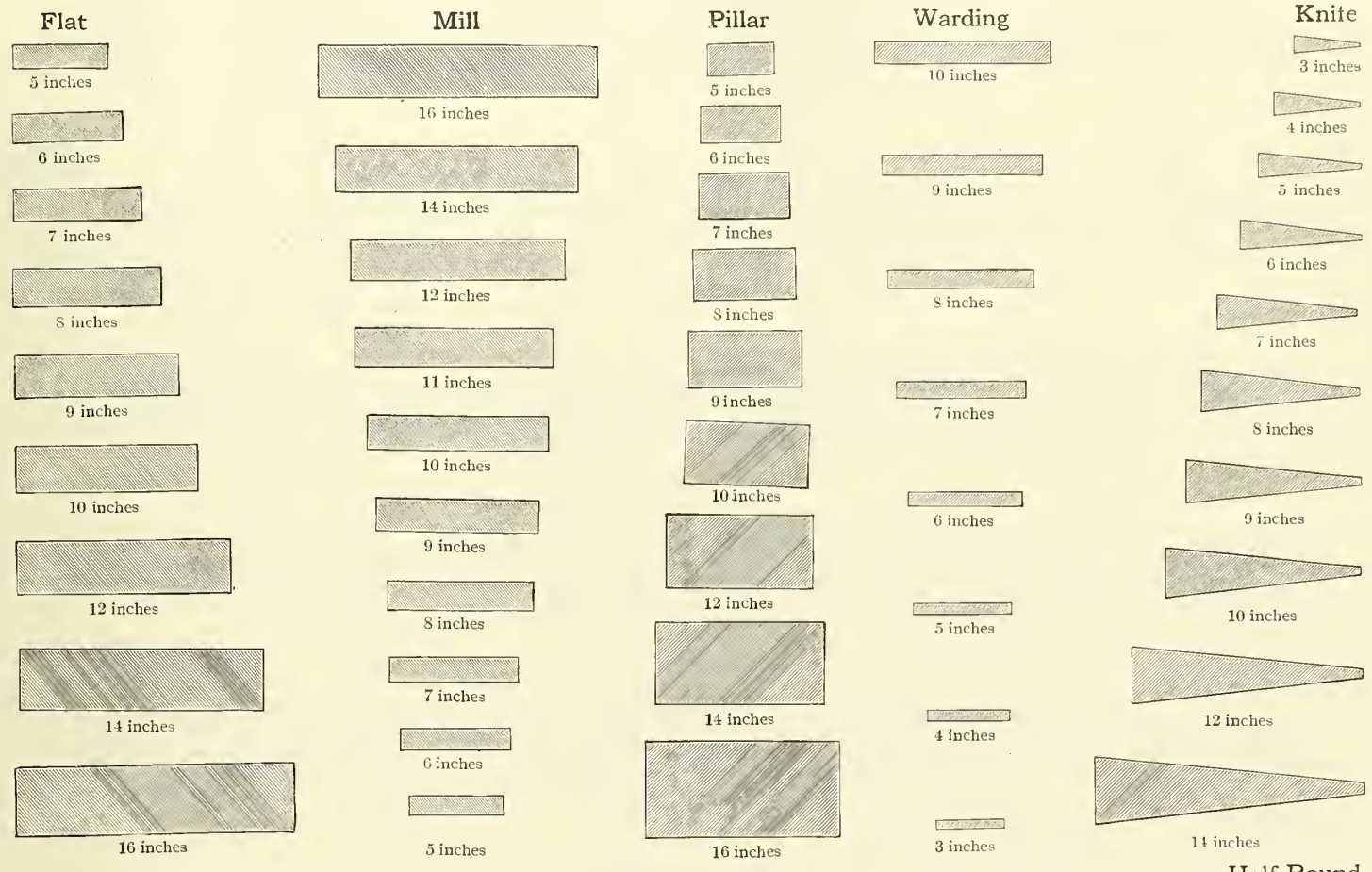
Trade Mark

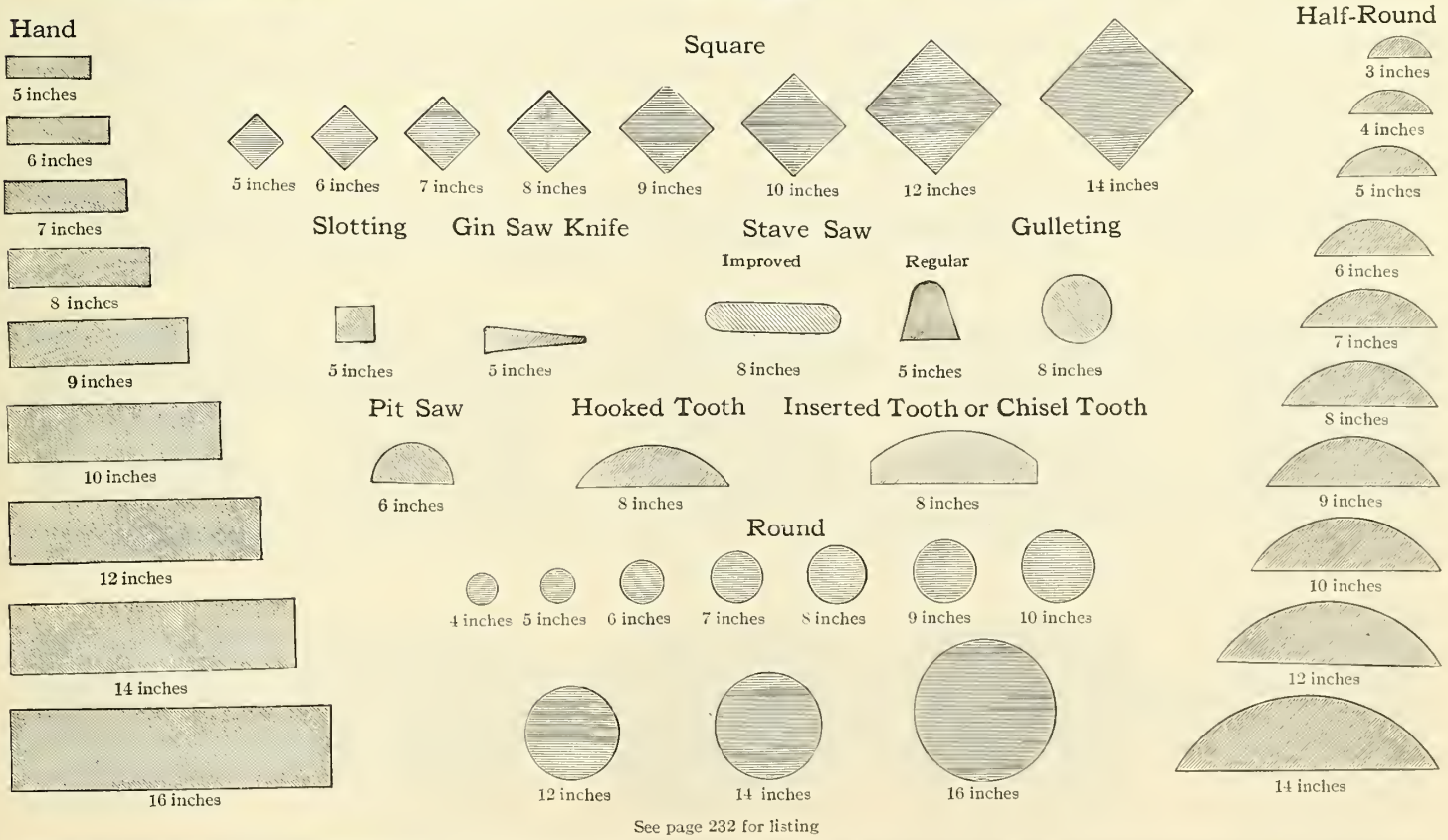
The celebrated Vautier "Pipe" (trade-mark) Files are unsurpassed and are equal in quality and evenness of cut to any genuine Swiss Files on the market.

These Files are graded the same as the Nicholson "XF" Swiss pattern—No. 00 being the coarsest, a little coarser than the ordinary bastard cut, and No. 6 the finest, equal to super or dead smooth. They are made in the same styles as shown on pages, 233, 234 and 235 and prices will be quoted on application.

Sectional View of Files

Actual Sizes



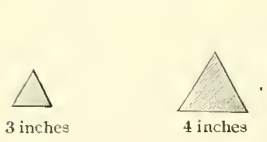


See page 232 for listing

Sectional Views of Files

Actual Sizes

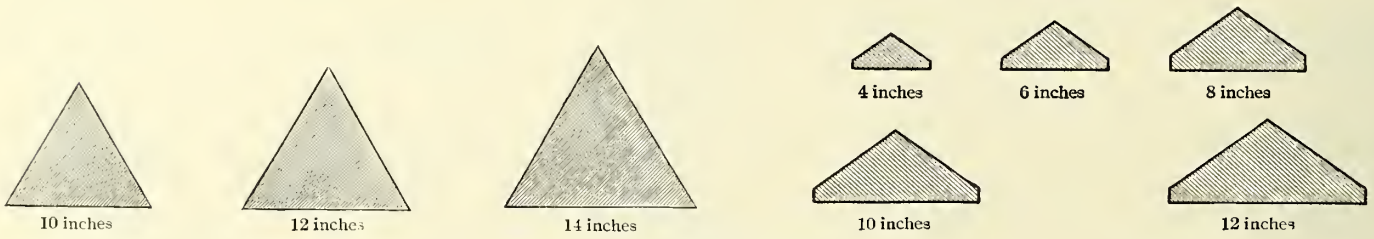
Three Square and Regular Taper Saw



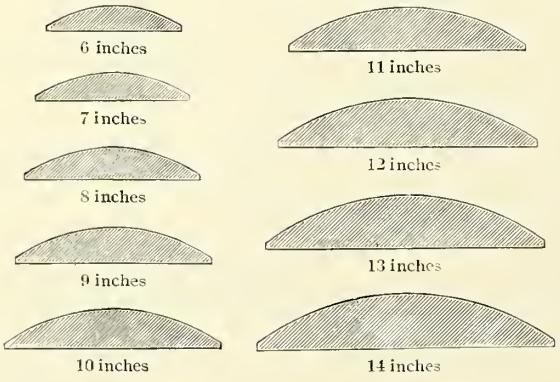
Slim Taper Saw



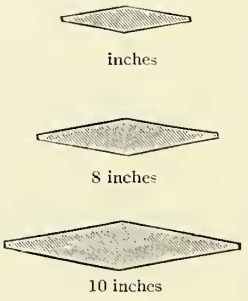
Cant Saw



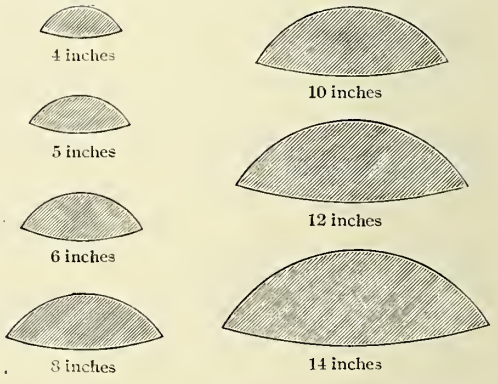
Cabinet



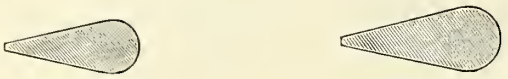
Feather Edge



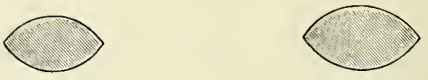
Crossing



Cross-Cut



Tumbler

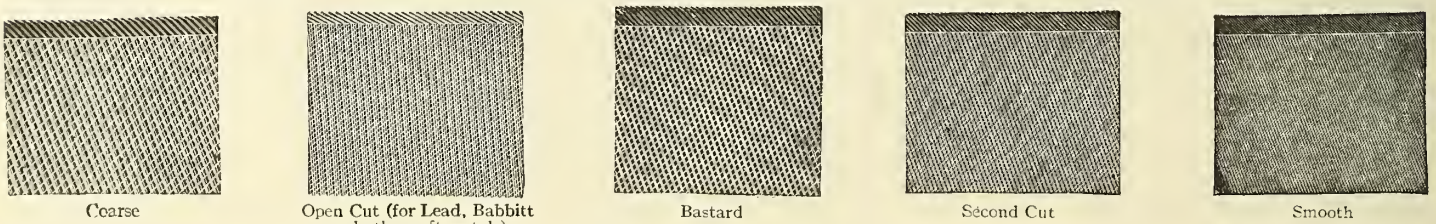


See page 232 for listing

Cutting Surfaces of Files

These illustrations indicate the cutting surfaces of 8-inch Coarse, Open Cut, Bastard, Second Cut and Smooth Hand Files

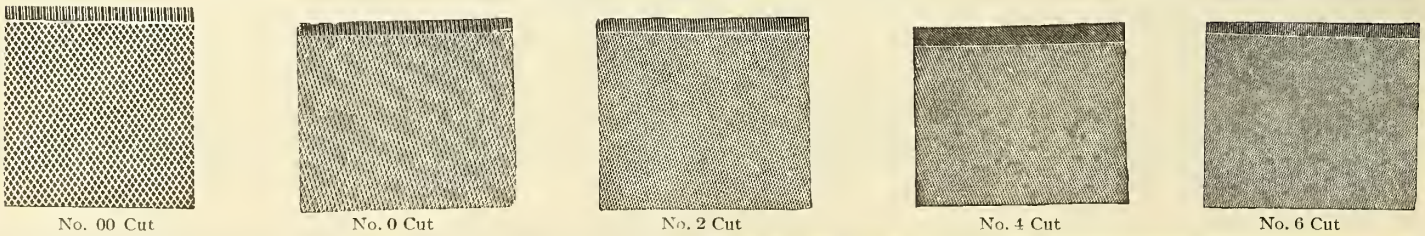
See page 232 for listing



Coarse | Open Cut (for Lead, Babbitt and other soft metals) | Bastard | Second Cut | Smooth

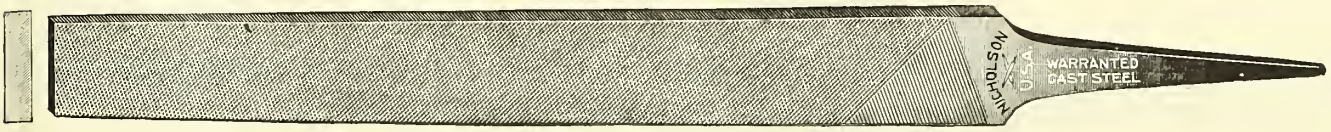
These illustrations indicate the cutting surfaces of 8-inch Nos. 00, 0, 2, 4 and 6 XF Swiss Pattern Hand Files

See page 236 for listing

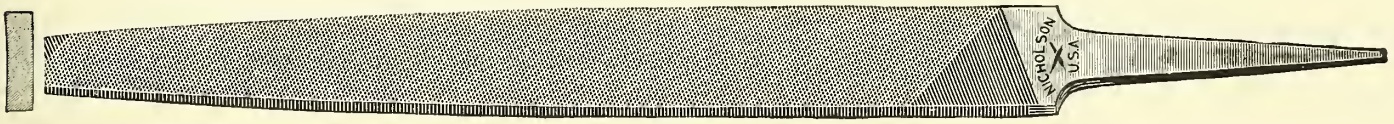


No. 00 Cut | No. 0 Cut | No. 2 Cut | No. 4 Cut | No. 6 Cut

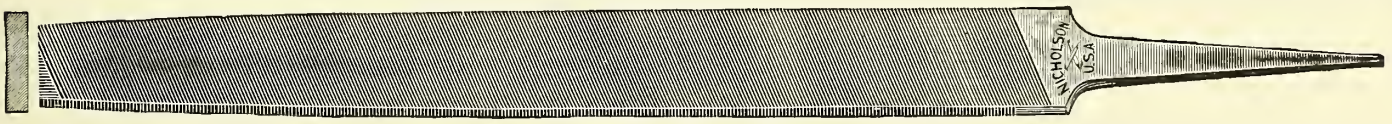
Files



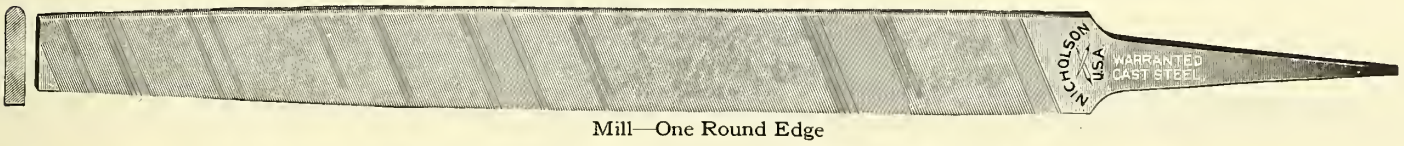
Hand—One Safe Edge



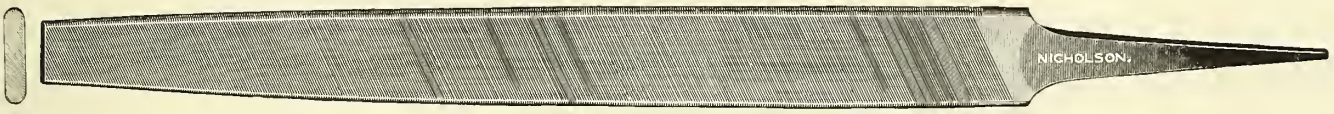
Flat



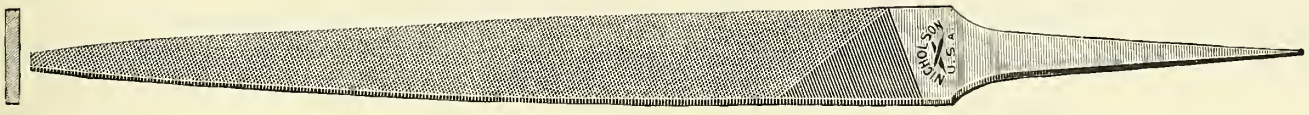
Mill—Two Square Edges



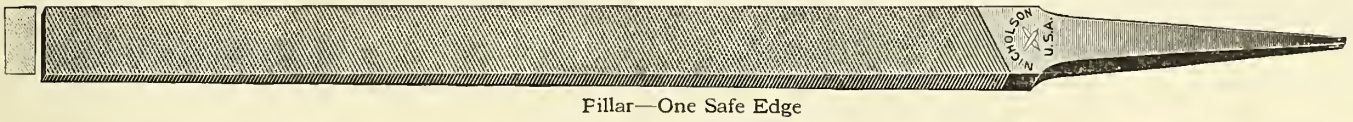
Mill—One Round Edge



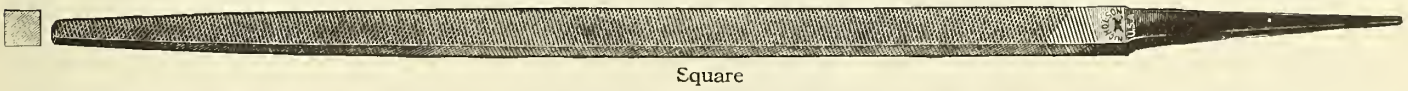
Mill—Two Round Edges



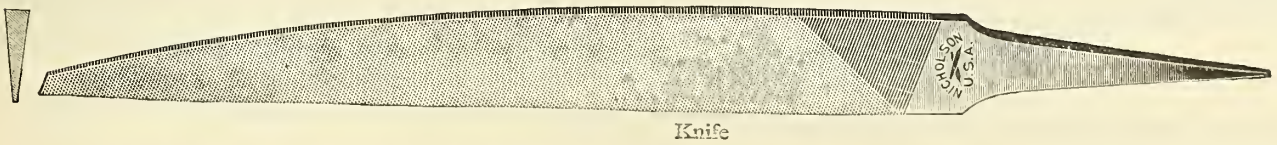
Warding



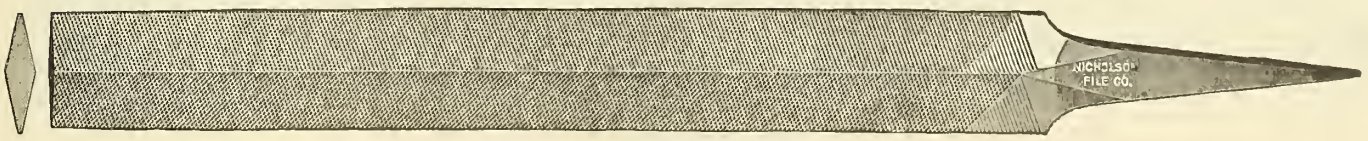
Fillar—One Safe Edge



Square



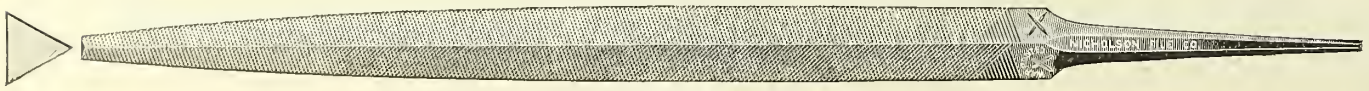
Knife



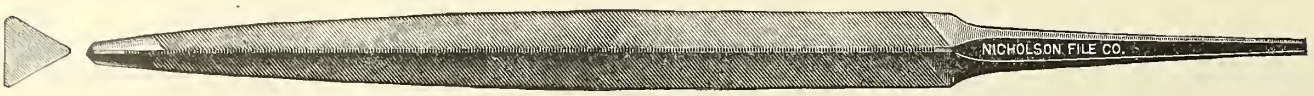
Feather Edge—Blunt

See page 232 for listing

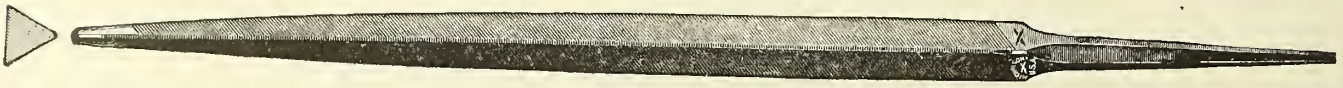
Files



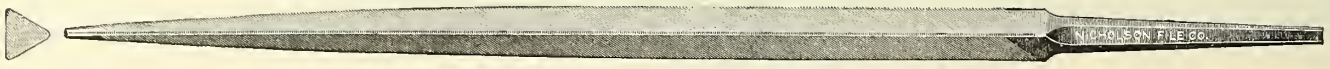
Three Square



Taper Saw—Regular



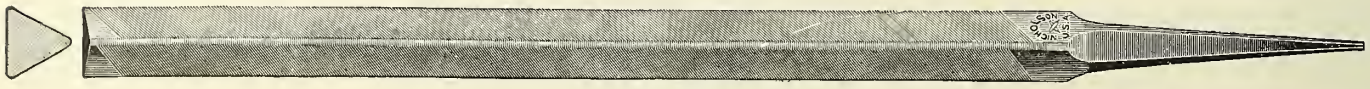
Taper Saw—Slim



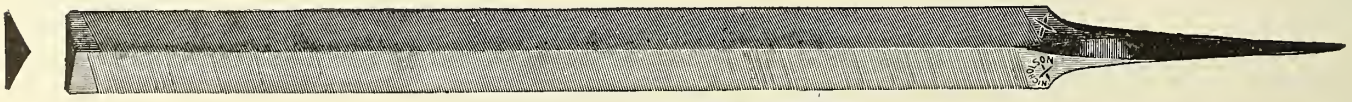
Taper Saw—Extra Slim



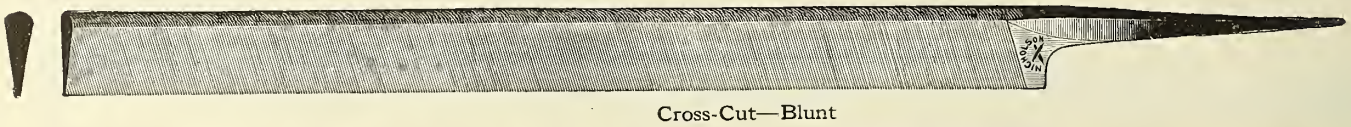
Double Ender Saw



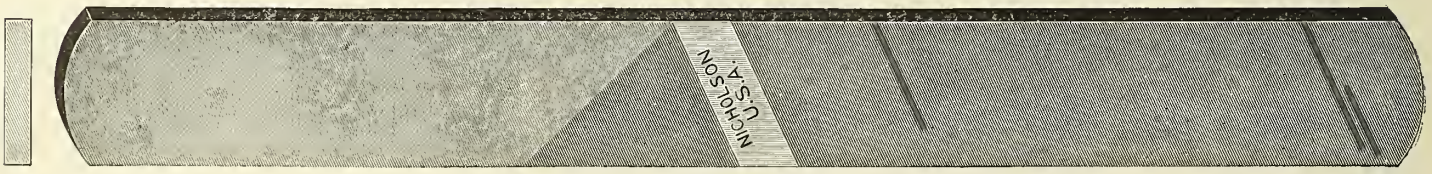
Band Saw—Blunt



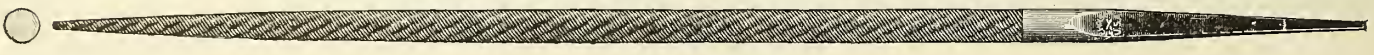
Cant Saw—Blunt



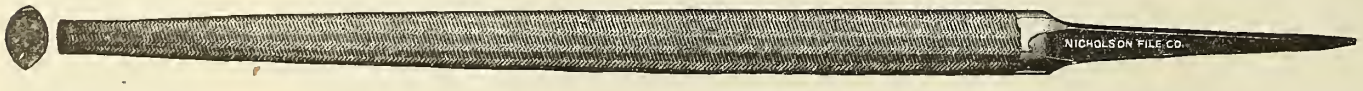
Cross-Cut—Blunt



Planer Knife



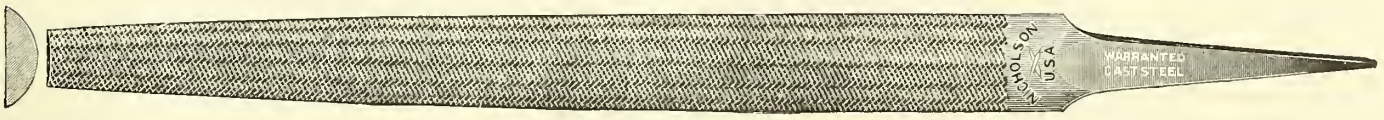
Round



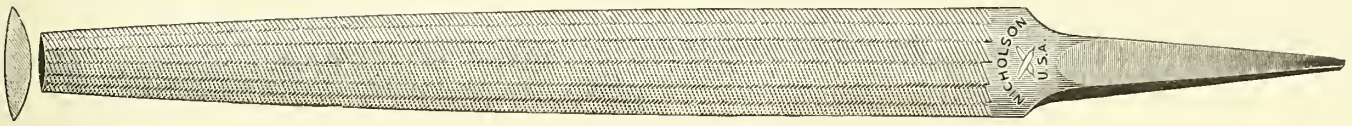
Tumbler

See page 232 for listing

Files and Rasps



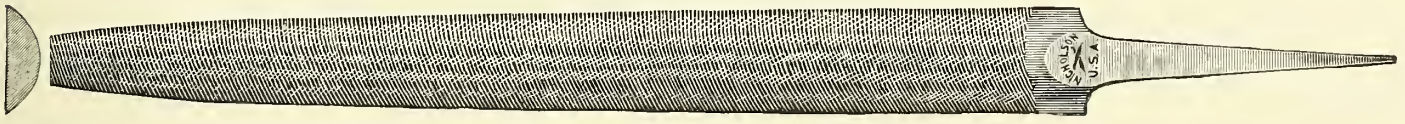
Half-Round File



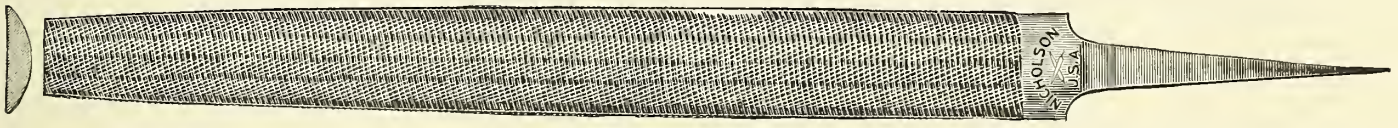
Crossing File



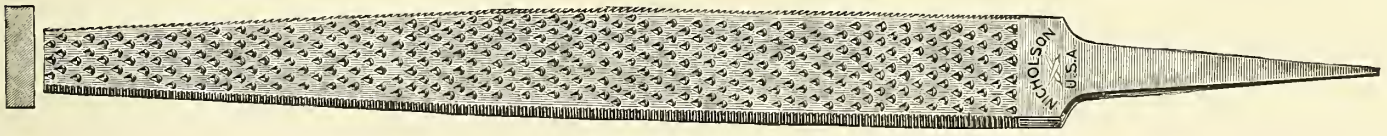
Flat Wood File—Open Cut



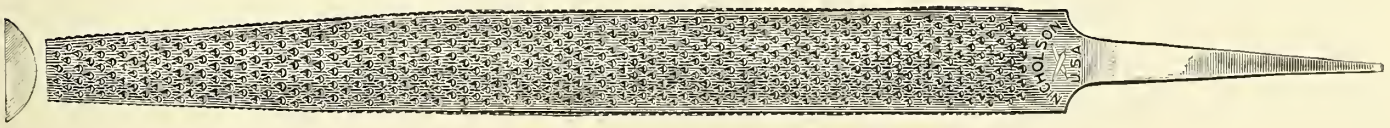
Half-Round Wood File—Open Cut



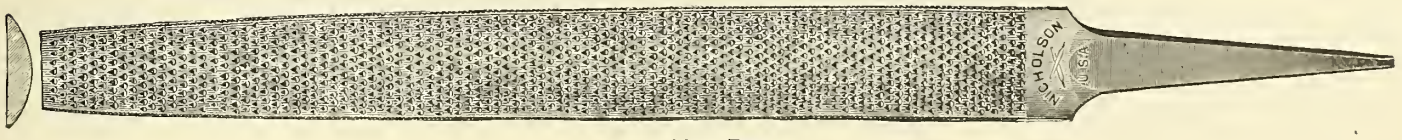
Cabinet File—Open Cut



Flat Wood Rasp



Half-Round Wood Rasp



Cabinet Rasp



Plain Horse Rasp

See page 232 for listing

Price List of Files and Rasps

Nicholson Increment Cut and Kearney and Foot Brands

As Adopted by the File Manufacturers' Association of the United States, November 1, 1899

Inches	Mill (single cut, two square edges) and Round			Flat		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	$3.00	$3.50	$3.90	$3.70	$4.30	$4.70
5	3.20	3.80	4.10	3.90	4.60	4.90
6	3.50	4.00	4.50	4.30	4.80	5.30
7	3.90	4.60	4.90	4.80	5.50	6.10
8	4.30	4.90	5.40	5.30	6.10	6.60
9	4.90	5.80	6.30	6.30	7.20	7.90
10	5.60	6.40	7.00	7.00	8.10	8.70
11	6.70	7.80	8.50	8.60	9.80	10.70
12	7.50	8.60	9.40	9.70	11.00	12.10
13	9.40	10.70	11.70	11.80	13.60	14.70
14	10.70	12.20	13.10	13.30	15.30	16.70
15	13.10	15.00	16.10	16.00	18.30	20.00
16	14.70	16.80	17.90	17.80	20.10	22.30
17	18.20	20.20	21.70	21.50	24.20	26.50
18	20.20	22.70	24.30	23.90	26.80	29.20
19	24.60	27.50	29.40	28.40	31.60	34.60
20	27.40	30.70	32.90	31.50	35.30	38.30

Mill Blunt, Dbl. Cut, adv. 2 in.
Mill Double Cut, adv. 1 in.
Mill Narrow Point, adv. 1 in.
Mill Machine, adv. 1 in.
Mill Triangular & Sq. adv. 1 in.

Cant (Blunt) Double Cut, advance 2 inches.

Inches	Square			Hand and Pillar One safe edge		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	$3.80	$4.60	$4.90	$3.70	$4.30	$4.80
5	4.10	4.80	5.30	3.90	4.70	5.30
6	4.60	5.10	5.50	4.30	5.10	5.60
7	5.10	5.80	6.30	4.90	5.80	6.30
8	5.50	6.30	7.00	5.40	6.30	6.70
9	6.60	7.70	8.30	6.70	7.80	8.30
10	7.40	8.50	9.10	7.50	8.70	9.40
11	9.10	10.40	11.30	9.40	10.90	11.80
12	10.20	11.50	12.80	10.70	12.30	13.50
13	12.50	14.30	15.40	13.30	15.20	16.20
14	13.90	16.10	17.50	15.00	17.00	18.20
15	16.90	19.20	20.90	17.90	20.60	21.70
16	18.70	21.20	23.30	20.10	22.80	24.20
17	22.50	25.40	27.50	24.20	27.10	28.60
18	25.10	28.20	30.40	26.80	29.90	31.50
19	29.70	33.20	35.70	31.90	35.40	37.60
20	32.80	36.70	39.30	35.10	39.20	41.60

Square Blunt, advance 1 inch.

Slotting (Blunt) one safe edge, advance 2 inches.

Inches	Half-Round and 3 Sq.			Warding		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	$4.80	$5.60	$6.10	$4.00	$4.80	$5.40
5	5.40	6.10	6.40	4.50	5.30	5.80
6	6.10	6.70	7.10	4.90	5.90	6.40
7	7.00	7.70	8.20	5.90	6.90	7.50
8	7.50	8.30	8.90	6.40	7.50	18.20
9	8.50	9.40	9.90	7.80	9.00	9.90
10	9.10	10.10	10.70	8.70	10.10	1.00
11	10.70	11.80	12.70	10.90	12.70	13.70
12	11.80	13.00	13.90	12.30	14.30	15.40
13	14.10	15.40	16.60	15.20	17.40	18.70
14	15.50	17.00	18.30	17.00	19.40	21.00
15	18.50	20.40	21.70			
16	20.60	22.50	24.20			
17	24.70	27 00	28.90			
18	27.50	29.90	32.00			
19	32.80	35.70	38.10			
20	36.20	39.40	42.30			

Ginsaw Knife, take Bastard price.
Crossing, advance 2 inches.
Tumbler, advance 2 inches.
Feather Edge (Blunt) advance 2 inches.
High Back / Half-Round } advance 2 inches

Stavesaw (Blunt) Regular.
8 inches..... $9.40

Stavesaw. Improved
6 inches..... $6.40
7 inches..... 7.40
8 inches..... 8.10
9 inches..... 9.70
10 inches..... 10.70
12 inches..... 15.40

Inches	Mill Single Cut One Round Edge			Mill Single Cut Two Round Edges		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	$3.40	$3.90	$4.40	$3.80	$4.40	$4.90
5	3.60	4.30	4.60	4.00	4.80	5.10
6	3.90	4.50	5.10	4.40	5.00	5.60
7	4.40	5.20	5.50	4.90	5.80	6.10
8	4.80	5.50	6.10	5.40	6.10	6.80
9	5.50	6.50	7.10	6.10	7.30	7.90
10	6.30	7.20	7.90	7.00	8.00	8.80
11	7.50	8.80	9.60	8.40	9.80	10.60
12	8.40	9.70	10.60	9.40	10.80	11.80
13	10.60	12.00	13.20	11.80	13.40	14.60
14	12.00	13.70	14.70	13.40	15.30	16.40
15	14.70	16.90	18.10	16.40	18.80	20.10
16	16.50	18.90	20.10	18.40	21.00	22.40
17	20.50	22.70	24.40	22.80	25.30	27.10
18	22.70	25.50	27.30	25.30	28.40	30.40

Inches	Tapers		Slim and Extra Slim Tapers		Bandsaw Blunt and Taper	
	Single Cut	Double Cut	Single Cut	Double Cut	Single Cut Regul'r	Single Cut Slim
3	$2.10	$2.50	$2.10	$2.50	$2.50	$2.50
3½	2.10	2.50	2.10	2.50	2.50	2.50
4	2.20	2.90	2.20	2.60	2.90	2.60
4½	2.40	3.10	2.30	3.00	3.10	3.00
5	2.60	3.50	2.50	3.20	3.50	3.20
5½	3.00	4.00	2.90	3.50	4.00	3.50
6	3.40	4.70	3.10	3.90	4.70	3.90
7	4.30	5.60	3.80	4.50	5.60	4.50
8	5.40	6.70	4.50	5.30	6.70	5.30
9	6.60	8.10	5.40	6.30	8.10	6.30
10	8.10	9.70	6.40	7.50	9.70	7.50
11	10.70	12.10	8.30	9.10	12.10	9.10
12	12.50	14.70	9.50	11.00	14.70	11.00
13	15.90	17.50	12.10	13.10	17.50	13.10
14	18.20	20.60	13.80	15.40	20.60	15.40

Inches	Pit Saw Blunt	Cant Saw Blunt	Cross Cut Blunt	Hook Tooth Blunt *	Planer Knife	Insert'd Tooth or Chisel Tooth Blunt
	Single Cut	Single Cut	Single Cut	Single Cut	Single Cut	
4	$4.80	$4.30	$4.80			Two Safe Edges
5	5.40	4.70	5.40			
6	6.10	5.40	6.10	$6.70		
7	7.00	6.10	7.00	7.70		
8	7.50	6.40	7.50	8.30	$6.40	$8.30
9	8.50	7.80	8.50	9.40	....	9.40
10	9.10	8.70	9.10	10.10	8.60	10.10
11	10.70	10.40	10.70	11.80	....	
12	11.80	11.40	11.80	13.00	12.16	

Climax, Blunt, Single Cut, advance 2 inches on Half Round Bastard. * Safe or Cut Back.
Round Gulleting, Blunt, take Pitsaw price.

Double-ender with Handle

Inches..	7	8	9	10
	$3.50	3.90	4.40	4.90

Inches	Horse Rasps			File Rasps	
	Plain	Beveled & ¾ Rasp	Tanged	Flat	Half-Round
6	....	....	....	$7.40	$8.10
7	....	....	....	8.60	9.30
8	....	....	....	9.40	10.10
9	....	....	....	11.40	12.20
10	$9.40	$10.70	$12.80	12.80	13.70
11	11.40	12.90	15.20	15.50	16.80
12	12.80	14.40	16.80	17.50	18.70
13	15.20	17.00	19.60	20.90	22.40
14	17.80	20.10	23.10	23.20	24.80
15	20.90	23.60	27.30	27.80	29.70
16	24.40	27.50	32.20	30.80	32.90
17	28.90	31.50	....	36.20	38.90
18	32.90	36.20	....	40.90	43.60

Inches	Wood Files			Wood Rasps		
	Flat	Half-Round	Cabinet	Flat	Half-Round	Cabinet
6	$4.30	$6.10	$8.10	$7.40	$8.10	$10.10
7	4.80	7.00	9.30	8.60	9.30	11.70
8	5.30	7.50	10.10	9.40	10.10	12.80
9	6.30	8.50	12.20	11.40	12.20	15.50
10	7.00	9.10	13.70	12.80	13.70	17.50
11	8.60	10.70	16.80	15.50	16.80	20.70
12	9.70	11.80	18.70	17.50	18.70	22.80
13	11.80	14.10	22.40	20.90	22.40	26.80
14	13.30	15.50	24.80	23.20	24.80	29.60
15	16.00	18.50	29.70	27.80	29.70	33.90
16	17.80	20.60	32.90	30.80	32.90	36.90
17	21.50	24.70	38.90	36.20	38.90	42.40
18	23.90	27.50	43.60	40.90	43.60	46.90

Last Makers Rasps
One inch advance on Cabinet Rasp.

Inches	Shoe Rasps		
	Flat	Half-Round	Oval
6	$8.10	$8.10	$9.30
7	9.30	9.30	10.10
8	10.10	10.10	12.20
9	12.20	12.20	13.70
10	13.70	13.70	16.80
11	16.80	16.80	18.70
12	18.70	18.70	22.40
13	22.40	22.40	....
14	24.80	24.80	....

Inches	Knife		
	Bastard	2d Cut	Smooth
4	$5.40	$6.10	$6.40
5	6.10	6.70	7.10
6	6.90	7.50	7.90
7	7.80	8.50	8.90
8	8.50	9.10	9.50
9	9.40	10.60	11.30
10	10.10	11.50	12.30
11	12.20	13.70	14.60
12	13.70	15.20	16.10
13	16.30	17.90	19.20
14	18.20	19.90	21.20

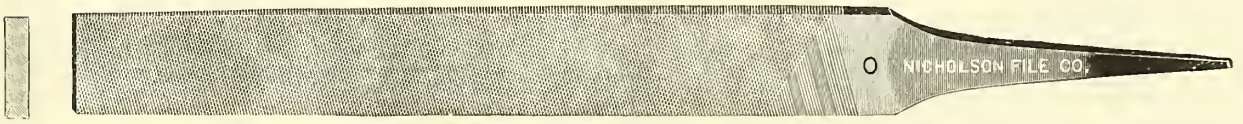
Sizes below 4 inches, not extended, take 4-inch price.
Half inches not specified, take next higher full inch price.
Dead Smooth, double the price of Bastard Cut.
One Round Edge, advance 12½ per cent.
All lengths above those listed, advance 20 per cent. on next lower inch price.

Blunt Files not specified, advance 1 inch on respective kinds and cuts.
Single or Float Cut not specified, on regular shapes take Double Cut price.
Equalings (bellied) advance 2 inches on respective kinds and cuts.
Two Round Edges advance 25 per cent.
Files varying from standard sizes, subject to special prices.

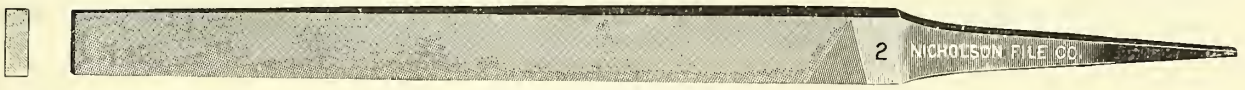
Cuts not specified, made upon regular blanks, advance 1 inch on respective kinds and nearest cut.

See pages 226 to 231 for shapes, cuts, notes, etc.

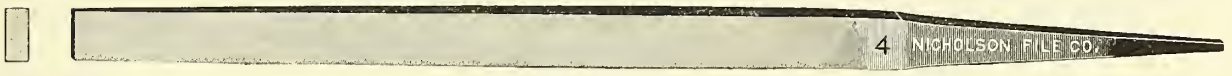
Nicholson "XF" Swiss Pattern Files



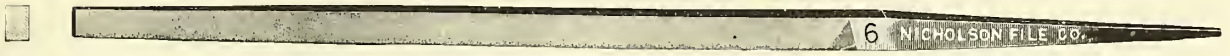
Hand—*One Safe Edge



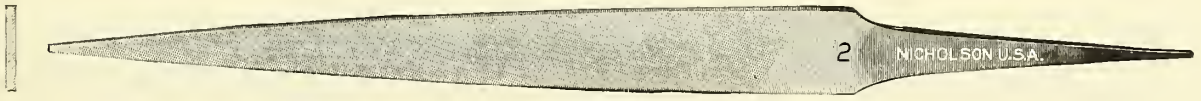
Pillar—Two Safe Edges



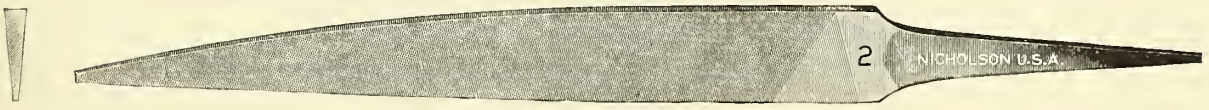
Narrow Pillar—Two Safe Edges



Extra Narrow Pillar—Two Safe Edges



Warding



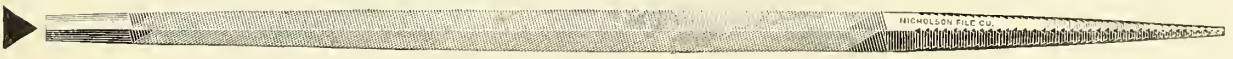
Knife



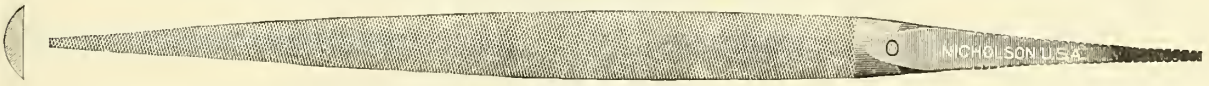
Square



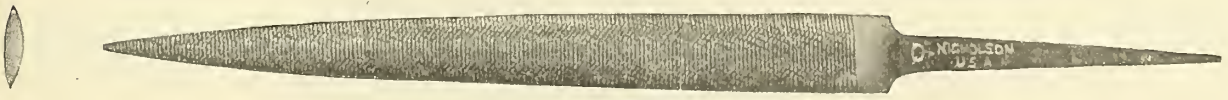
Three Square



Metal Saw



Half Round



Crossing



Round



Round Blunt



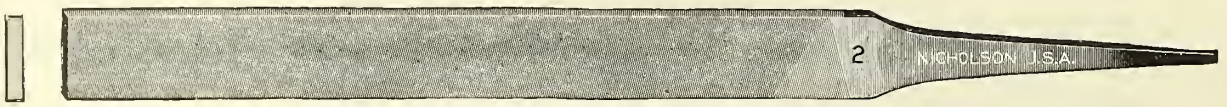
Barrette—Safe Back

See page 236 for listing

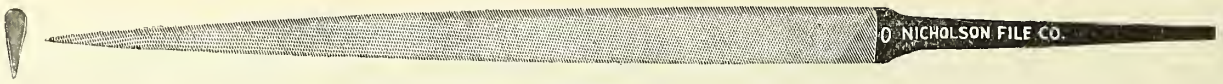
We are also in position to furnish Vautier Genuine Swiss Files. Prices on application

*Cuts Nos. 6, 7 and 8 have two safe edges.

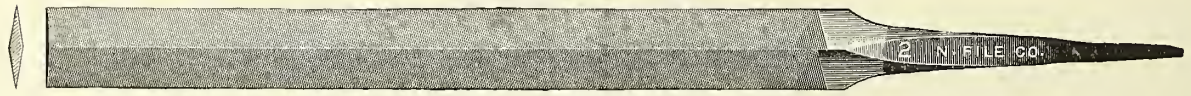
Nicholson "XF" Swiss Pattern Files



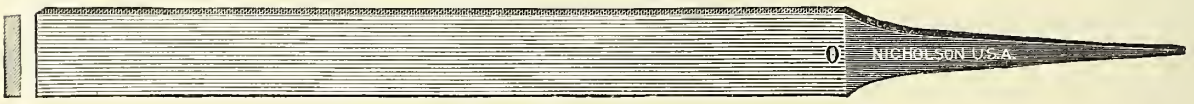
Equaling



Pippin



Slitting



Drill or Joint—Square Edge, Thick—Two Safe Sides

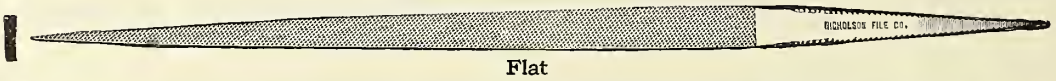


Drill or Joint—Round Edge, Thin—Two Safe Sides

Nicholson "XF" Die Sinkers Files



Flat—One Safe Edge



Flat



Square



Lozenge



Three Square



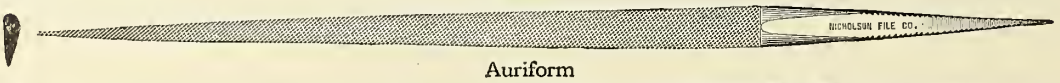
Round



Half Round



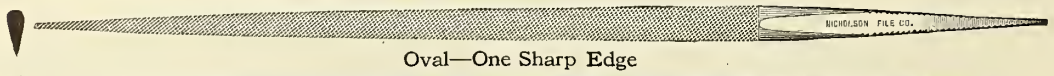
Knife



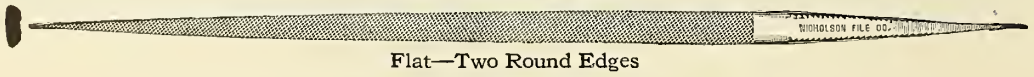
Auriform



Oval



Oval—One Sharp Edge



Flat—Two Round Edges

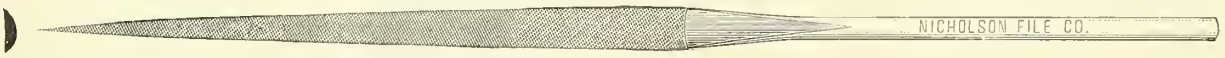
See page 236 for listing

We are also in position to furnish Vautier Genuine Swiss Files. Prices on application

Nicholson "XF" Needle Files



Round



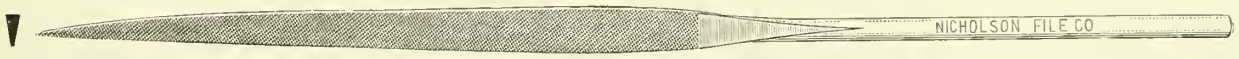
Half Round



Flat



Oval



Knife



Square



Three Square



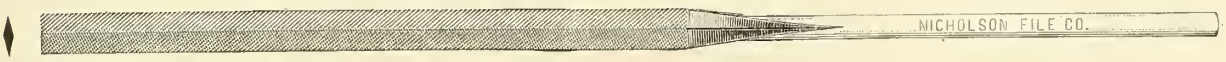
Equaling



Barrette—Safe Back



Drill or Joint—Square Edges
Two Safe Sides



Slitting



Marking—Safe Flat Side



Coil—Two Safe Edges

See page 236 for listing

We are also in position to furnish Vautier Genuine Swiss Files. Prices on application

Nicholson "XF" Swiss Pattern Files

Regular cuts carried in stock are Nos. 00, 0, 2, 4 and 6, other numbers furnished at short notice if desired. Prices per dozen

Hand, One Safe Edge						
No.	00-2	3-4	5	6	7	8
2 & 2½″	$1.85	$1.95	$2.05	$2.20	$2.35	$2.50
3	2.20	2.30	2.40	2.60	2.90	3.10
3½	2.45	2.60	2.75	3.00	3.25	3.50
4	2.70	2.85	3.00	3.25	3.55	3.80
4½	3.15	3.35	3.55	3.85	4.25	4.45
5	3.45	3.65	3.95	4.40	4.75	5.00
6	4.10	4.40	4.65	5.00	5.55	6.05
7	5.50	5.75	6.05	6.65	7.25	7.75
8	6.30	6.60	7.15	7.75	8.30	9.30
9	8.25	8.80	9.60	9.90	10.50	11.60
10	9.55	9.90	10.50	11.10	11.50	12.30
12	12.30	12.60	13.60	14.00	14.70	15.50
14	15.00	15.00	16.00	17.00	18.20	19.50

Pillar, Pillar Narrow, Pillar Extra Narrow, Two Safe Edges				
No.	00-2	3-4	5-6	7-8
2 & 2½″	$1.65	$1.70	$1.75	$1.85
3	1.85	1.95	2.05	2.15
3½	2.10	2.20	2.35	2.45
4	2.35	2.50	2.60	2.75
4½	2.75	2.85	3.00	3.25
5	3.05	3.20	3.40	3.60
6	3.30	3.50	3.65	3.90
7	4.15	4.40	4.75	5.00
8	5.50	5.80	6.05	6.60
9	6.30	6.65	7.15	7.90
10	8.55	8.80	9.30	9.70
12	11.20	12.00	14.10	15.50

3-Square and Metal Saw			
No.	00-2	3-5	6-8
2″	$1.75	$1.75	$1.75
2½	2.20	2.35	2.50
3	2.20	2.35	2.50
3½	2.40	2.55	2.75
4	2.85	3.00	3.20
4½	3.20	3.35	3.55
5	3.45	3.60	3.85
6	4.40	4.55	4.75
7	5.80	6.15	6.60
8	7.40	7.95	8.50
9	8.50	9.20	9.50
10	9.15	9.55	9.90
12	11.20	11.60	12.00

Knife			
No.	00-2	3-4	5-6
2″	$1.75	$1.75	$1.75
2½	2.30	2.40	2.50
3	2.30	2.45	2.55
3½	2.85	2.95	3.05
4	3.30	3.40	3.55
4½	3.85	4.00	4.30
5	4.30	4.55	4.85
6	4.95	5.50	6.05
7	6.60	7.15	7.70
8	8.80	9.20	9.60
9	9.90	10.45	11.00
10	10.30	10.70	11.10
12	12.30	12.70	13.10

Warding				
No.	00-2	3-4	5-6	7-8
2″	$1.50	$1.65	$1.75	$1.90
2½	1.80	1.90	2.00	2.20
3	1.85	1.95	2.10	2.25
3½	2.20	2.30	2.40	2.65
4	2.60	2.85	3.10	3.35
4½	3.00	3.25	3.45	3.80
5	3.30	3.55	3.85	4.20
6	4.10	4.40	4.65	4.95
7	5.05	5.50	6.10	6.70
8	6.10	6.60	7.20	7.80
9	7.40	8.25	8.80	9.40
10	9.00	9.60	10.00	10.40
12	11.40	12.20	12.60	13.00

Half Round				Crossing		
No.	00-2	3-5	6-8	00-2	3-5	6-8
2″	$1.75	$1.85	$1.95	$1.65	$1.65	$1.65
2½	2.30	2.40	2.60	2.20	2.25	2.35
3	2.30	2.40	2.60	2.25	2.30	2.40
3½	2.50	2.70	2.95	2.50	2.55	2.85
4	2.75	3.40	3.70	3.40	3.60	3.85
4½	3.10	3.90	4.30	3.95	4.35	4.65
5	3.45	4.30	4.65	4.40	4.95	5.50
6	4.40	5.25	5.90	5.25	5.90	6.60
7	6.05	7.15	7.95	7.40	8.10	8.75
8	7.45	8.75	9.55	8.50	9.25	10.10
9	9.90	12.10	13.20	11.00	13.50	15.20
10	10.70	13.80	16.20	11.50	14.30	16.90
12	12.90	16.90	19.30	14.70	18.50	22.00

Barrette, Safe Back			
No.	00-2	3-5	6-8
2″	$1.70	$1.70	$1.70
2½	2.05	2.15	2.25
3	2.10	2.15	2.25
3½	2.45	2.55	2.65
4	3.40	3.50	3.60
4½	3.85	4.05	4.30
5	4.70	4.95	5.25
6	6.05	6.30	6.60
7	7.70	8.00	8.25
8	9.15	9.35	9.55
10	12.30	12.50	12.80
12	15.50	15.70	16.00

Square			
No.	00-2	3-5	6-8
2″	$1.20	$1.20	$1.20
2½	1.30	1.30	1.30
3	1.35	1.35	1.35
3½	1.60	1.60	1.60
4	2.20	2.35	2.50
4½	2.50	2.70	2.85
5	2.75	2.90	3.05
6	3.55	3.75	3.95
7	4.40	4.65	4.95
8	5.50	6.05	6.60
9	6.05	6.80	7.75
10	7.15	8.00	8.80
12	8.80	9.60	10.40

Round			
00-2	3-5	6-8	
$ .90	$ .90	$ .90	
1.05	1.05	1.05	
1.05	1.05	1.05	
1.25	1.25	1.25	
1.75	1.85	1.95	
1.90	2.05	2.25	
2.05	2.30	2.50	
2.55	2.85	3.15	
3.30	3.85	4.40	
4.40	4.95	5.50	
5.50	6.60	7.70	
7.15	8.25	9.55	
9.30	10.10	11.30	

Cant and Barrette, Cut All Sides		
00-2	3-5	6-8
$2.20	$2.20	$2.20
2.85	2.95	3.05
2.85	2.95	3.05
3.70	3.85	3.95
4.40	4.60	4.80
5.50	5.95	6.05
6.05	6.30	6.55
7.35	7.60	7.75
8.60	8.90	9.10
10.00	10.40	10.60

Crochet and Pippin			
No.	00-2	3-5	6-8
2″	$1.65	$1.90	$2.20
2½	2.20	2.45	2.75
3	2.20	2.50	2.75
3½	2.60	2.85	3.15
4	3.15	3.45	3.70
4½	3.55	3.95	4.15
5	3.85	4.30	4.70
6	4.95	5.40	5.75
7	6.60	7.15	7.70
8	8.25	8.75	9.15
10	11.60	12.00	12.45

Inches	2	2½	3	3½	4	4½	5	6	7	8	10	12
Equaling, all cuts	$1.50	$1.75	$1.80	$2.20	$2.75	$3.25	$3.70	$4.25	$4.95	$6.90	$10.00	$13.50
Slitting, all cuts	1.95	2.20	2.20	2.60	3.50	4.40	5.25	6.70	8.20	9.40	12.60	16.00
Round Straight, all cuts	....	....	1.10	1.50	1.90	2.10	2.30	2.75	3.85	5.05		
Drill or Joint, Round or Square Edge, all cuts	....	....	1.95	2.10	2.35	2.70	3.05	3.70	4.40	4.95		
Thickness of Drill or Joint, Thin, inch	....	....	.02	.03	.04	.05	.06	.08	.09	.10		
Thickness of Drill or Joint, Thick, inch	....	....	.06	.07	.08	.09	.10	.12	.13	.14		

Die Sinkers

Assorted Shapes

Nos.	0-1-2
3 inches	$2.15
3½ inches	2.50

Needle Files

Round Handle

	Round	Other Shapes	Assorted
10 cm. or 4 inches	$ .95	$1.50	$1.45
12 cm. or 4¾ inches	.95	1.50	1.45
14 cm. or 5½ inches	1.10	1.65	1.60
16 cm. or 6¼ inches	1.25	1.90	1.85

Square Handle or Escapement

	Round	Square	Other Shapes	Assorted
14 cm. or 5½ inches	$1.20	$1.40	$2.00	$1.90

Of the following twelve varieties, viz: Round, Half-Round, Flat, Oval, Knife, Square, Three-Square, Slitting, Equaling, Joint, Barrette and Marking (if Round Handle) or Half-Round Blunt (if Square Handle).
Put up in dozens, either assorted (one of each kind) or in kinds. Assorted dozens will always be sent when order does not state otherwise

Coil, two safe edges, round handle 6¼ inches, dozen $2.40

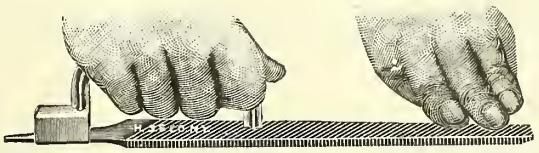
Widths of Hand and Pillar Files

Length inches		2	2½	3	3½	4	4½	5	6	7	8	10	12	14
Width in decimal parts of an inch stated as near as practicable	Hand	.33	.38	.43	.48	.53	.58	.62	.72	.81	.90	1.09	1.27	1.45
	Pillar	.23	.26	.29	.32	.35	.38	.42	.48	.54	.60	.73	.85	
	Pillar Narrow	.17	.19	.22	.24	.27	.29	.31	.36	.41	.45	.55	.64	
	Pillar Extra Narrow	.12	.13	.14	.16	.18	.19	.21	.24	.27	.30	.36	.42	

Pillar, Pillar Narrow, and Pillar Extra Narrow, with one or both edges cut, take same list price as with two safe edges.
Other regular widths not listed take regular list prices. List Revised November 1, 1913

See pages 228, 233, 234 and 235 for Shapes, Cuts, Etc.

Surfacing File Handles and Holders



Malleable Iron Handles

This handle is quickly adjusted to any kind of file. Leaves a perfectly flat surface and the entire length of the file can be used.

No. 523	For 4 and 6-inch files, each	$ .65
No. 522	For 8 and 10-inch files, each	.75
No. 521	For 12 and 14-inch files, each	.85



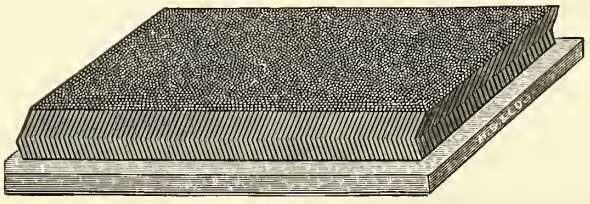
Nicholson Holders

The advantages of the Surface File Holder consist in not only being able to hold and conveniently use a file for surface work, but in being able to bend or curve it slightly when desired.

No. 4	Holding files from 10 to 12 inches, each	$1.25
No. 5	Holding files 14 inches and longer, each	1.50

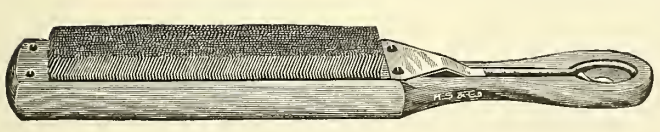
File Cleaners

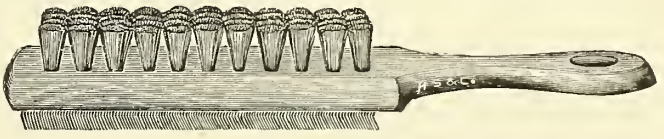
H. S. & Co.



Carding—In Strips 1½ Inches Wide

Fine or coarse, by the lineal foot ..... Foot $.50



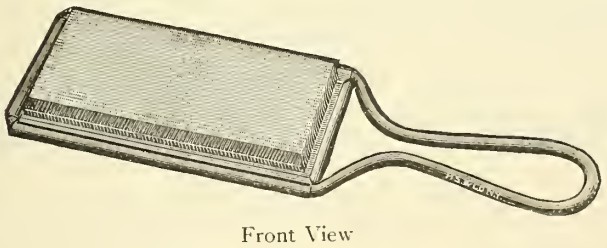


No. 1 Wire File Card, dozen $2.75

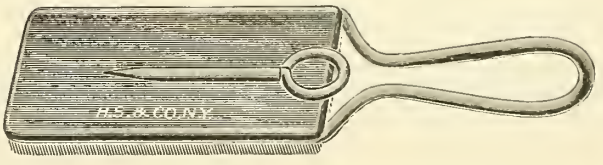
No. 2 Wire File Card and Bristle Brush, dozen $4.84

Substantially made of the best material, the carding being firmly secured to the holder. Each brush is provided with a scorer or metal piece for removing chips or pin pieces from the file teeth

Colton



Front View



Back View

Has a steel back frame and face with tempered steel wire brush. Very durable and economical. Each cleaner supplied with a picker to remove solder and other hard substances from file teeth

No. 10 Dozen $2.50

Carvers Files and Rasps

French



No. 1



No. 5



No. 2



No. 6



No. 3



No. 7



No. 4



No. 8

The Wood Carver Files have the same shapes as the Rasps, the only difference being in the cutting surface

In ordering, be sure to state whether Files or Rasps are wanted

Files

Inches	6	7	8
Dozen	$5.10	$5.70	$6.75

Rasps

Inches	6	7	8	9
Dozen	$5.10	$5.70	$6.75	$7.95

Auger Bit Files

Genuine Moore



7-inch, dozen $2.50

Wood Rasps

French

These French Rasps are especially recommended for their exceptionally high quality and durability. Their cutting quality is unequalled and on account of their extreme hardness and fine temper can be used on marble as well as wood.



10-Inch Cabinet



10-Inch Round



10-Inch Half Round

Illustrations show center sectional view. Full size

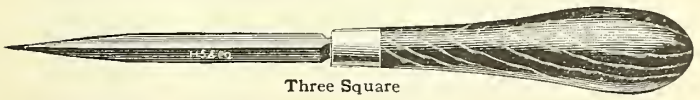
Inches	Cabinet Second Cut Dozen	Cabinet Smooth Dozen
5	$3.60	$3.90
6	3.75	4.20
7	4.50	4.80
8	5.30	5.70
9	5.85	6.10
10	6.50	7.65
11	7.50	8.90
12	9 00	10.35
13	10.75	11.90

Inches	Round Second Cut Dozen	Round Smooth Dozen
4	$2.20	$2.60
5	2.60	3.00
6	2.95	3.25
7	3.60	3.90
8	4.30	4.80
9	4.85	5.50
10	5.85	7.00
11	6.75	8.25
12	8.40	9.30
13	10.35	11.40

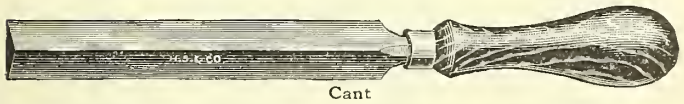
Inches	Half Round Second Cut Dozen	Half Round Smooth Dozen
4	$2.35	$2.75
5	2.70	3.15
6	3.15	3.60
7	3.60	4.00
8	4.20	4.95
9	4.95	5.75
10	5.85	7.15
11	7.15	8.40
12	8.65	9.75
13	11.00	12.00

Machinist Scrapers

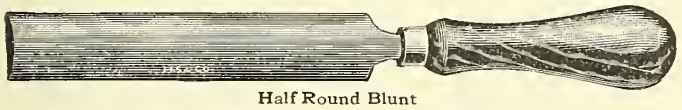
Nicholson



Three Square



Cant



Half Round Blunt



Round Blunt



Mill Blunt



Three Square Blunt

Length, including handle, 9 inches

Set of six	$2.75
Either style, each	.46

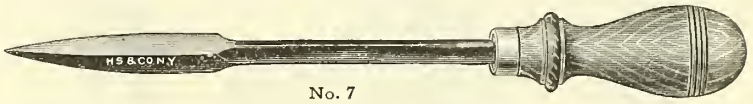
Exceptionally fine quality. Made of the same grade of steel as the celebrated Nicholson Files.

H. S. & Co.



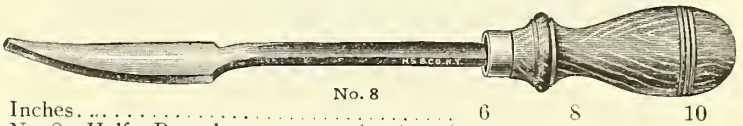
No. 6

No. 6 Double End, 10 inches long, dozen $14.00



No. 7

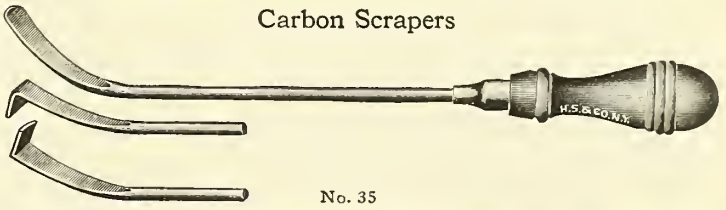
Inches	6	8	10
No. 7 Three Square, concave, hardwood handle, dozen	$9.20	10.80	14.00



No. 8

Inches	6	8	10
No. 8 Half Round, concave, hardwood handle, dozen	$9.20	10.80	14.00

Carbon Scrapers



No. 35

No. 35 Round red fibre finish handles; polished and blued blades. Three to a set in box ..... $ .85

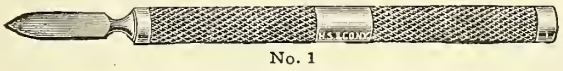


No. 3

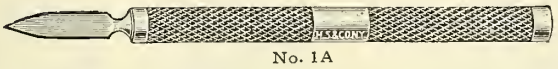
No. 3 Rosewood handle, 3¼-inch blade. The blade is made of the finest tool steel, ground concave. Will hold a good cutting edge and is easily sharpened. Just the tool for scraping bearings, etc., dozen $7.20

Toolmakers Scrapers

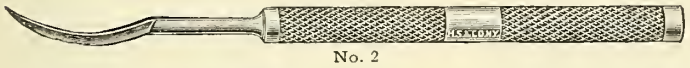
H. S. & Co.



No. 1



No. 1A



No. 2



No. 2A



No. 3



No. 3A



No. 3B



No. 4



No. 5

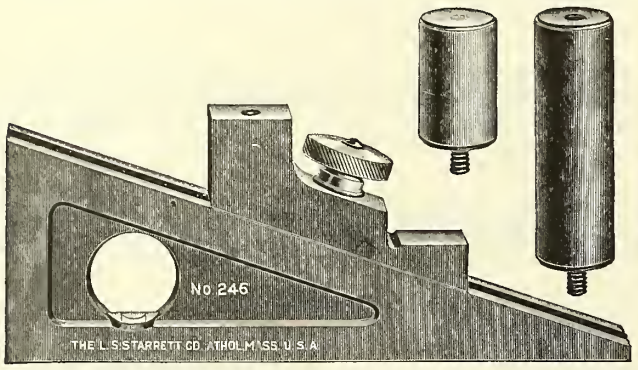
No. 1	Triangular, hollow ground on sides, each	$ .40
No. 1A	Triangular, extra slim hollow ground on sides, each	.40
No. 2	Half round, curved, each	.50
No. 2A	Half round, straight, each	.45
No. 3	Flat, $\frac{5}{16}$ inch wide, each	.40
No. 3A	Flat, $\frac{1}{4}$ inch wide, each	.40
No. 3B	Flat, $\frac{3}{16}$ inch wide, each	.40
No. 4	Round end, each	.45
No. 5	Diamond point, each	.45
No. 03	Consisting of three different tools, Nos. 1, 2 and 3	1.00
No. 09	Set consisting of nine different tools, as above	3.00

They are made in one piece from a selected grade of material best adapted for producing serviceable tools for particular work in scraping and finishing; the handles are solid and have the proper weight for delicacy of touch, and are knurled the full length for gripping securely.

The scraping edges are expertly finished and uniformly hardened with care to last and give the best results on all kinds of surfaces.

Handles are treated with a gunmetal finish.

Planer and Shaper Gauge



Starrett No. 26

Made from drop-forgings, nicely finished, case-hardened and ground. Designed to supply the great need of planer, shaper and milling machine workers for an instrument by which to set a cutter, planer or shaper tool to plane or mill any desired thickness without the "cut and try" process. The gauge with extensions will give any measure from ½ inch to 5½ inches.

For planer work: Set the adjustable slide (using a scale caliper or micrometer) so that one of its seats, with or without the extensions, will measure the height or thickness wanted, place it under the planer or shaper tool, raising or lowering the tool until it touches the seat. Remove the gauge and the work will come as measured.

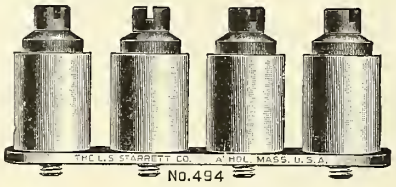
For milling machine work: After the gauge is set to thickness of work wanted, place it on the table or seat for the work, raising or lowering the cutter to touch the gauge. It may also be used for a slot or a height gauge.

For a plumb: Place the right-angle end to the base against the work and read the bevel. This will go in places where nothing else can be used.

Each $3.75

Tool-Maker Buttons

With Screws and Washers for Jig Work



Starrett No. 495

These Buttons are hardened and ground to standard size, and are used to locate holes to be chucked and bushed for jigs where positive accuracy is required. To use: Lay out the jig piece, prick punch, drill and tap for button screws and smooth off burr raised by tapping. Fasten on the buttons, strap the pieces to an angle iron, place same on a surface plate where, by aid of a surface gauge, height gauge or other instrument the buttons (with holes larger than the screws) are brought to the desired location. Now strap the angle iron with button pieces to lathe face plate, bringing one of the buttons to run true with the center aided by test gauge. This done, remove the button and chuck and ream the hole. Repeat the operation with the other buttons until all the holes are chucked.

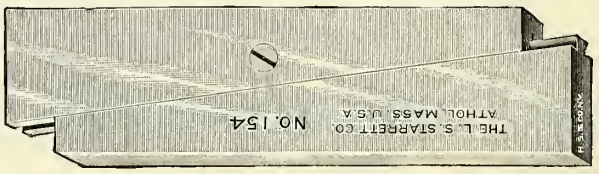
The buttons are furnished screwed to a small plate, which makes a convenient holder for them when not in use.

Set of four Buttons with screws and washers

No. 494A	.300 x 1 inch	$2.00
No. 494A	.300 x ½ inch	2.00
No. 494B	.400 x ½ inch	2.00
No. 494C	.500 x ½ inch	2.00
Taps (.125–40) to use with above, each		.25

A special circular on the Button Scheme will be sent on request

Adjustable Parallels



Starrett No. 154

These Parallels will be found very convenient for use in connection with milling, planer and shaper vises, taking the place of the large number usually required, also for leveling up work on planer, drill press, etc. They give any height from ⅜ inch to 2¼ inches.

Number	Length Inches	Thickness Inch	Capacity Inches	Each
154A	1¾	9/32	⅜—½	$ .75
154B	2⅛	9/32	½—11/16	.90
154C	2 11/16	9/32	11/16—15/16	1.00
154D	3 9/16	9/32	15/16—1 5/16	1.25
154E	4 3/16	9/32	1 5/16—1¾	1.50
154F	5 1/16	9/32	1¾—2¼	1.75

Ground Flat Stock

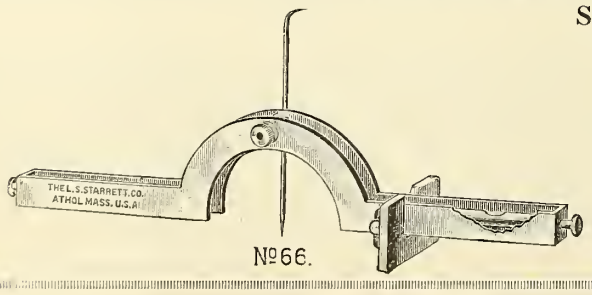
Th's Stock is of service not only in tool work for making flat gauges, test tools, "jig work," etc., but in all work requiring steel of a definite thickness.

This steel is of first quality, cut the length of the sheet, annealed and ground to within a limit of .001 inch of the given thickness.

Size, Inches	Approximate Weight	Pound	Size Inches	Approximate Weight	Pound
1-64	Ounces		5-32	Pounds	
2 x18	3	$3.00	1 x18	⅞	$ .60
2½x18	3½	3.00	1½x18	1⅛	.60
3 x18	4	3.00	2 x18	1¾	.50
3½x18	4½	3.00	2½x18	2	.50
4 x18	5½	3.00	3 x18	2½	.50
1-32			3½x18	2¾	.50
2 x18	6	1.25	4 x18	3¼	.50
2½x18	7	1.25	3-16		
3 x18	8	1.25	1 x18	1	.50
3½x18	9	1.25	1½x18	1½	.50
4 x18	11	1.25	2 x18	2	.45
1-16	Pounds		2½x18	2½	.45
1 x18	⅜	.90	3 x18	3	.45
1½x18	½	.90	3½x18	3½	.45
2 x18	¾	.80	4 x18	4	.45
2½x18	⅞	.80	7-32		
3 x18	1	.80	1 x18	1⅛	.50
3½x18	1⅛	.80	1½x18	1¾	.50
4 x18	1⅜	.80	2 x18	2¼	.45
3-32			2½x18	2⅞	.45
1 x18	½	.75	3 x18	3½	.45
1½x18	¾	.75	3½x18	4	.45
2 x18	1	.65	4 x18	4⅝	.45
2½x18	1¼	.65	1-4		
3 x18	1½	.65	1 x18	1⅜	.45
3½x18	1¾	.65	1½x18	2	.45
4 x18	2	.65	2 x18	2⅝	.40
1-8			2½x18	3¼	.40
1 x18	⅝	.60	3 x18	4	.40
1½x18	1	.60	3½x18	4½	.40
2 x18	1⅜	.50	4 x18	5⅛	.40
2½x18	1¾	.50			
3 x18	2	.50			
3½x18	2¼	.50			
4 x18	2⅝	.50			

Locomotive Guide Liner

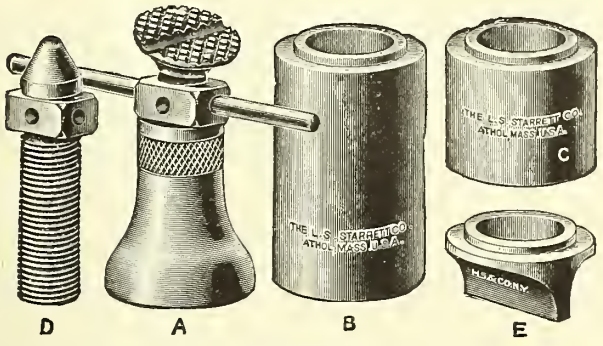
Starrett No. 66



This instrument was devised after many urgent requests from intelligent mechanics, there having been nothing of the kind on the market. The lightness of this tool, combined with strength and accuracy together with an adjustable level in each end, adapting it to be used either side up and the convenient way of adjusting the pointer, all go to make it just the thing needed. Length over all, 14 inches; span of arch 3¼ inches.

Each $3.00

Little Giant Jack Screws



Starrett

Designed for tool-room use, for leveling up work on a planer-bed or under an upright drill, setting up machinery, etc. All parts are case-hardened.

No. 190. The Jack (A) is 1¼ inch diameter at the base and has a range from 2¼ to 3⅝ inches. It will raise 1,000 pounds or more. Two extension bases (B and C) are made to fit the base of the main part (A) and are 2 inches and 1 inch high respectively. With these two extensions used singly or together a reach from 2¼ to 6½ inches may be obtained.

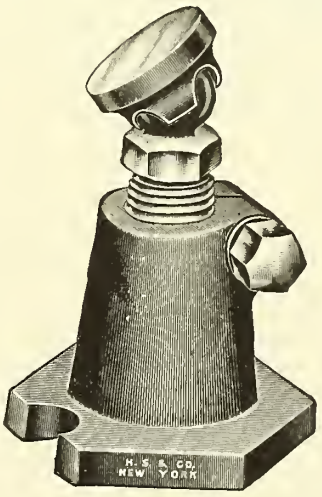
An auxiliary pointed screw (D) is supplied to be used in place of the screw with swivel cap in certain places where it may be preferable. The base (E) is also provided, for use in cases where such a shape may be desirable.

No. 191. A smaller size is made, 1 inch diameter. Part A, 1½ inches high; B, 1 inch; and C, ½ inch. With this size, adjustments from 1½ to 3½ inches are obtainable.

Jack (A) either No. 190 or No. 191	$ .75
Extension Base (B) either No. 190 or No. 191	.20
Extension Base (C) either No. 190 or No. 191	.15
Extension Base (E) either No. 190 or No. 191	.15
Extra Screw (D) either No. 190 or No. 191	.15
Complete, either No. 190 or No. 191	1.40

Sent complete unless otherwise ordered

Planer Jacks

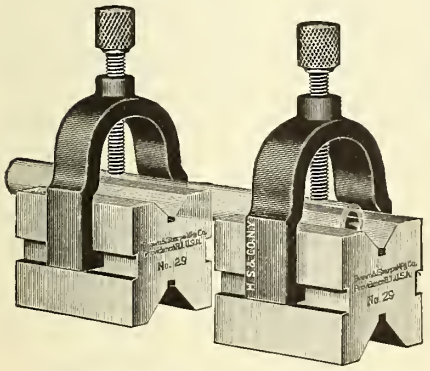


Armstrong

Designed to displace the haphazard devices and methods quite generally in use for leveling work on machine tools, and a glance will show any mechanic their convenience and utility. A set on a machine will greatly reduce the proportion of time required for preliminary arrangements as compared with the actual machine time on the job, and will, moreover, by their perfect adjustability and solidity, insure good, true surfaced work.

Number	Height Contracted Inches	Height Extended Inches	Weight Pounds	Each
1	2¾	3¾	1½	$1.00
2	3¾	5¼	3	1.50
3	5¼	7½	6	2.00
4	7½	12	12	3.00

V-Blocks and Clamps



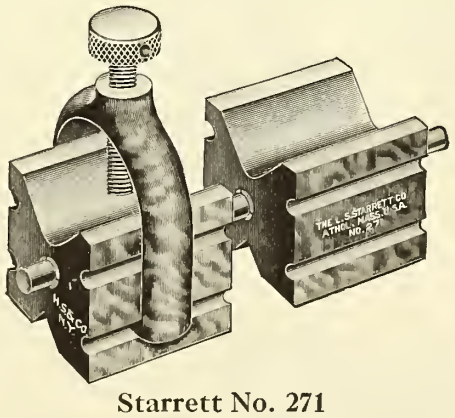
Brown & Sharpe No. 750

Made of tool steel hardened, with the sides ground parallel and the V grooves carefully ground central and parallel to the bottom and sides. Made and sold only in numbered pairs, so that the V-grooves in blocks of the same numbers are always in alignment.

Each block is approximately 1¼ x 1¼ x 1⅝ inches in size and will take work to 1⅛ inches in diameter.

They are not sold singly.

Set as shown $4.00



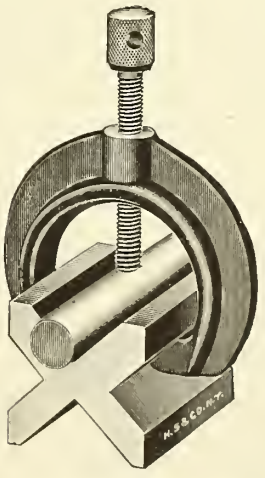
Starrett No. 271

All steel, case hardened

May be used close together or separated and are kept in line by a spindle passing through friction bushings. They will be found convenient when holding pieces with shoulders, which may rest between the blocks. Are 1¼ inches square and will hold round pieces to 1¼ inches diameter. The two grooves in each side take up the length and hold the clamp for small or large work.

No. 271A	Two Blocks	$2.00
No. 271B	Clamp	.75
No. 271C	Set complete	2.75

Will be sent complete unless otherwise ordered



Starrett No. 268

Furnished in pairs. The size of each is 2 x 1½ inches.

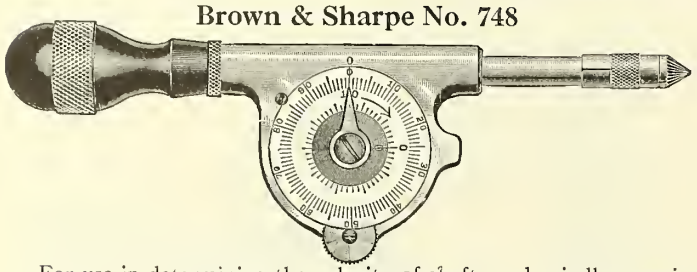
The clamp will hold a round piece 1⅛ inches in diameter firmly in the groove of the blocks.

No. 268A	Two Blocks	$1.00
No. 268B	Clamp	.50
No. 268C	Set, complete	1.50

Will be sent complete unless otherwise ordered

Speed Indicators

Brown & Sharpe No. 748



For use in determining the velocity of shafts and spindles running in either direction. Registers on either side, the front side being used to determine the velocity of shafts and spindles running in one direction and the reverse side the speed of those running in the opposite direction. Thus the confusion and errors that arise where all readings are taken from one dial are avoided.

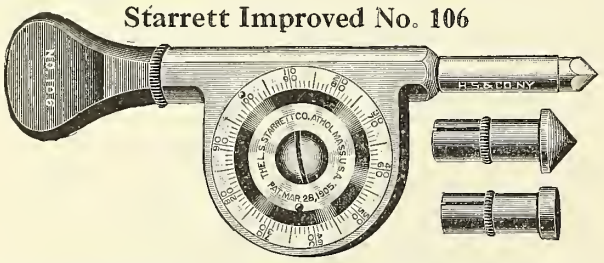
The dials register units and tens by means of a revolving pointer and, in addition, the front dial registers hundreds up to 5000 by means of a rotating disk in the center. This disk will register when either side is used.

Quick use of the tool is greatly facilitated by means of a small knurled wheel on the side of the case which, when turned, reverts the rotating disk on the front dial to the starting point. The pointers are readjusted by simply turning the indicator spindle.

The Indicator is small, light and convenient to handle. All of the working mechanism is encased and the case is heavily nickeled with a dull finish. The point is of steel, hardened, and can be readily removed when worn.

Each $5.50
In Morocco Case, each 6.00

Starrett Improved No. 106



The working parts are inclosed like a watch, and as well made. The graduations show every revolution, and with two rows of figures read both right and left as the shaft may run. While looking at the watch, each hundred revolutions may be counted by allowing the oval-headed pin on the revolving disk to pass under the thumb as the instrument is pressed to its work.

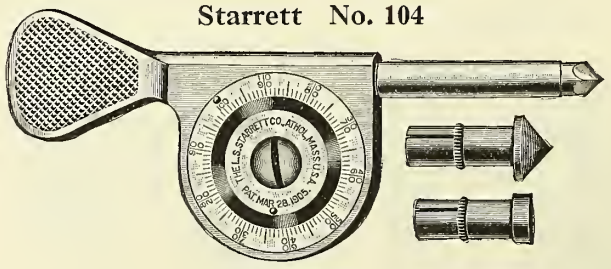
A late improvement in this Indicator consists in the rotating disk, which, being carried by friction, may be moved to the starting point where the raised knobs coincide. When the spindle is placed in connection with the revolving shaft, pressing the raised knob with the thumb will prevent the disk from rotating, while the hand of the watch gets to the right position to take the time. By releasing the pressure the disk is liberated for counting the revolutions of the shaft when every 100 may be noted by feeling the knob pass under the thumb lightly pressed against it, thus relieving the eye, which has only to look on the watch to note the time.

The instrument is nickel-plated, and has a rubber handle, so that it will not heat the fingers when run at high speed.

In Pasteboard Box, each $1.50
In Leatherette Case, each 2.00

Sent in pasteboard box unless otherwise ordered

Starrett No. 104



Nickel-plated

May be run at highest speed required without heating, and this on account of our frictionless bearing against which the inner end of the spindle revolves.

The working parts of this Instrument are encased, and the dial plate has two rows of figures, reading right or left, as the shaft may run.

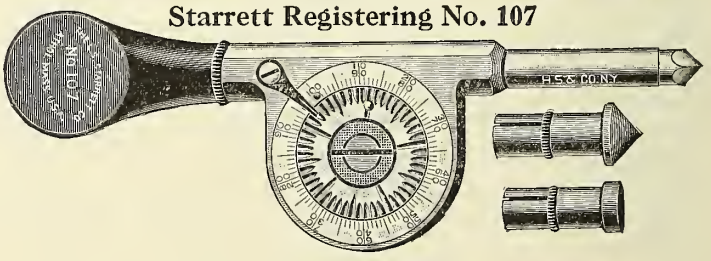
A late improvement in this Indicator consists in the rotating disk, which, being carried by friction, may be moved to the starting point where the raised knobs coincide. When the spindle is placed in connection with the revolving shaft, pressing the raised knob with the thumb will prevent the disk from rotating, while the hand of the watch gets to the right position to take the time. By releasing the pressure the disk is liberated for counting the revolutions of the shaft when every 100 may be noted by feeling the knob pass under the thumb lightly pressed against it, thus relieving the eye which has only to look on the watch to note the time.

In Pasteboard Box, each $1.00
In Leatherette Case, each 1.50

We supply the Indicators with a spindle 7½ inches long for use on dairy machines, etc., for 50 cents extra

The Indicator in pasteboard box (list $1.00) will be sent unless otherwise ordered

Starrett Registering No. 107



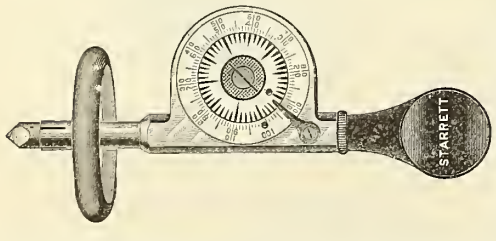
Nickel-plated

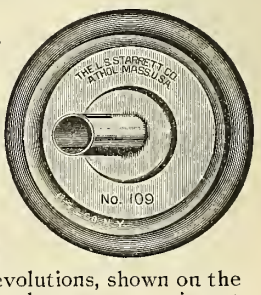
Devised to automatically register hundreds as well as units and tens, and thus relieve the mind from keeping tally; also to furnish a better registering indicator at a more reasonable cost than has been on the market heretofore. The instrument will register 5,000 revolutions. The large dial is graduated into one hundred lines, each one representing a revolution of the spindle. The small dial has fifty lines cut upon its face, each representing one hundred revolutions of the spindle (or one complete turn of the large dial). A spring finger trip attached to the case engages with one of the lines in the small dial and holds it from revolving until the large dial makes one complete turn, when the trip pin passing under the spring trip lifts it, and the dial is frictionally carried along by the large plate one line, thus showing that one hundred revolutions of the spindle have been made. The instrument has a hard rubber handle, making a safe insulator when used on electrical machinery.

In Pasteboard Box, each $3.00
In Leatherette Case, each 3.50

Sent in pasteboard box unless otherwise ordered

Surface Speed Attachment





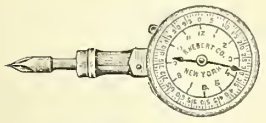
This attachment applied to a Starrett Speed Indicator is designed to show the number of lineal feet per minute the periphery of a shaft or pully is running and thus enable a workman to know if the speed is too fast, or is too slow to get the most work the tool will stand. For instance, the speed of a cone pulley being turned needs to be changed at every step. Heretofore it has been all guesswork as to the number of feet per minute the periphery of the work is traveling. It may be so fast as to heat and spoil the tool, or it may not be nearly fast enough to perform what should be done. The same is true when shifting the tool from the hub to the rim of a pulley. The rubber-banded indicator wheel may be instantly slipped off or on the spindle of any Starrett Speed Indicator, and when held against the periphery of a shaft or pulley a half minute or so, the number of feet the surface is traveling may be obtained by dividing by 2 the number of revolutions, shown on the dial of the indicator, as each revolution of the indicator wheel shows six inches; twice around, one foot. A close approach to accuracy is not claimed for this attachment, but it will be found very convenient and adequate for the purposes intended, as suggested above.

No. 109 Each ..... $ .50

Speed Indicators and Counters

Hebert Duplex Speed Indicator

Ball Bearing. Direct Reading
Indestructible Crystal
Insulated Shaft



Cut One-half Size

This instrument is made with but one dial and two rows of figures same as a watch. The outer row, or long hand, registers units and tens; the inner row, or short hands hundreds, and registers from 0 to 1200, then repeats; but if continuous counting is not required, the register is easily and instantly turned to zero for a new start, by turning thumb-nut in either direction.

When placed in connection with the shaft it revolves without registering. When ready, press down the lever under the index finger, as shown in cut, and it immediately commences to register.

No matter in which direction the shaft turns, the hands always turn and register to the right, same as in a watch, so in no case is it necessary to read backwards.

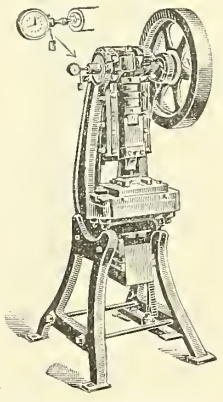
Each.....$6.00

Hebert Punch Press Counter

An automatic counting device attached to a press to aid in keeping a record of the number of pieces stamped is often found convenient and saving of time, each stroke of the press being registered. Registers to 1200 and repeats. Can be thrown out of action or re-set to zero when desired.

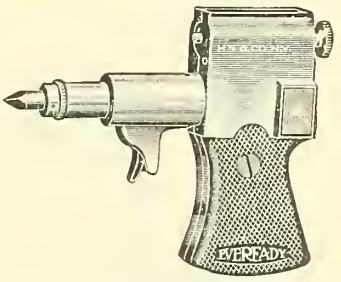
Attached to shaft with two small screws. Quickly detached by loosening set screw when desired for use as Speed Indicator.

Each.....$6.50



As Applied to Punch Press

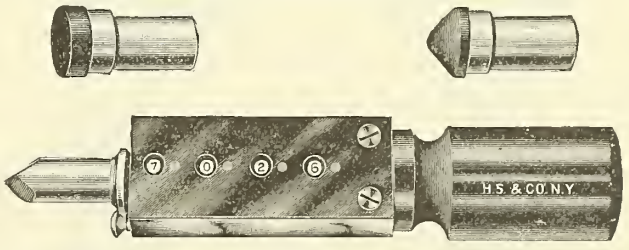
Eveready Revolution Counter



This Counter has many valuable features. Its shape is such that it is easy to handle. When the point is placed against a revolving shaft the spindle of the counter revolves with the shaft but does not register until the trigger is pulled. When the trigger is released the instrument stops registering instantly, although the spindle may still be against the shaft and revolving. The revolutions are shown in figures in the head of the Counter. Turning the knurled knob sets the Counter back to zero instantly. This instrument counts forward—from zero up—no matter in which direction shaft is revolving. Built to stand the hard service an instrument of this kind is subject to.

Each.....$5.00
In Leather Case, with Male and Female Rubber Tips, each.....6.00

Initiative Revolution Counter

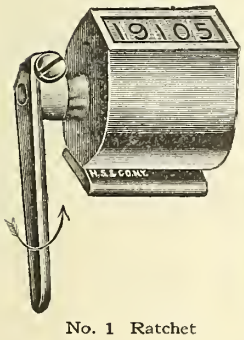


Will register from 0 to 10,000 in either direction and can easily be set to zero from any number. The count is read like an ordinary number, all digits being lined up in a row. This feature has many advantages over the puzzling way of reading with a pointer and dial. Its compact size, its easy way of registering and the fact that the recording does not need to be read backward make the "Initiative" Revolution Counter most perfect, durable and handy.

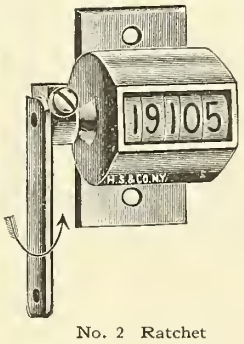
Has insulated rubber handle to guard against electric shocks.
In Plush-lined Morocco Case, each.....$5.00

Veeder Counters

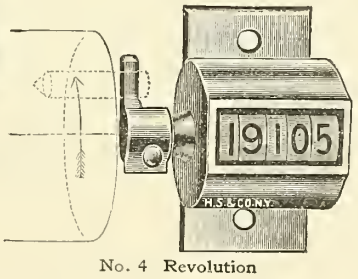
Cuts full Size



No. 1 Ratchet



No. 2 Ratchet



No. 4 Revolution

These instruments are for use in automatically counting the parts produced by, or the number of movements or revolutions of, machinery of all descriptions, notably punch presses and automatic machinery.

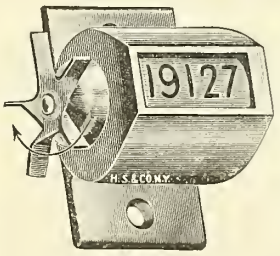
No. 1 will register, on a small movement of the lever, up to 99,999 when the next movement returns the counter to zero.

No 2 is the same as No. 1, except that it has a flange instead of a gib base.

No. 4 requires a complete movement of the shaft for each registration. It can be furnished with a gib base if required. If run backwards, it subtracts. Can also be furnished with the window in the center of the flange at a small extra cost.

No. 1	Each	$1.00
No. 2	Each	1.00
No. 4	Each	1.00

Veeder Star Counter



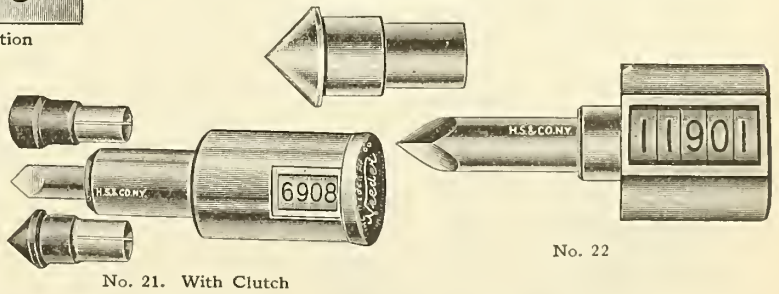
Cut Full Size

This instrument registers one figure when the star wheel is moved one point, or one-fifth of a revolution. Is adapted for all machines where the speed is not great, nor the motion continuous. The star wheel is ¾ inch in diameter and is kept from spinning by a friction brake on the shaft.

No. 7, each.....$1.25

Veeder Speed Counters

Cuts one-half size



No. 21. With Clutch

No. 22

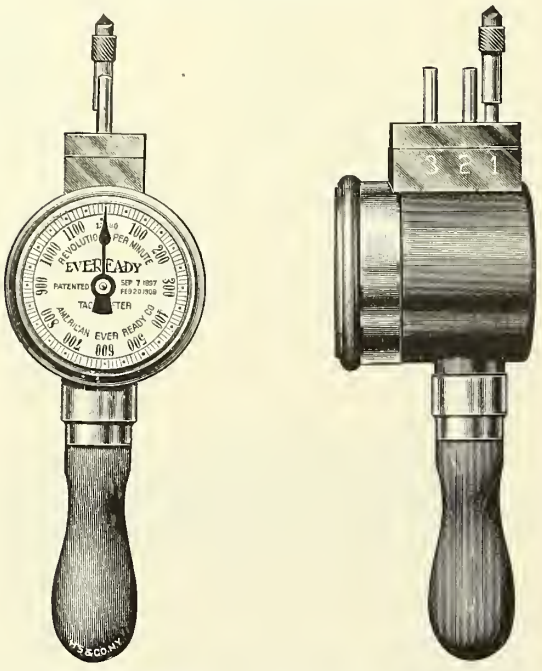
No. 21 Clutch Counter does not register although the point may be engaged, until the end of the instrument is pressed. When the pressure is removed registration stops at once. The number of revolutions is determined by reading before and after the operation.
Each.....$3.00

No. 22 Counter is designed to supply the demand for a low priced but durable and accurate instrument. It has no clutch mechanism.
Each.....$1.25

Speed Indicating Devices

Eveready

Hand Tachometers



Light, of convenient shape, and require but a slight pressure against the shaft to take a reading. The hand pointing directly to the speed at which the machine is running, readings can be taken quickly, the element of time requiring no consideration. All variations in the speed or pumping are easily detected with this instrument.

Since it makes no difference in the reading whether the shaft is revolving right or left, this Tachometer can be used on either end of the shaft. Is not affected by heat or cold.

Spindle 1 reading indicates actual R. P. M.

Spindle 2 reading, multiplied by 2, gives actual R. P. M.

Spindle 3 reading, divided by 2, gives actual R. P. M.

Spindles 2 and 3 are for the purpose or reading high and low speeds, not otherwise within the range of the instrument.

Diameter of dial 2¼ inches.

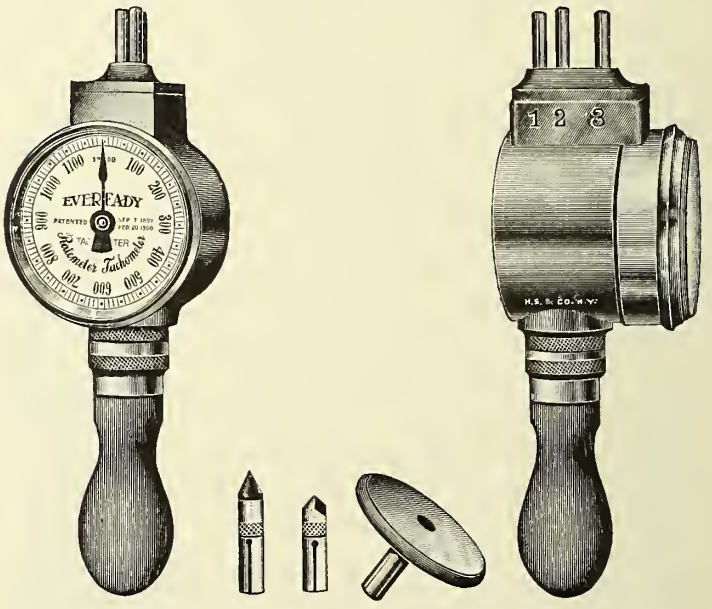
Depth of case 2¼ inches.

Length 7 inches. Weight 18 ounces.

Complete with steel and rubber points, in finely finished case.

No. 121. Range 1 to 2,400 R.P.M., each $30.00
No. 122. Range 200 to 9,600 R.P.M., each 30.00

Combination Tachometer and Rate Meter

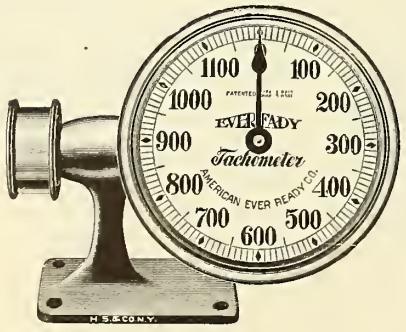


This instrument, besides being a Hand Tachometer, can be used as a Rate Meter or Cut Meter, to determine the rate of movement in feet per minute of any moving object. It is a valuable and necessary equipment for the modern factory, as the cutting speeds of tools, belt speeds, hoisting speeds, etc., can be quickly ascertained. The indicator hand points directly to the number of feet the material per minute—no need to time the operation. Operates in either direction. Length 7 inches. Weight 18 ounces.

Complete with steel and rubber points and rubber tired disc. In finely finished case.

No. 161 Each $35.00

Stationary Tachometers



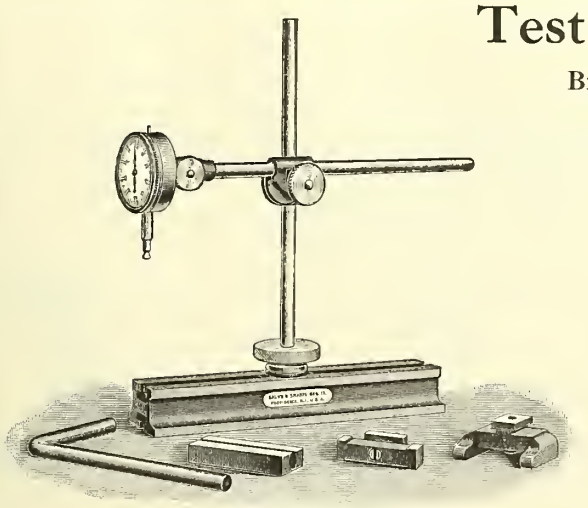
Economical operation of machinery has become a vital factor in the proper management of manufacturing plants. The "Eveready" Tachometer shows instantly whether a machine is running at its proper speed. Connected with a revolving shaft it indicates the exact number of revolutions per minute. There is no need to time the Tachometer with a watch. The hand points to the speed at which the machine is running and varies only as the speed of the machine varies, indicating any variation, and the amount of the variation, from the normal. The hand moves in one way, clockwise, whether the shaft is turning right or left.

No. 101 4-inch Dial, each $40.00
No. 102 6-inch Dial, each 50.00
No. 103 8-inch Dial, each 60.00

In ordering specify the diameter of the dial, the normal working speed, the maximum speed and whether the dial is to be placed to the right or left of the driving wheel.

Test Indicators

Brown & Sharpe



Dial No. 730

Diameter of dial, 1¾ inches. Spindle has ¼ inch movement
Length of base, 8½ inches. Width, 2¼ inches

This Indicator is especially serviceable to those erecting or inspecting machines in determining the inaccuracy in a surface or the movement of a spindle or arbor, etc.

The parts are adjustable to any angle. The arm can be removed from the post and used independently, as in the tool post of a lathe. The points are removable to permit the use of different forms.

The movement of the measuring surface that bears upon the work is magnified a number of times and indicated by the pointer. The dial reads to .001 inch, has a white enamel face and is adjustable to allow the setting of the zero to any required position.

Stops for use on the under side of the base, a split block and an angular post are furnished.

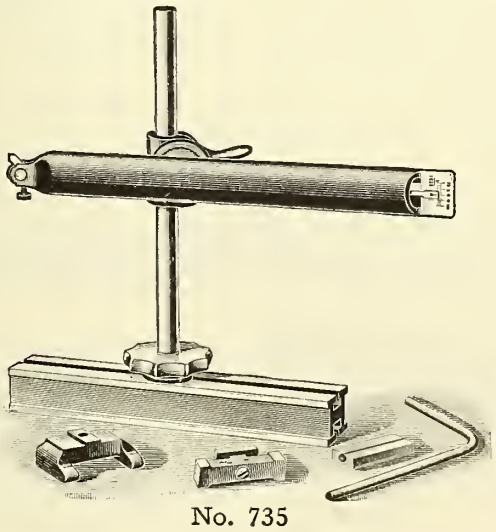
Metric measure. Also made with Metric Dial and reads to $\frac{1}{100}$ mm.

English or Metric measure, each..... $20.00

Dial No. 732

This Indicator differs from No. 730 only in the range and size. It is designed for a heavier class of work. Diameter of dial, 2¼ inches. Spindle has ½ inch movement. Length of base, 10 inches; width, 3 inches.

English or Metric measure, each..... $35.00



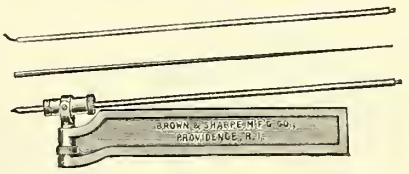
No. 735

This Indicator is especially useful to those erecting or inspecting machines. The parts are adjustable to any angle. The movement of the point is magnified a number of times by the length of the index finger and its movement may be read upon the graduations shown. The indexing finger may be brought to zero by the knurl headed screw shown, whatever may be the position of the arm. A split block and angular post are furnished with the indicator.

Also made to read to $\frac{1}{50}$ mm.

Length of base, 8 inches; height of post, 9 inches.

English or Metric measure, each $15.00



Lathe No. 736

The Lathe Test Indicator is for use in setting centrally any point or hole in a piece of work to be operated upon in a lathe or upon a face plate. It is also well adapted for testing lathe centers, shafting or other work held between centers, the inside or outside of cylinders, pulleys, etc., and all work of a similar class.

The tool is made of steel and is of such a size as to be held conveniently in the tool post of a lathe. The bar, $\frac{15}{16}$ inch wide and $\frac{3}{8}$ inch thick, is drop forged and formed at the end to receive a Universal joint for supporting the finger holder. The Universal joint recommends itself by its simplicity of construction. A clamp nut is provided for clamping the joint when it is desired to have only a vertical movement to the finger, as in testing pieces held between centers, the inside or outside of pulleys, etc. The bushing, which holds the finger, is split, thus allowing the finger to be adjusted to lengths required and clamped in position.

The bar and all wearing parts are hardened.

The finger holder is furnished with two fingers, either one of which can be quickly attached; one finger is ground to an angle of 60 degrees and the other is bent for inside and outside testing.

A spiral spring is provided for holding the finger against the work with an even pressure.

Each tool is neatly packed in a box, fitted to receive the various parts.

Each..... $3.00



No. 738

The B. & S. Indicator is designed to meet the steadily increasing demand for an Indicator that is universal in its movement.

This Indicator is intended for use in setting centrally any point or hole in a piece of work to be operated upon in a lathe or upon a face plate, also for testing lathe centers, shafting and other work held between centers, the inside and out side diameters of cylinders, pulleys, etc., and work of a similar nature.

The shank is made of hardened steel and is designed to be held in the tool post of a lathe. By means of the swivel at one end of the shank, the Indicator may be adjusted either upwards or downwards and readings obtained.

The Indicator point is of steel, hardened, and is made spherical, allowing of pressure being brought upon it by the work from any angle and readings taken.

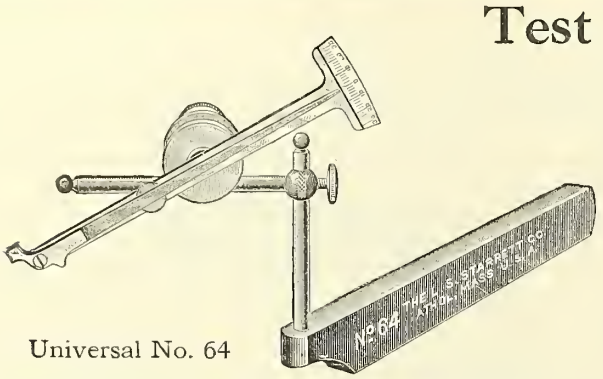
The readings are obtained by means of the pointer and scale on the top of the case. The scale is graduated to read to approximately .007 inch either side of zero. In this way, the amount that the piece may run out of true, both under and over size, is easily ascertained.

Metric measure. This Indicator is also made to read to metric measurements, reading to approximately 1 mm. either side of zero by hundredths of 1 mm.

No. 738 English or Metric measure, each..... $5.75
Morocco Case, each..... .50

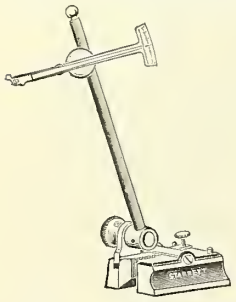
Test Indicators

Starrett



Universal No. 64

This Indicator may be used to test inside, outside or surface work. It can be instantly attached to the spindle or the needle of any surface gauge and used in connection with same to show the slightest variation in thousandths. It may be clamped to a flat or round support, varying in size from a surface gauge needle up to ⅜ inch, flat or round. A special holder, as shown in cut, is designed to go in the tool-post of a lathe, adapting it for use to show the accuracy of all sorts of lathe work, turning, chucking, or locating and centering work on face plate. The head of the needle has three working points, equally distant from its fulcrum, so the telltale needle will vibrate, reading in thousandths, when work is in contact with either point—in front, above or below it. When in front, the spring operating the telltale needle needs to be reversed to throw point of needle up instead of down, as when used above or below the work. This may be instantly done by a slight turn of the disk to which the vibrating spring is attached. The working parts of the head are hardened. In setting the indicator, bring the contact point against the work so that the needle will point to 0, when any variation either way will show.



Indicator may be used in connection with surface gauges as shown in small cut.

Indicator only, each	$2.50
Tool-post Holder, without arm, each	.75
Tool-post Holder, with arm, each	1.00
Indicator, with Tool-post Holder and arms, complete, each	3.50

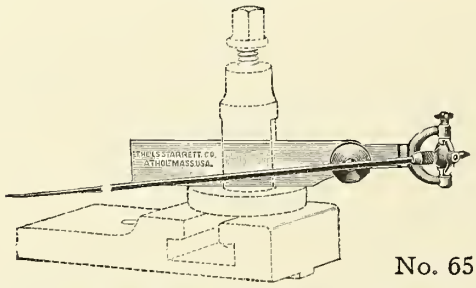
Sent complete unless otherwise ordered.

No. 64M

Same as above, except that it is graduated to show variations of $\frac{1}{50}$th of a millimeter. Prices as above.

Center Tester

Starrett

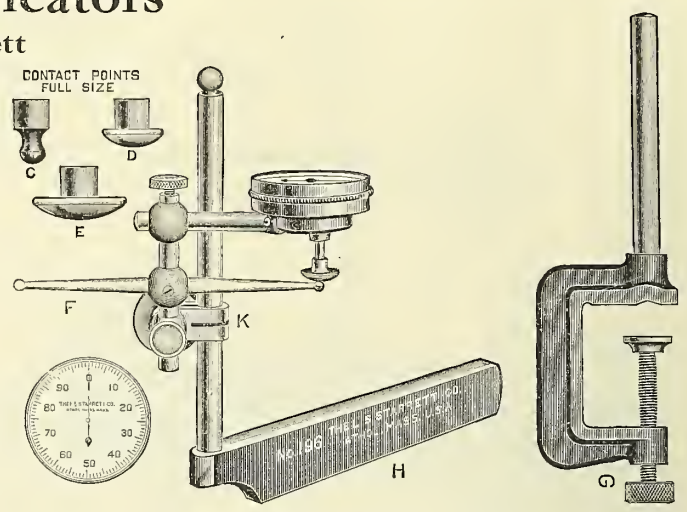


No. 65

This instrument was designed to use in adjusting and locating centrally any point or hole in a piece of work operated upon in a lathe chuck or on a face-plate; also to test the truth of lathe centers or a shaft between the centers, the instrument being held in the tool post.

The Tester is of improved design and nicely made. The indicating needle passes through the ball, having a split stem, forming a chuck for holding the needle adjusted to any desired length. The ball is pivoted to form a universal joint, but may be instantly converted into a single joint for tilting motion by only tightening the knurled nut, adapting it for both inside and outside surface contact. A steel bead, not shown in the cut, and carried on the needle, slips over the point of same when used for inside work. The instrument is joined to a tool-post shank by a flexible steel ribbon with sufficient spring to properly hold the needle in contact with the work. It is a tool needed in every up-to-date tool room.

Each $2.50



Universal Dial No. 196

This Indicator is simple, reliable, easily read and very sensitive. The slightest pressure upon the contact point produces a movement of the hand on the dial. The circumference of the dial is divided into 100 equal spaces, each one representing a movement of the contact point of one-thousandth of an inch. One revolution of the hand therefore indicates $\frac{1}{10}$ inch, the capacity of the instrument being two-tenths. By bringing the contact point against the work with just enough pressure to give the hand one full turn, then setting it at 0, an opportunity is given for one full revolution of the hand to both right and left of 0, showing a rise or drop in the work and the amount of variation. A most valuable feature is the adjustable dial. By turning the knurled rim the dial may be instantly moved to bring the 0 mark to any point desired in relation to the hand. Each Indicator is fitted with three hardened contact points adapted to different classes of work. The special tool post and sleeve as shown above are useful in lathe work. For general work the indicator, with sleeve B, is adapted for use with 9-inch or 12-inch surface gauges.

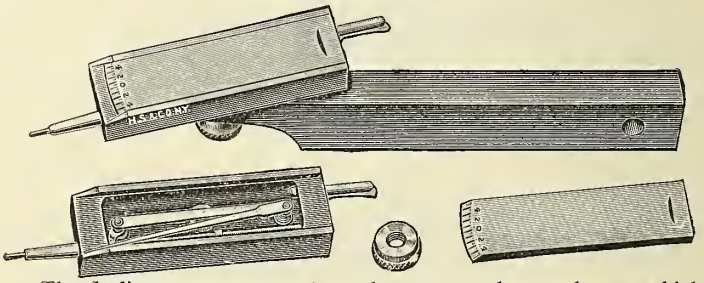
The clamp G permits attaching the indicator to large lathe and planer tools, milling arbors, etc.

The attachment F more than doubles the value of the Indicator, adapting it for use inside of holes, to reach over blockings on face plates, etc.

No. 196A	Indicator with all attachments, as shown, each	$10.75
No. 196B	Indicator only, with 3 contact points, each	7.00
No. 196F	Hole attachment, each	1.50
No. 196G	Clamp, each	.75
No. 196H	Tool post, each	.75
No. 196K	Sleeve, each	.75
Extra contact points, each		.10

No. 196A, Indicator complete, will be sent unless otherwise ordered.

Koch Universal



The Indicator proper consists of a rectangular steel case which carries the pointer, lever, and other mechanism and is adapted to swivel freely at the end of a holder which may be used in the lathe, shaper, or miller. The indicator head may also be attached to the post of a surface gauge and used for a variety of bench-plate work, or it may be placed on either of its flat sides and operated in conjunction with size blocks and parallels for testing work. The contact point for external and internal operations are at opposite ends of the indicator and by loosening the clamp nut underneath the device is readily swiveled end for end to bring either point desired into contact with the work.

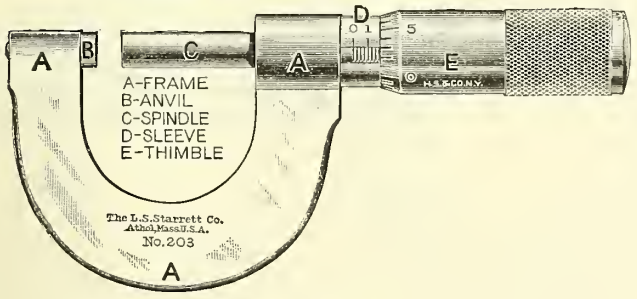
Each graduation represents .001 inch movement of the plunger or .002 movement of the bell crank.

The instrument has a valuable safety feature in that the plunger operates away from instead of against the lever, preventing any of the delicate parts being broken by a sudden or excessive jolt of the plunger.

Each $4.00

Micrometer Calipers

How to Read a Micrometer



The spindle C is attached to the thimble E at the point H. The part of the spindle which is concealed within the sleeve and thimble is threaded to fit a nut in the frame A. The frame being held stationary, the thimble E is revolved by the thumb and finger and the spindle C being attached to the thimble revolves with it, and moves through the nut in the frame, approaching or receding from the anvil B. The article to be measured is placed between the anvil B and the spindle C. The measurement of the opening between the anvil and the spindle is shown by the lines and figures on the sleeve D and the thimble E.

The pitch of the screw threads on the concealed part of the spindle is 40 to an inch. One complete revolution of the spindle therefore moves it longitudinally one fortieth (or twenty-five thousandths) of an inch. The sleeve D is marked with 40 lines to the inch, corresponding to the number of threads on the spindle. When the micrometer is closed, the beveled edge of the thimble coincides with the line marked 0 on the sleeve, and the 0 line on the thimble agrees with the horizontal line on the sleeve. Open the micrometer by revolving the thimble one full revolution, or until the 0 line on the thimble again coincides with the horizontal line on the sleeve; the distance between the anvil B and the spindle C is then $\frac{1}{40}$ or (.025) of an inch; and the beveled edge of the thimble will coincide with the second vertical line on the sleeve. Each vertical line on the sleeve indicates a distance of $\frac{1}{40}$ of an inch. Every fourth line is made longer than the others, and is numbered 0, 1, 2, 3, etc. Each numbered line indicates a distance of four times $\frac{1}{40}$ of an inch, or one-tenth.

The beveled edge of the thimble is marked in twenty-five divisions, and every fifth line is numbered, from 0 to 25. Rotating the thimble from one of these marks to the next moves the spindle longitudinally $\frac{1}{25}$ of twenty-five thousandths, or one thousandth of an inch. Rotating it two divisionsin dicates two thousandths, etc. Twenty-five divisions will indicate a complete revolution, .025 or $\frac{1}{40}$ of an inch.

To read the micrometer, therefore, multiply the number of vertical divisions visible on the sleeve by 25, and add the number of divisions on the bevel of the thimble, from 0 to the line which coincides with the horizontal line on the sleeve. Multiply this number by 25, and add the number of divisions shown on the bevel of the thimble, 3. The micrometer is open one hundred and seventy-eight thousandths. ($7 \times 25 = 175 + 3 = 178$.)

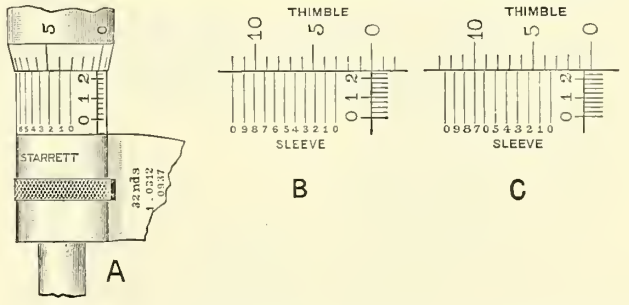
Ratchet Stop for Micrometers



In using this device, the ratchet slips by the pawl when more than a certain amount of pressure is applied, and so prevents the measuring spindle from turning farther and perhaps springing the instrument.

It is valuable where a number of measurements have to be taken quickly and especially where measurements are taken by more than one person with the same micrometer, as by its use the same amount of pressure is applied to the objects measured, in each case.

How to Read a Ten-Thousandths Micrometer



Readings in ten-thousandths of an inch are obtained by the use of a vernier, so named from Pierre Vernier, who invented the device in 1631. As applied to a micrometer this consists of ten divisions on the adjustable sleeve, which occupy the same space as nine divisions on the thimble. The difference between the width of one of the ten spaces on the sleeve and one of the nine spaces on the thimble is therefore one-tenth of a space on the thimble. In engraving B the third line from 0 on thimble coincides with the first line on the sleeve. The next two lines on thimble and sleeve do not coincide by one-tenth of a space on thimble; the next two, marked 5 and 2, are two-tenths apart, and so on. In opening the tool, by turning the thimble to the left, each space on the thimble represents an opening of one-thousandth of an inch. If therefore the thimble be turned so that the lines marked 5 and 2 coincide, the caliper will be opened two-tenths of one thousandth or two ten thousandths. Turning the thimble further, until the line 10 coincides with the line 7 on the sleeve, as in engraving C, the caliper has been opened seven ten thousandths, and the reading of the tool is .2257.

To read a ten-thousandths micrometer, first note the thousandths as in the ordinary micrometer, then observe the line on the sleeve which coincides with a line on the thimble. If it is the second line, marked 1, add one ten thousandth; if the third, marked 2, add two ten thousandths, etc.

Gauges vs. Micrometer Calipers

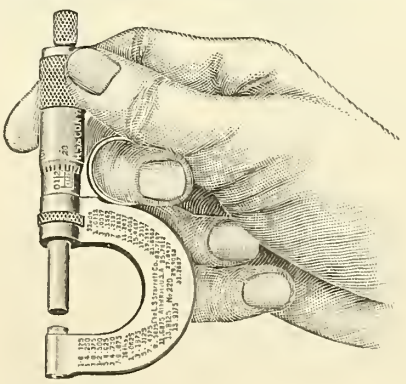
Owing to the confusion frequently occurring over the different "Standard" Gauges, we suggest as a very safe way to avoid errors, the use of the Micrometer Caliper.

These are made to measure thousandths or ten thousandths of an inch accurately.

They are simple, so that any boy of ordinary intelligence may be taught to use one in a very few minutes.

They have easy arrangements for re-adjustment when worn, and insure practically accurate measurements, expressed decimally, which are easy of interpretation and, when carefully rendered, save all confusion.

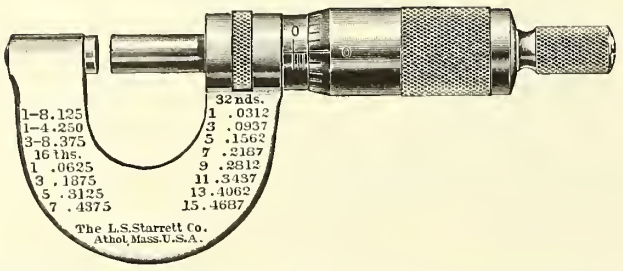
Finger Ring for Micrometers



Finger Ring can be supplied on any Starrett Micrometer at an extra cost of 75 cents.

Micrometer Calipers

Starrett



Half Inch English Measure; 13 mm. Metric Measure

With Lock Nut and Ratchet Stop — Each

No. 215 English Measure, 0 to ½ inch by 1,000ths $5.00
No. 219 English Measure, 0 to ½ inch by 10,000ths..... 6.00
No. 215M Metric Measure, 0 to 13 mm. by 100ths of mm... 5.00

Without Lock Nut; with Ratchet Stop

No. 216 English Measure, 0 to ½ inch by 1,000ths..... $4.50
No. 218 English Measure, 0 to ½ inch by 10,000ths..... 5.50
No. 216M Metric Measure, 0 to 13 mm. by 100ths of mm... 4.50
Leather Case..... .50

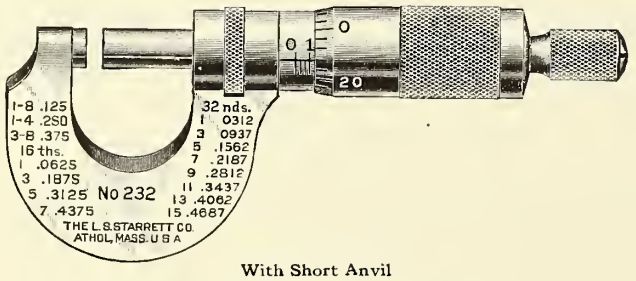
One Inch English Measure; 25 mm. Metric Measure

With Lock Nut and Ratchet Stop

No. 3 English Measure, 0 to 1 inch by 1,000ths..... $6.00
No. 113 English Measure, 0 to 1 inch by 10,000ths..... 7.00
No. 3M Metric Measure, 0 to 25 mm. by 100th of mm..... 6.00

Without Lock Nut or Ratchet Stop

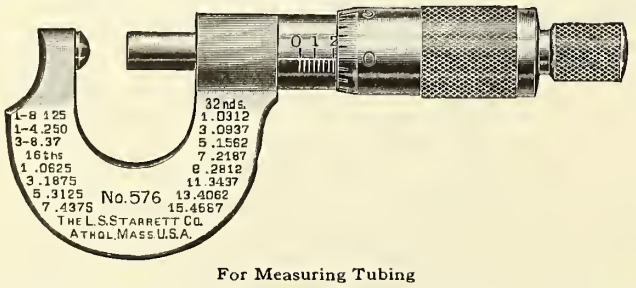
No. 203 English Measure, 0 to 1 inch by 1,000ths..... 5.00
Leather Case..... .50



With Short Anvil

With Lock Nut and Ratchet Stop

No. 230 English Measure, 0 to 1 inch by 1,000ths..... $6.00
No. 231 English Measure, 0 to 1 inch by 10,000ths..... 7.00
No. 232 English Measure, 0 to ½ inch by 1,000ths..... 5.00
No. 233 English Measure, 0 to ½ inch by 10,000ths..... 6.00
Leather Case..... .50

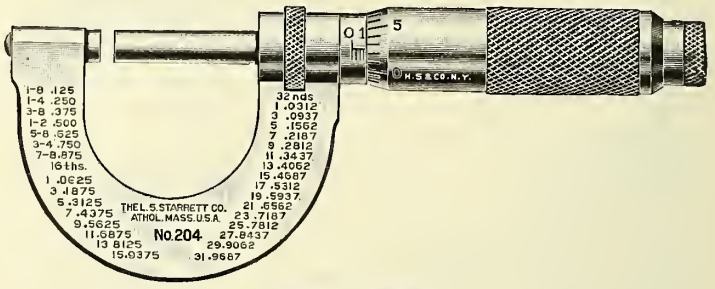


For Measuring Tubing

This micrometer has the face of the anvil rounded, which adapts it for accurately measuring the thickness of tubing, etc. The anvil touches at only one point on the inside, while the end of spindle being flat, touches at only one point on the outside, thus measuring accurately the thickness of tube.

Without Lock Nut; With Ratchet Stop — Each

No. 576 English Measure, 0 to ½ inch by 1,000ths..... $5.00
No. 576M Metric Measure, 0 to 13mm. by 100ths of mm..... 5.00
Leather Case..... .50



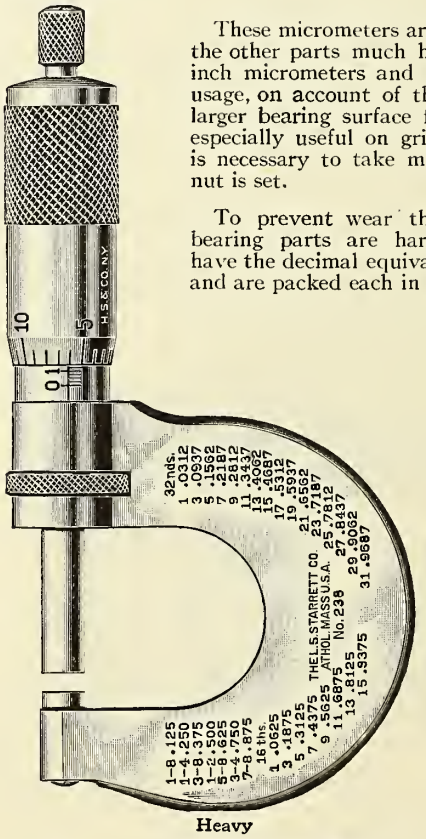
Quick Adjusting

This is a tool which the mechanical world has been seeking for years. After long study and much experimenting a micrometer has been produced which can be instantly opened or closed to any point within its capacity. And this is done without impairing its accuracy or sensitiveness in the slightest degree. Forty complete revolutions of the screw are required to open or close an ordinary one-inch micrometer its full length, taking approximately 20 seconds. This time is practically all saved by the use of this new tool.

To operate the micrometer it is only necessary to press with the finger against the end of the plunger. This immediately releases the nut, disengaging it from the screw, when any adjustment within an inch may be instantly made. Releasing the pressure, the nut instantly engages the screw, when fine adjustments may be made in the usual way.

This micrometer has lock nut as well as a ratchet stop. Each

No. 204 English Measure, 0 to 1 inch by 1,000ths $10.00
No. 205 English Measure, 0 to 1 inch by 10,000ths..... 11.00
No. 204M Metric Measure, 0 to 25 mm. by 100ths of mm... 10.00
Leather Case..... .50



These micrometers are made with the frame and the other parts much heavier than the regular one-inch micrometers and will last longer under hard usage, on account of their stiffness and because of larger bearing surface for the threads. They are especially useful on grinding work and wherever it is necessary to take measurements after the lock nut is set.

To prevent wear the measuring surfaces and bearing parts are hardened. These micrometers have the decimal equivalents stamped on the frame and are packed each in a strong wooden box.

Heavy

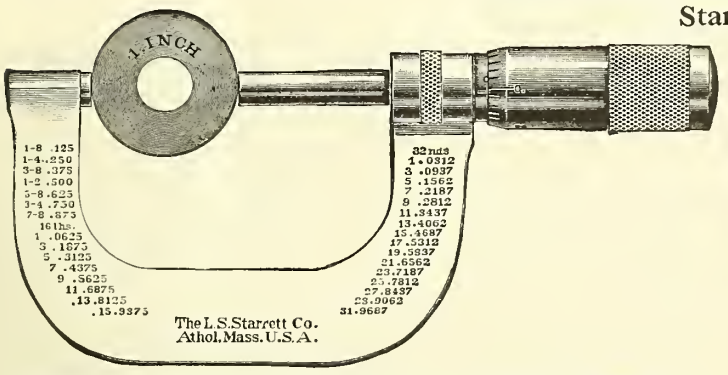
With Ratchet Stop and Lock Nut — Each

No. 238 English Measure, 0 to 1 inch by 1,000ths..... $7.00
No. 238M Metric Measure, 0 to 25 mm. by 100ths of mm.... 7.00

Note—All Metric Micrometers are furnished without table of decimal equivalents

Micrometer Calipers

Starrett



Two Inch English Measure; 50 mm. Metric Measure

		Each
	With Lock Nut and Standard; Without Ratchet Stop	
No. 217	English Measure, 1 to 2 inches by 1,000ths	$6.00
	With Lock Nut, Ratchet Stop and Standard	
No. 2	English Measure, 1 to 2 inches by 1,000ths	6.50
No. 213	English Measure, 1 to 2 inches by 10,000ths	7.50
No. 2M	Metric Measure, 25 to 50 mm. by 100ths	6.50
Leather Case		.75

A standard one-inch gauge, to be used in adjusting the Caliper, is sent with each one of the above.



Attachment for Micrometers

By means of which a 2-inch micrometer may be instantly converted into a 1-inch tool, will be furnished, when ordered, with any of the above 2-inch or 50-millimeter micrometers.

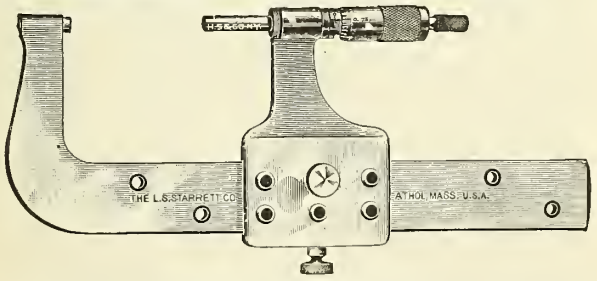
No. 212	English Measure, each	$2.00
No. 212M	Metric Measure, each	2.00



Micrometer Heads

Length from shoulder to lock nut ¾ inch, ½ inch diameter. These heads are easily attached to tools or machines when fine measurements are required. They have ratchet stops and lock nuts and are graduated to read to thousandths of an inch. They will be furnished without ratchet or lock nut when so desired, at same price.

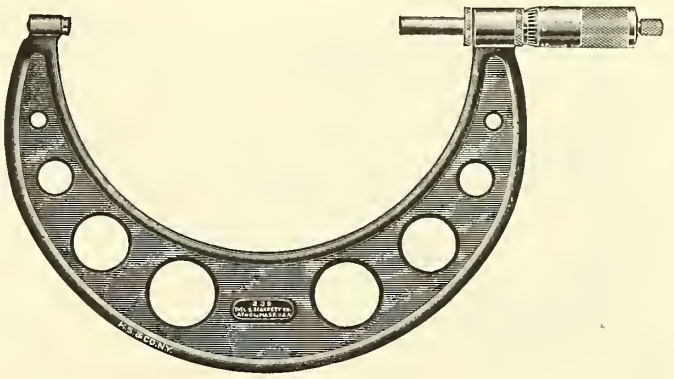
No. 263	English Measure, 0 to 1 inch by 1,000ths.	Each	$3.50
No. 263M	Metric Measure, 0 to 25 mm. by 100ths.	Each	3.50
No. 363	English Measure, 0 to 1 inch by 10,000ths.	Each	4.50



Patent Six-inch Micrometers

This micrometer will measure round work to 4¼ inches, and flat work to 6 inches. It weighs 21 ounces, and is rigid and accurate. It can be quickly set to exact position, from 1 inch to 6 inches, by inserting a plug as shown. A valuable feature of this tool is a set of six independent holes through both the movable part and the beam, each hole being bushed with hardened steel bushings, ground and lapped to fit the plug, which locates to exactness the various inch settings.

No. 128	English Measure, 6 inches.	Each	$20.00
No. 128M	Metric Measure, 15 cm.	Each	20.00
Leather Case, extra.		Each	1.50



Heavy

These micrometers were designed to meet the exacting demands of heavy and severe usage. The spindle and screw portion is of larger area than in the regular micrometer, thus insuring longer wear and greater rigidity; those from two inches to six inches inclusive, are made from drop-forgings, and the larger sizes, from seven inches to twelve inches, from steel castings. The bearing parts and measuring surfaces are hardened to prevent wear, and the same means provided for adjustment as in our other micrometers. Made with lock nut and ratchet stop. Sizes are stamped to show their capacity.

No. 239 English Measure		Each
1 inch to 2 inches, $8.00	With standard,	$9.00
Leather case extra, $ .75		
2 inches to 3 inches, $9.00	With standard,	10.00
Leather case extra, $1.25		
3 inches to 4 inches, $10.00	With standard,	11.15
Leather case extra, $1.75		
4 inches to 5 inches, $11.00	With standard,	12.35
Leather case extra, $2.00		
5 inches to 6 inches, $12.00	With standard,	13.50
Leather case extra, $2.25		
6 inches to 7 inches, $13.00	With standard,	15.00
7 inches to 8 inches, 14.00	With standard,	16.20
8 inches to 9 inches, 15.00	With standard,	17.40
9 inches to 10 inches, 16.00	With standard,	18.60
10 inches to 11 inches, 17.00	With standard,	19.80
11 inches to 12 inches, 18.00	With standard,	21.00

No. 239 M Metric Measure		Each
25 to 50 mm., $8.00	With standard,	$9.00
Leather case extra, $ .75		
50 to 75 mm., $9.00	With standard,	10.00
Leather case extra, $1.25		
75 to 100 mm., $10.00	With standard,	11.15
Leather case extra, $1.75		
100 to 125 mm., $11.00	With standard,	12.35
Leather case extra, $2.00		
125 to 150 mm., $12.00	With standard,	13.50
Leather case extra, $2.25		
150 to 175 mm., $13.00	With standard,	15.00
175 to 200 mm., 14.00	With standard,	16.20
200 to 225 mm., 15.00	With standard,	17.40
225 to 250 mm., 16.00	With standard,	18.60
250 to 275 mm., 17.00	With standard,	19.80
275 to 300 mm., 18.00	With standard,	21.00

Leather cases not supplied for sizes above 6 inches or 150 mm. Micrometers sent without case, and with standards unless otherwise ordered. Each size sent in a strong wooden box.

Sets

English Measure

Set No. 239A, consisting of No. 238 one inch, with decimal equivalents on frame, and No. 239, sizes 2 to 6 inch. Sent in strong wooden boxes.

Set, $57.00 With standards, $63.00

Sent with standards unless otherwise ordered.

Set No. 239B, consisting of No. 238 one inch, with decimal equivalents on frame, and sizes 2 to 12 inch of No. 239. Sent in strong wooden boxes.

Set, $150.00 With standards, $171.00

Sent with standards unless otherwise ordered.

Metric Measure

Set No. 239 AM., consisting of No. 238 M, 0 to 25 mm., and No. 239M, sizes 25 to 150 mm. Sent in strong wooden boxes.

Set, $57.00 With standards, $63.00

Sent with standards unless otherwise ordered.

Set No. 239 BM, consisting of No. 238 M, 0 to 25 mm., and sizes 25 to 300 mm. of No. 239. Sent in strong wooden boxes.

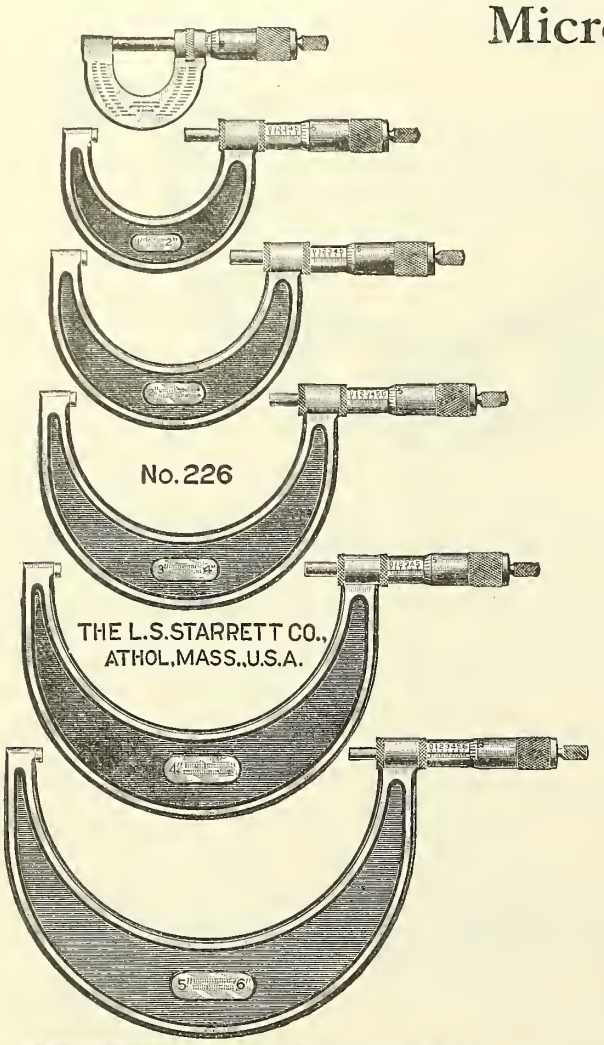
Set, $150.00 With standards, $171.00

Sent with standards unless otherwise ordered.

Note—All Metric Micrometers are furnished without table of decimal equivalents

Micrometer Calipers

Starrett



These micrometers meet the demand for accurate gauges at a low price. They are better adapted for general use than the vernier or bar micrometer, as they can be set quickly for the different measurements and are more easily read.

Each micrometer is graduated to read by thousandths of an inch, is furnished with our patent lock nut, and is sent with or without ratchet stop as desired.

The frames are drop-forged from bar steel and are nicely finished.

The 1 inch has the decimal equivalents stamped on the frame. The other sizes are marked to show their capacity.

Standards for use in adjusting these micrometers will be furnished when desired at prices given below.

Micrometers will be supplied singly or in sets as desired, and will be sent with ratchet stop and without leather case or standard unless otherwise ordered. A reduction is made in the price when sold in sets.

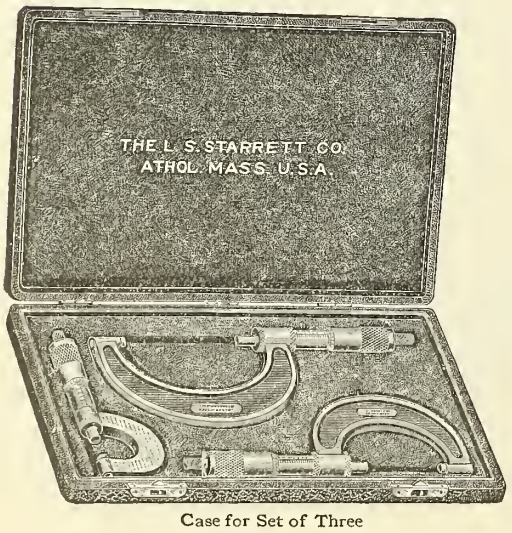
No. 226 English Measure

Size Inches	Range Inches	Without Ratchet Stop Each	With Ratchet Stop Each	With Standard Extra Each
1	0 to 1	$5.50	$6.00	
2	1 to 2	4.50	5.00	$1.00
3	2 to 3	6.00	6.50	1.00
4	3 to 4	6.50	7.00	1.15
5	4 to 5	7.25	7.75	1.35
6	5 to 6	8.00	8.50	1.50

No. 226 M Metric Measure

Size MM.	Range MM.	Without Ratchet Stop Each	With Ratchet Stop Each	With Standard Extra Each
25	0 to 25	$5.50	$6.00	
50	25 to 50	4.50	5.00	$1.00
75	50 to 75	6.00	6.50	1.00
100	75 to 100	6.50	7.00	1.15
125	100 to 125	7.25	7.75	1.35
150	125 to 150	8.00	8.50	1.50

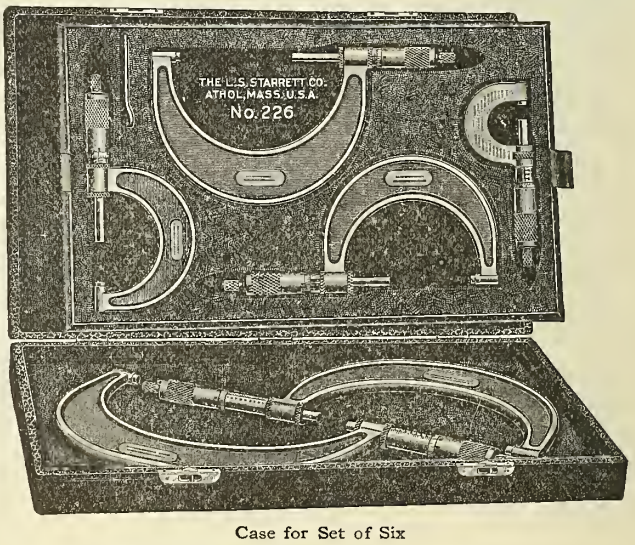
In Sets



Case for Set of Three

The cases for these micrometers are well made and nicely finished.

They are covered with morocco leather and lined with velvet.



Case for Set of Six

English Measure Sets, No. 226

Set of three Micrometers from 0 to 3 inches

	Each		Each
Without ratchet stop....	$15.50	With ratchet stop.....	$17.00
Without ratchet stop in case.....	17.50	With ratchet stop in case.	19.00

Set of six Micrometers, including all sizes from 0 to 6 inches

Without ratchet stop....	$36.00	With ratchet stop.....	$39.00
Without ratchet stop in case.....	40.00	With ratchet stop in case.	43.00

Cases only

For Set of three Micrometers, each..... $2.00

Metric Measure Sets, No. 226 M

Set of three Micrometers from 0 to 75 mm.

	Each		Each
Without ratchet stop....	$15.50	With ratchet stop.....	$17.00
Without ratchet stop, in case.....	17.50	With ratchet stop in case.	19.00

Set of six Micrometers, including all sizes from 0 to 150 mm.

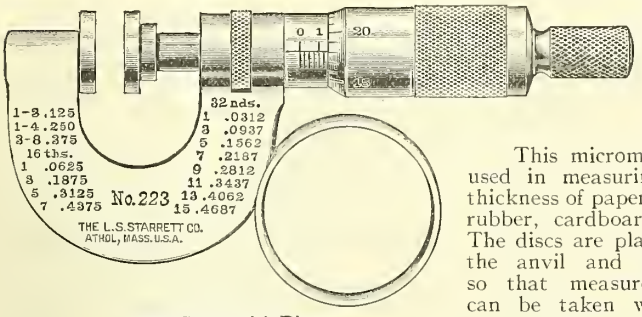
Without ratchet stop....	$36.00	With ratchet stop.....	$39.00
Without ratchet stop, in case.....	40.00	With ratchet stop in case	43.00

Cases only

For Set of six Micrometers, each..... $4.00

Micrometer Calipers

Starrett

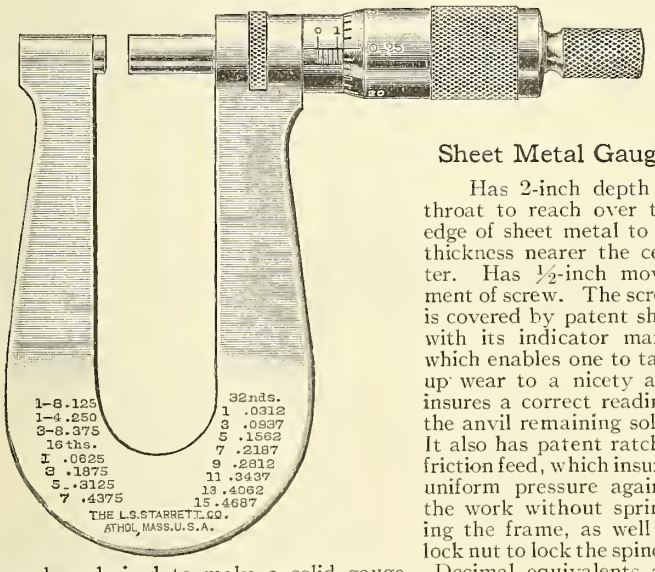


Paper Gauge with Ring

This micrometer is used in measuring the thickness of paper, sheet rubber, cardboard, etc. The discs are placed on the anvil and spindle so that measurements can be taken without compressing the articles measured. Measures all sizes less than $\frac{11}{32}$ of an inch by thousandths of an inch.

	With Ratchet Stop	Each
No. 223	English Measure	$6.75
No. 223M	Metric Measure	6.75
	With Lock Nut and Ring without Ratchet Stop	
No. 223	English Measure	$6.25
No. 223M	Metric Measure	6.25
No. 225	Same as 223, without Ring.	
	With Ratchet Stop	
No. 225	English Measure	$6.00
No. 225M	Metric Measure	6.00
	Without Ratchet Stop	
No. 225	English Measure	$5.50
No. 225M	Metric Measure	5.50
Leather Case, extra		.50

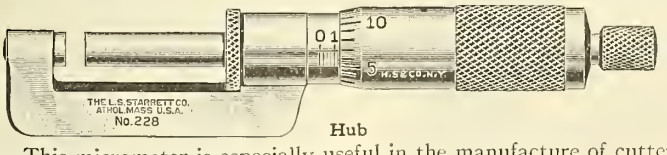
Metric micrometers are furnished without table of decimal equivalents.



Sheet Metal Gauge

Has 2-inch depth of throat to reach over the edge of sheet metal to its thickness nearer the center. Has ½-inch movement of screw. The screw is covered by patent shell with its indicator mark, which enables one to take up wear to a nicety and insures a correct reading, the anvil remaining solid. It also has patent ratchet friction feed, which insures uniform pressure against the work without springing the frame, as well as lock nut to lock the spindle firm when desired to make a solid gauge. Decimal equivalents are stamped on the frame. Weight of gauge, 3 ounces.

		Each
No. 222	English Measure	$6.00
No. 222M	Metric Measure	6.00
Leather Case, extra		.75



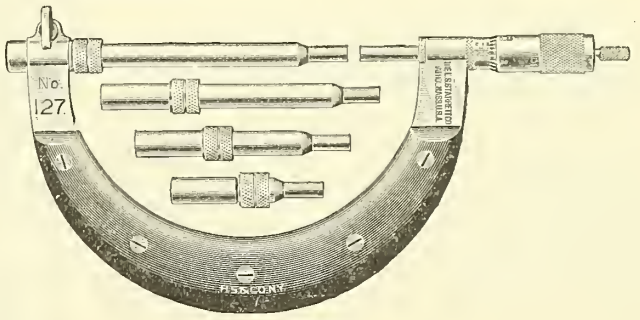
Hub

This micrometer is especially useful in the manufacture of cutters and such articles where exact hub lengths are required.

The frame will easily pass through a ¾-inch hole.

The micrometer is made for measurements by thousandths up to one inch or 25 mm. Has lock nut and ratchet stop.

		Each
No. 228	English Measure	$6.00
No. 228M	Metric Measure	6.00
Leather Case		.50

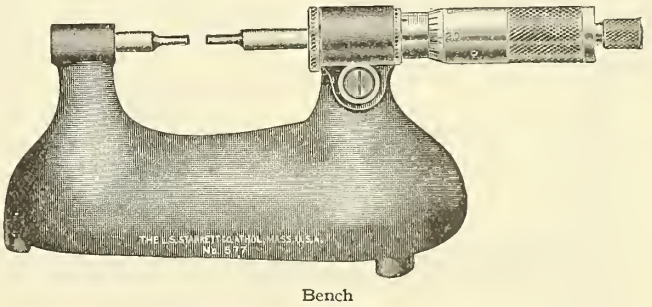


Large

These gauges were designed and made to meet the requirements of the Government in making big guns and other work in the Ordnance Department of Government shops, where they are now used. The frames are cut from steel plates, nicely finished. The sides are covered with hard rubber, put on with brass screws, preventing inaccuracy through expansion caused by change in temperature when held in warm hands. The micrometer screw adjusts one inch, reading $\frac{1}{1000}$ of an inch, and is provided with lock nut. The different length tail spindles, forming anvils, are interchangeable and have positive stops to set against their socketed seats. The adjusting collars on these anvils have notches to facilitate the removal of dirt, which would prevent them from setting accurately against the seat. The contact ends of spindles are slightly convex, to prevent catching on cylindrical work. Furnished with ratchet stop or speeded screw thumb piece, as desired.

	English Measure	Each
No. 127A	0 to 4 inches	$25.00
No. 127B	4 to 8 inches	37.00
No. 127C	8 to 12 inches	50.00
	Metric Measure	
No. 127MA	0 to 100 mm	$25.00
No. 127MB	100 to 200 mm	37.00
No. 127MC	200 to 300 mm	50.00

Furnished in case without extra charge. Prices on larger sizes quoted on application.



Bench

For measurements by thousandths or ten thousandths up to one inch.

This caliper is made with a heavy base, which makes a very rigid and accurate tool, and will be found of advantage to inspectors, watchmakers, etc., who need to take fine measurements on work of such a class that it can be better inspected when used on a bench. This micrometer can also be supplied with regular anvil and spindle in place of those shown in cut when so desired.

Made with lock nut and ratchet stop. Can be supplied without ratchet stop at reduction of 50 cents from price given.

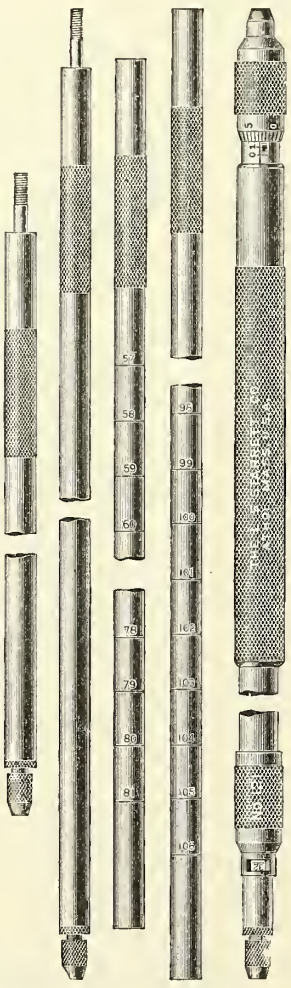
English Measure	Each
No. 577 A, with fine points .075 diameter, reading by thousandths	$7.50
No. 577B, with regular points .235 diameter, reading by thousandths	7.00
No. 577C, with fine points .075 diameter, reading by ten thousandths	8.50
No. 577D, with regular points .235 diameter, reading by ten thousandths	8.00
Metric Measure	
No. 577MA, with fine points .075 diameter	7.50
No. 577MB, with regular points .235 diameter	7.00

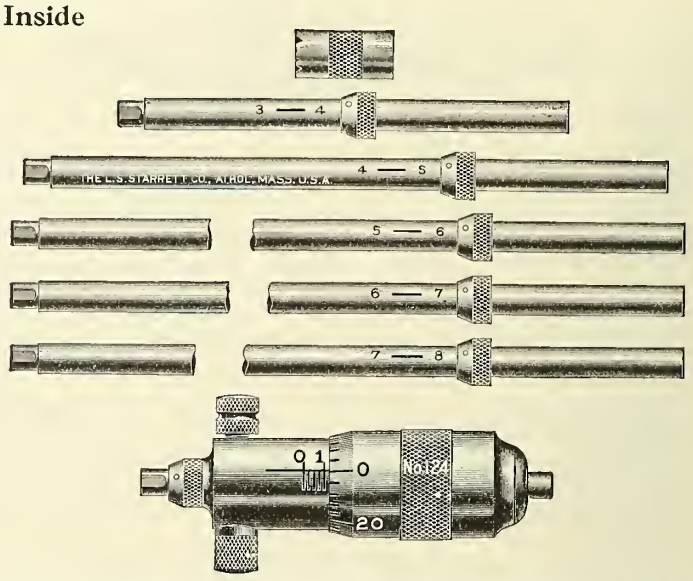
Metric Micrometers are furnished without table or decimal equivalents

Micrometer Calipers

Starrett Inside

When linear measurements are beyond the capacity of the ordinary micrometer it is frequently necessary to have a more accurate instrument than the rule or steel tape. The inside micrometers shown here were designed for and are now used by the Government in navy yards and arsenals. They consist of steel tubes with telescoping extensions combined with a one-inch screw micrometer movement. The tubes are accurately graduated and figured in inches and set to the inch marks showing the length wanted, and are firmly held by a knurled locking nut. The ends of the rods have hardened steel anvils. Combinations are possible which give a range from 32 to 107 inches and with micrometer accuracy over the whole range. A case is furnished with each set.





No. 121

Set A Stock with one rod, 32 to 57 inches	Set $25.00
Set B Stock with two rods, 32 to 82 inches	30.00
Set C Stock with three rods, 32 to 107 inches	35.00

No. 121M

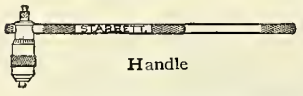
Metric

Same as above, but made to read in hundredths of a millimeter.

Set A Stock with one rod, 800 mm. to 1440 mm	Set $25.00
Set B Stock with two rods, 800 mm. to 2070 mm	30.00
Set C Stock with three rods, 800 mm., to 2700 mm	35.00

The micrometer screw in the head has ½ inch movement in sets A and B, one inch in set C, and by means of the extension rods furnished, the sizes as given for each set can be obtained. The extension rods are provided with a collar, against which the rods are conveniently and accurately set in the micrometer head. In setting these rods, see that the zero mark on the collar coincides with the zero mark on the micrometer head. With the rods are sent standard gauges or rings to slip on the rods, under the collars, to further extend the rod. The contact surfaces are all hardened, and provision is made for adjustment, to compensate for wear of the screw and contact surfaces.

The auxiliary handle, as shown in cut, can be used with sets A, B and D. The handle is screwed in the side of the micrometer head, in place of the knurled ear screw, which can be removed, thus fitting the tool for use in places too small for the hand. Handle is 50 cents extra.



Handle

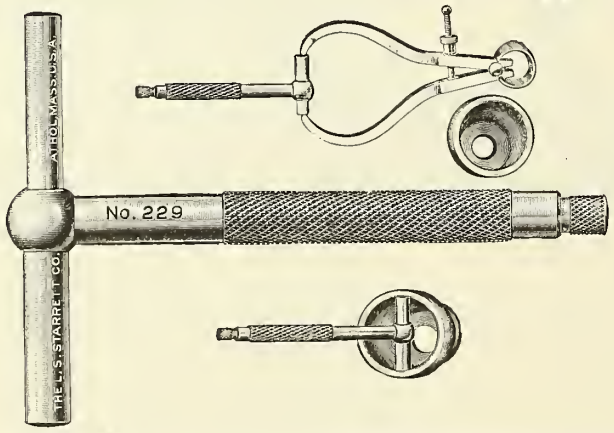
No. 124 English Measure. No. 124 M Metric Measure

Set	Number of Rods	Range	With Case Set	Without Case Set
A	6	2 to 8 inches	$5.25	$4.50
A	6	50 to 200 mm.	5.25	4.50
B	10	2 to 12 inches	6.50	5.50
B	10	50 to 300 mm.	6.50	5.50
C	4	8 to 32 inches	8.00	6.50
C	4	200 to 800 mm.	8.00	6.50
D	10	2 to 32 inches	12.50	11.00
D	10	50 to 800 mm.	12.50	11.00

Sent with Case unless otherwise ordered. Set D is a combinationof Sets A and C

Telescoping Inside Gauges

Starrett



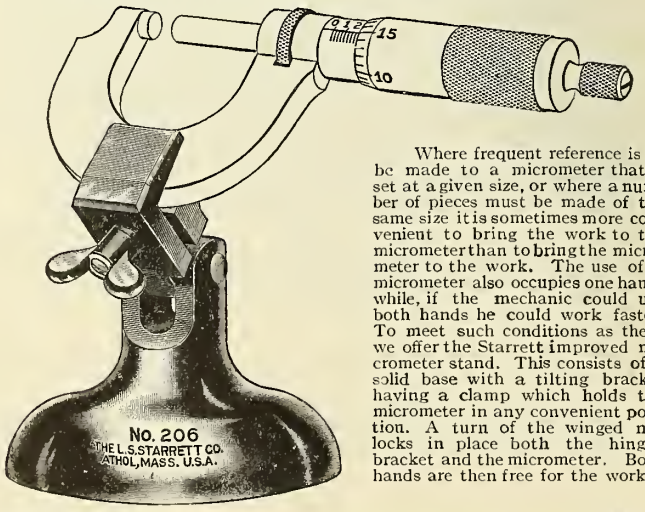
These are instruments from which the exact size of holes or slots can be taken by an outside caliper or micrometer, so that shrink, close or loose fits, varying in thousandths, or less, can be made and measured.

To use the instrument to measure a hole: Compress the telescoping head and lock the plunger by a slight turn of the knurled screw in the end of the handle, insert the head inside the hole, release the lock and the plunger will expand across the hole to a fit. Now lock the plunger by a slight turn of the screw, withdraw and caliper over the ends of the head with a micrometer, which will give the exact size of the hole. The ends of each telescope head are hardened and are made on a radius of the smallest hole it will enter. These instruments are more reliable than ordinary leg calipers on account of the tendency of the legs of the latter to spring and of the points to catch in blow holes or other depressions. They can be used, of course, either in fitting cylinders to holes or holes to cylinder.

The gauges are made in sizes to enter holes from ½ inch to 6 inches.

No. 229A	Range ½ inch to ¾ inch, each	$1.50
No. 229B	Range ¾ inch to 1¼ inches, each	1.75
No. 229C	Range 1¼ inches to 2⅛ inches, each	2.00
No. 229D	Range 2⅛ inches to 3½ inches	2.50
No. 229E	Range 3½ inches to 6 inches, each	3.00

Stands for Outside Micrometer Calipers

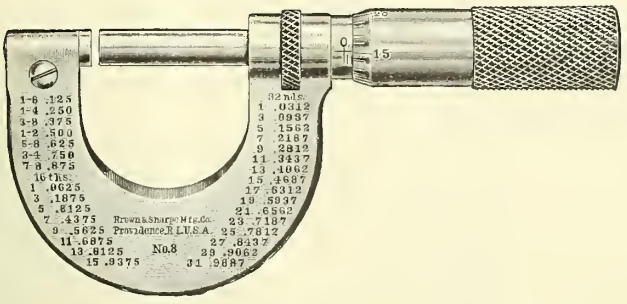


Where frequent reference is to be made to a micrometer that is set at a given size, or where a number of pieces must be made of the same size it is sometimes more convenient to bring the work to the micrometer than to bring the micrometer to the work. The use of a micrometer also occupies one hand, while, if the mechanic could use both hands he could work faster. To meet such conditions as these we offer the Starrett improved micrometer stand. This consists of a solid base with a tilting bracket having a clamp which holds the micrometer in any convenient position. A turn of the winged nut locks in place both the hinged bracket and the micrometer. Both hands are then free for the work.

No. 206 Each $2.00

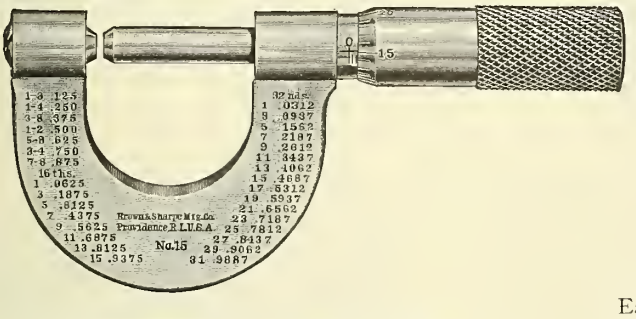
Micrometer Calipers

Brown & Sharpe

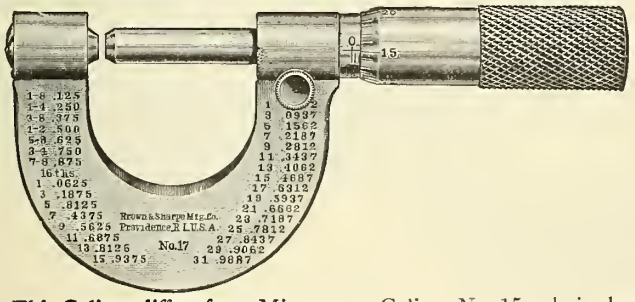


With Clamp Ring, as shown

		Each
No. 5	English Measure, 0 to ½ inch, by 1000ths	$4.50
No. 5	Metric Measure, 0 to 13 mm. by 100ths	4.50
No. 7	English Measure, 0 to ½ inch by 10,000ths	5.50
No. 8	English Measure, 0 to 1 inch by 1,000ths	5.50
No. 8	Metric Measure, 0 to 25 mm. by 100ths	5.50
No. 10	English Measure, 0 to 1 inch by 10,000ths	6.50
Ratchet Stop, extra		.50
Morocco Case, extra		.50

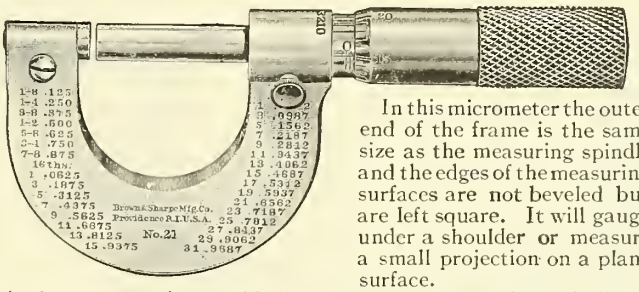


		Each
No. 15	English Measure, 0 to 1 inch by 1,000ths	$5.00
No 15	Metric Measure, 0 to 25 mm. by 100ths	5.00
No. 16	English Measure, 0 to 1 inch by 10,000ths	6.00
Ratchet Stop, extra		.50
Morocco Case, extra		.50



This Caliper differs from Micrometer Caliper No. 15 only in having a clamp screw by which the measuring spindle can be held in any desired position.

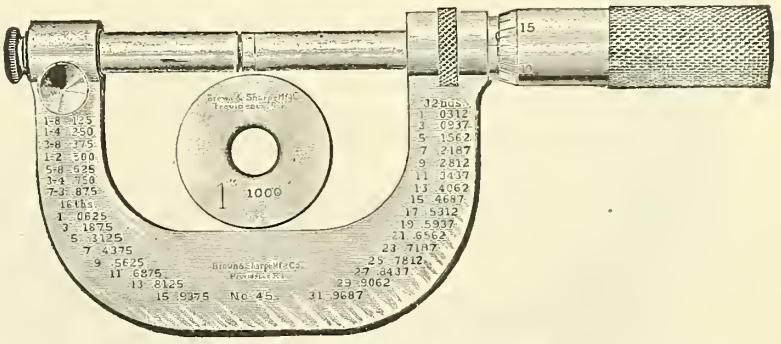
		Each
No. 17	English Measure, 0 to 1 inch by 1,000ths	$5.50
No. 17	Metric Measure, 0 to 25 mm. by 100ths	5.50
No. 18	English Measure, 0 to 1 inch by 10,000ths	6.50
Ratchet Stop, extra		.50
Morocco Case, extra		.50



In this micrometer the outer end of the frame is the same size as the measuring spindle and the edges of the measuring surfaces are not beveled but are left square. It will gauge under a shoulder or measure a small projection on a plane surface.

A clamp screw is provided by which the measuring spindle can be held in any desired position.

		Each
No. 21	English Measure, 0 to 1 inch by 10,000ths	$6.50
Ratchet Stop, extra		.50
Morocco Case, extra		.50

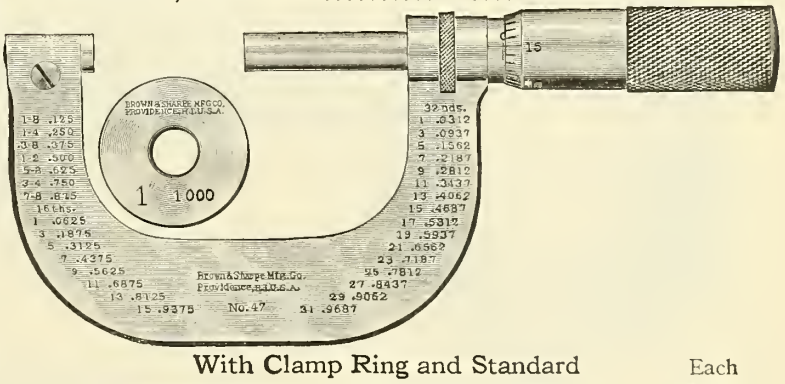


With Clamp Ring and Standard

		Each
No. 45	English Measure, 0 to 2 inches by 1,000ths	$8.00
No. 45	Metric Measure, 0 to 50 mm. by 100ths	8.00
No. 46	English Measure, 0 to 2 inches by 10,000ths	9.00

A standard 1-inch gauge, to be used in adjusting the Caliper, is sent with each one of the above.

Ratchet Stop, extra		$ .50
Morocco Case, extra		.75



With Clamp Ring and Standard

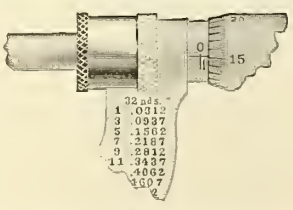
		Each
No. 47	English Measure, 1 to 2 inches by 1,000ths	$6.00
No. 47	Metric Measure, 25 to 50 mm. by 100ths	6.00
No 48	English Measure, 1 to 2 inches by 10,000ths	7.00

A standard 1-inch gauge, to be used in adjusting the Caliper, is sent with each one of the above.

Ratchet Stop, extra		$ .50
Morocco Case, extra		.75

Spindle Protector No. 1





This Spindle Protector is an attachment which will fit any Brown & Sharpe 1-inch Micrometer, and also Micrometers Nos. 30 to 53 inclusive, listed on this and the following pages.

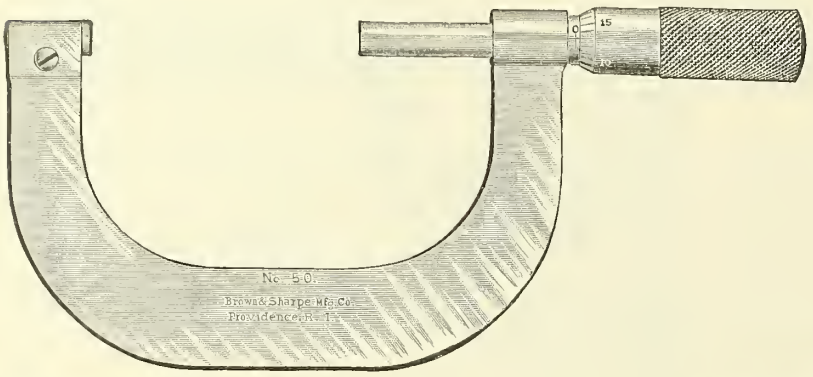
It consists of a metal cap containing a felt washer which fits tightly over the spindle in the manner shown above. It protects the spindle bearing from dust, emery grit, etc., without interfering with the action of the spindle or the clamp ring.

The capacity of the Caliper is slightly lessened by the application of the Protector. When ordering, customer should give the diameter of the micrometer frame.

Note—All Metric Micrometers are furnished without table of decimal equivalents

Micrometer Calipers

Brown & Sharpe

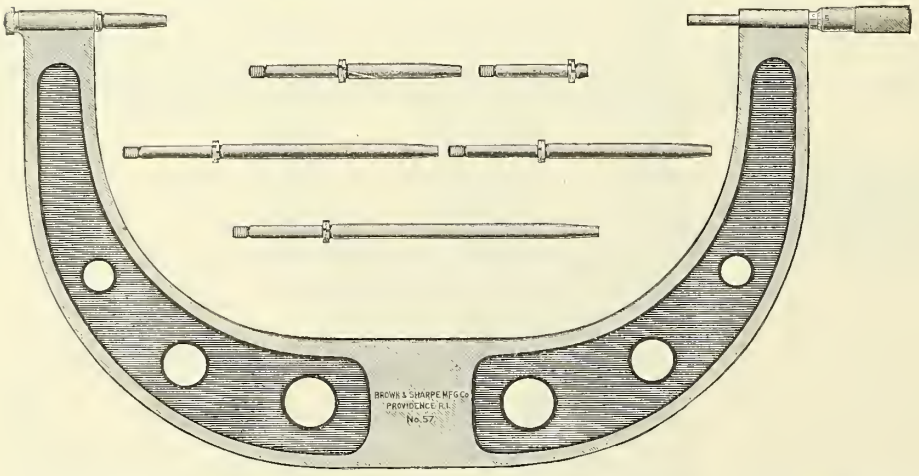


	Without Lock Nut	Each
No. 50	English Measure, 2 to 3 inches by 1,000ths...	$7.00
No. 50	Metric Measure, 50 to 75 mm. by 100ths	7.00
No. 51	English Measure, 2 to 3 inches by 10,000ths..	8.00
	With Lock Nut	
No. 52	English Measure, 2 to 3 inches by 1,000ths...	7.50
No. 52	Metric Measure, 50 to 75 mm. by 100ths.....	7.50
No. 53	English Measure, 2 to 3 inches by 10,000ths..	8.50

Ratchet Stop, extra $ .50 Standard, extra .50

Morocco Case, extra $1.00

Furnished with Standard unless otherwise ordered



No. 55 English Measure, 3 to 6 inches by 1,000ths

No. 55 Metric Measure, 75 to 150 mm. by 100ths

Three anvils are furnished: the long anvil measures from 3 to 4 inches; the intermediate from 4 to 5 inches, and the short one from 5 to 6 inches.

Each anvil is provided with separate means of adjustment for wear. They are easily and quickly inserted in the frame and are held solidly to their bearings by a knurled nut.

Means of adjustment for the measuring screw are also provided. Each

With Standards..... $14.00

Without Standards..... 10.00

If Ratchet stop is wanted, add $ .50 to above prices.

Sent with Standards unless otherwise ordered

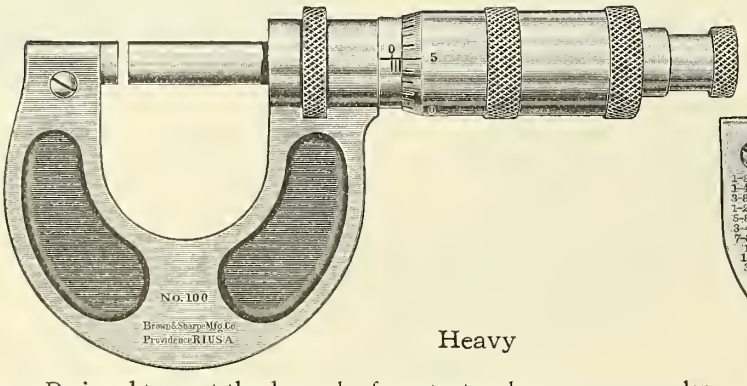
No. 57 English Measure, 6 to 12 inches, by 1,000ths.

No. 57 Metric Measure, 150 to 300 mm. by 100ths.

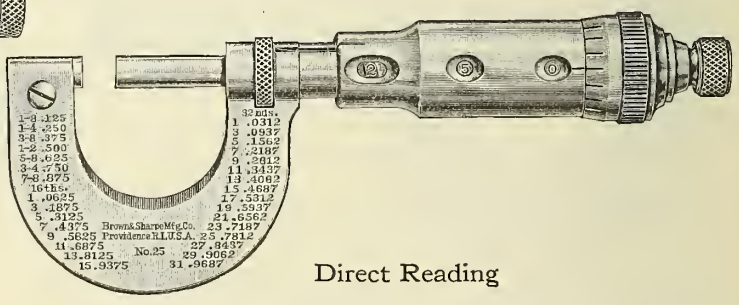
Six anvils are furnished and measure respectively, 11 to 12 inches, 10 to 11 inches, 9 to 10 inches, 8 to 9 inches, 7 to 8 inches and 6 to 7 inches.

With Standards..... $31.10 Without Standards..... $20.00

Sent with Standards unless otherwise ordered. If Ratchet Stop is wanted, add $ .50 to above prices.



Heavy



Direct Reading

Designed to meet the demands of constant and severe usage under adverse conditions, such as the dirt and moisture of grinding rooms or wherever it is desired to take frequent measurements with the clamp ring set.

Frame is made of heavy I-section with a much heavier spindle and threaded portion than is usually put in calipers. This permits greater stiffness and insures longer life to the screw under adverse conditions because of larger bearing surface for the threads.

The bearing parts and measuring surfaces are hardened to prevent wear and means are provided to compensate for wear.

Ratchet stops and a clamp ring firmly hold the spindle and preserve the setting.

Number	Range English Inches	Range Metric MM.	Each	With Standard	Morocco Case Extra
100	0 to 1	0 to 25	$7.00	.....	$ .75
102	1 to 2	25 to 50	8.00	$9.00	1.00
104	2 to 3	50 to 75	9.00	10.00	1.25
106	3 to 4	75 to 100	10.00	11.15	1.75
108	4 to 5	100 to 125	11.00	12.35	2.00
110	5 to 6	125 to 150	12.00	13.50	2.25

Presents an entirely new feature, in that thousandths of an inch can be read in exact figures without the necessity of calculation with the aid of graduation lines. The mechanical principle of a screw free to move in a fixed nut, used in our regular line of Micrometers and with which mechanics are familiar, is retained.

The figures showing in the opening nearest the frame indicate the movement of the spindle by tenths of an inch. Those in the next opening register the movement by hundredths of an inch, while the figures in the last opening indicate the movement by thousandths. In addition, the thimble on the end of the sleeve is graduated in connection with a line on the sleeve and to read to thousandths of an inch. By means of these lines, fractional parts of a thousandth may be estimated.

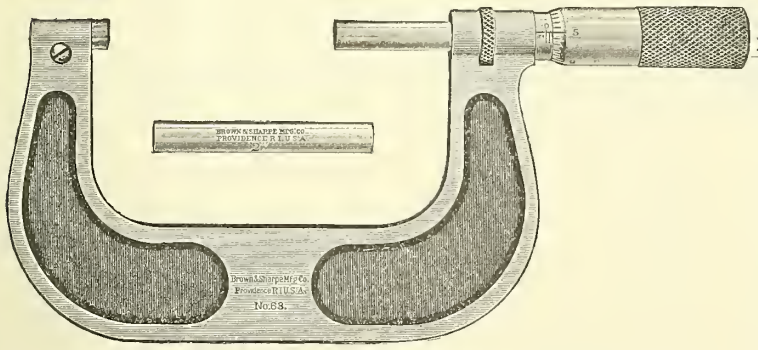
The registering mechanism is so constructed that the dials are positively locked and the Micrometer cannot get out of adjustment and read incorrectly.

Parts not subject to wear or stress are made of an alloy to eliminate weight. All other parts are made of steel, the spindle and anvil being hardened. The Caliper may be adjusted for wear on anvil, or for looseness in the thread, same as on the regular line of Micrometers.

No. 25. English Measure, 0 to 1 inch, in Morocco Case, $12.00

Micrometer Calipers

Brown & Sharpe



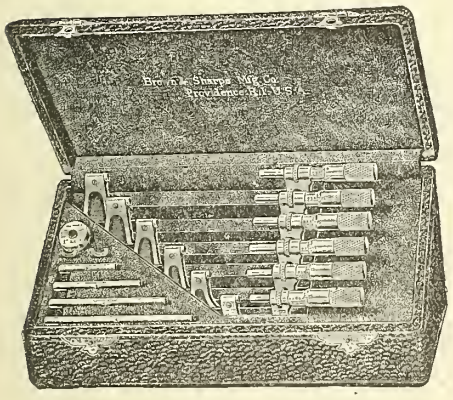
These Micrometers are made to meet the demand for an inexpensive, yet accurate measuring tool. They are more convenient for general use than the bar Micrometer or Vernier, as they can be more readily set for the different measurements and are more easily handled where rapid measurements are required.

The frame is of I-section, thus combining the greatest rigidity and strength with lightness.

Number	Range English Inches	Range Metric Millimeters	Without Standards Each	With Standards Each	Morocco Case Extra
61	1 to 2	25 to 50	$5.00	$6.00	$ .75
*62	1 to 2	25 to 50	6.00	7.00	.75
63	2 to 3	50 to 75	6.00	7.00	1.00
*64	2 to 3	50 to 75	7.00	8.00	1.00
65	3 to 4	75 to 100	6.50	7.65	1.50
67	4 to 5	100 to 125	7.25	8.60	1.75
69	5 to 6	125 to 150	8.00	9.50	2.00
71	6 to 7	150 to 175	9.00	10.60	
72	7 to 8	175 to 200	10.00	11.70	
73	8 to 9	200 to 225	11.00	12.80	
74	9 to 10	225 to 250	12.00	13.90	
75	10 to 11	250 to 275	13.00	15.00	
76	11 to 12	275 to 300	14.00	16.10	
77	12 to 13	300 to 325	15.50	17.70	
78	13 to 14	325 to 350	17.00	19.30	
79	14 to 15	350 to 375	19.00	21.40	
80	15 to 16	375 to 400	21.00	23.50	
81	16 to 17	400 to 425	23.00	25.60	
82	17 to 18	425 to 450	25.00	27.70	
83	18 to 19	450 to 475	27.00	29.80	
84	19 to 20	475 to 500	30.00	32.90	

*62 and 64 differ from the others only in reading to ten thousandths.
For Ratchet Stop, add 50 cents to above prices.

In Sets



This Set is inexpensive, accurate and trustworthy for inspecting the finished product as well as for general shop use. For many classes of work they are more convenient than the Vernier Caliper.

The 1-inch Caliper is the standard type with decimal equivalents stamped on the frame and is provided with a clamp ring; the 2, 3, 4, 5 and 6-inch Calipers have frames of I-section, which combines the greatest rigidity and lightness.

Each micrometer is graduated to read to thousandths of an inch, or hundredths of a millimeter.

English or Metric Measure

No. 135 Six Micrometers, 0 to 6 inches or 0 to 150 mm	Set $36.00
With Ratchet Stops	39.00
With Standards	42.00
With Standards and Ratchet Stops	45.00
Leather Case, extra. Each	4.00
No. 136 Six Micrometers, 0 to 6 inches or 0 to 150 mm	43.50
With Standards	49.50
With Ratchet Stops	46.50
With Standards and Ratchet Stops	52.50
Leather Case, extra. Each	4.00

This Set differs from Micrometer Set No. 135 only in being graduated to read to ten-thousandths of an inch.

In substantial wooden case.

English or Metric Measure

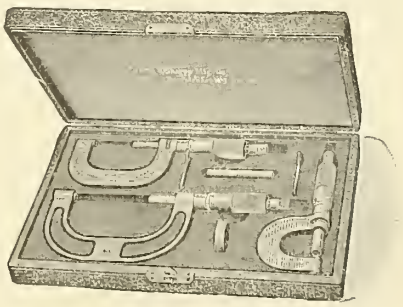
No. 137 Six Micrometers, 6 or 12 inches or 150 mm. to 300 mm	Set $68.00
With Standards	79.10
With Ratchet Stops	71.00
With Standards and Ratchet Stops	82.10
No. 139 Four Calipers, measuring from 12 to 16 inches or 300 mm. to 400 mm	72.00
With Standards	81.40
With Ratchet Stops	74.00
With Standards and Ratchet Stops	83.40
No. 140 Four Calipers, measuring from 16 to 20 inches or 400 mm. to 500 mm	104.00
With Standards	115.00
With Ratchet Stops	106.00
With Standards and Ratchet Stops	117.00

English or Metric Measure

No. 131 Three Micrometers, Nos. 8 47 and 52, 0 to 3 inches or 0 to 75 mm	Set $18.50
With Standards	19.50
With Ratchet Stops	20.00
With Standards and Ratchet Stops	21.00
Case, extra. Each	2.00

English Measure

Set No. 132 Three Micrometers, Nos. 10, 48 and 52, 0 to 3 inches by ten thousandths	Set 21.50
With Standards	22.50
With Ratchet Stops	23.00
With Standards and Ratchet Stops	24.00
Case, extra. Each	2.00



This Set of Micrometers forms an inexpensive set of accurate and convenient reference tools for inspecting the finished product as well as for general shop use.

Each Micrometer is graduated to read to thousandths of an inch, or hundredths of a millimeter. The set is neatly arranged in a substantial case lined with velvet and covered with leather.

English Measure

No. 133 Three Micrometers, Nos. 11, 61 and 63, 0 to 1 inch or 0 to 75 mm	Set $15.50
With Standards	17.50
With Ratchet Stops	17.00
With Standards and Ratchet Stops	19.00
Case, extra. Each	2.00

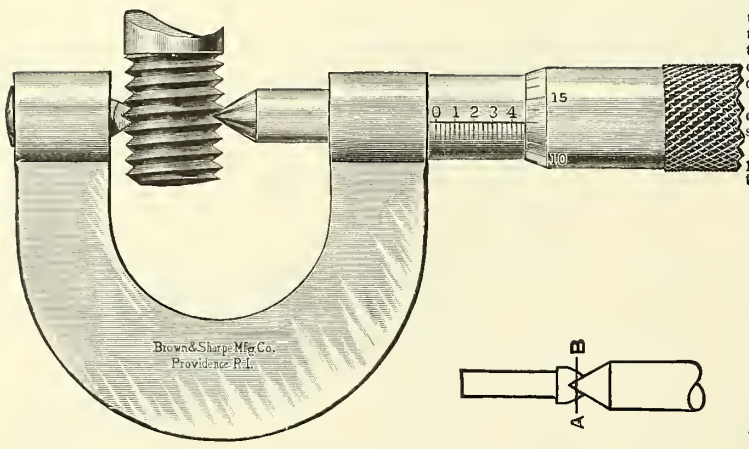
Sent with Standards and without Ratchet Stops unless otherwise ordered.

No. 134 Three heavy Micrometers, Nos. 100, 102 and 104, 0 to 3 inches or 0 to 75 mm., with Ratchet Stops	Set $24.50
With Standards and Ratchet Stops	26.50
Case, extra. Each	2.00

Sent with Standards unless otherwise ordered.

Micrometer Calipers

Brown and Sharpe Screw Thread



The distinctive feature in the construction of this micrometer is that the end of the movable spindle is pointed and the fixed end or "anvil" is V shaped. Enough is taken fron the end of the point and the botton of the V is carried down low enough, so that they will not rest on the bottom or top of the thread to be measured but on the cut surface. As the thread itself is measured, it will be seen that the actual outside diameter of the piece does not enter into consideration.

As we measure one-half of the depth of the thread from the top, on each side, the diameter of the thread as indicated by the micrometer, or the pitch diameter. is the full size of the thread less the depth of one thread.

When the point and anvil are in contact the 0 represents a line drawn through the plane A, B, and if the micrometer is opened, say to .500, it represents the distance of the two planes .500 inch apart.

Number	Capacity Inches	Range Threads Per Inch	Form of Thread	Each
150	½	48 to 64	V and U. S.	$7.00
152	1	8 to 13	V and U. S. or Whitwh. Std.	7.50
153	1	14 to 20	V and U. S. or Whitwh. Std.	7.50
154	1	22 to 30	V and U. S.	7.50
155	1	32 to 40	V and U. S.	7.50
156	2	4½ to 7	V and U. S. or Whitwh. Std.	9.00
157	2	8 to 13	V and U. S.	9.00
158	2	14 to 20	V and U. S.	9.00
159	2	22 to 30	V and U. S.	9.00

These Calipers can also be furnished in metric sizes for V and U. S. or Whitworth Standards.

Tables for Use in Connection with Screw Thread Micrometer Calipers

Caliper Reading or Pitch Diameter for V Threads = $D - \frac{.866}{N}$

V Threads

Diameter	Threads Per Inch	Caliper Reading or Pitch Diameter		Diameter* Inches	Threads Per Inch	Caliper Reading or Pitch Diameter	
D	N	$D-\frac{.866}{N}$	$\frac{.866}{N}$	D	N	$D-\frac{.866}{N}$	$\frac{.866}{N}$
	64		.0135	¼	24	.2139	.0361
	62		.0140	5/16	20	.2067	.0433
	60		.0144	5/16	20	.2692	.0433
	58		.0149	3/8	18	.2644	.0481
	56		.0155	3/8	18	.3269	.0481
	54		.0160	7/16	16	.3209	.0541
	52		.0167	7/16	16	.3834	.0541
	50		.0173	1/2	14	.3756	.0619
	48		.0180	1/2	14	.4381	.0619
	46		.0188	9/16	13	.4334	.0666
	44		.0197	9/16	12	.4278	.0722
	42		.0206	5/8	14	.5006	.0619
	40		.0217	5/8	12	.4903	.0722
	38		.0228	11/16	11	.5463	.0787
	36		.0241	3/4	10	.5384	.0866
	34		.0255	3/4	10	.6009	.0866
	32		.0271	13/16	10	.6634	.0866
	30		.0289	7/8	9	.7788	.0962
	28		.0309	1	8	.8918	.1082
	26		.0333	1⅛	8	1.0168	.1082
				1¼	7	1.1263	.1237
				1½	6	1.3557	.1443

Caliper Reading or Pitch Diameter for U. S. Threads = $D - \frac{.6495}{N}$

U. S. Standard Threads

Diameter	Threads Per Inch	Caliper Reading or Pitch Diameter		Diameter Inches	Threads Per Inch	Caliper Reading or Pitch Diameter	
D	N	$D-\frac{.6495}{N}$	$\frac{.6495}{N}$	D	N	$D-\frac{.6495}{N}$	$\frac{.6495}{N}$
	64		.0101	¼	20	.2175	.0325
	62		.0105	5/16	18	.2764	.0361
	60		.0108	3/8	16	.3344	.0406
	58		.0112	7/16	14	.3911	.0464
	56		.0116	½	13	.4501	.0499
	54		.0120	9/16	12	.5084	.0541
	52		.0125	5/8	11	.566	.0590
	50		.0130	3/4	10	.6851	.0649
	48		.0135	7/8	9	.8029	.0721
	46		.0141	1	8	.9188	.0812
	44		.0148	1⅛	7	1.0322	.0928
	42		.0155	1¼	7	1.1572	.0928
	40		.0162	1⅜	6	1.2668	.1082
	38		.0171	1½	6	1.3918	.1082
	36		.0180	1⅝	5½	1.507	.1180
	34		.0191	1¾	5	1.6201	.1299
	32		.0203	1⅞	5	1.7451	.1299
	30		.0217	2	4½	1.8557	.1443
	28		.0232	2½	4	2.3376	.1624
	26		.0250	3	3½	2.8145	.1855
	24		.0271	3½	3¼	3.3002	.1998
	22		.0295	4	3	3.7835	.2165

Caliper Reading or Pitch Diameter, Whitworth Threads = $D - \frac{.640}{N}$

Whitworth Standard Threads

Diameter	Threads per Inch	Caliper Reading or Pitch Diameter	
D	N	$D-\frac{.640}{N}$	$\frac{.640}{N}$
¼	20	.2180	.0320
5/16	18	.2769	.0355
3/8	16	.3350	.0400
7/16	14	.3918	.0457
½	12	.4467	.0533
9/16	12	.5092	.0533
5/8	11	.5668	.0582
11/16	11	.6293	.0582
3/4	10	.6860	.0640
13/16	10	.7485	.0640
7/8	9	.8039	.0711
15/16	9	.8664	.0711
1	8	.9200	.0800
1⅛	7	1.0336	.0914
1¼	7	1.1586	.0914
1⅜	6	1.2684	.1066
1½	6	1.3934	.1066
1⅝	5	1.4970	.1280
1¾	5	1.6220	.1280
1⅞	4½	1.7328	.1422
2	4½	1.8578	.1422
2⅛	4½	1.9828	.1422

Caliper Reading or Pitch Diameter, A.S.M.E. Standard = $D - \frac{.6495}{N}$
Same form of Thread as the U. S. Standard

A. S. M. E. Standard Threads

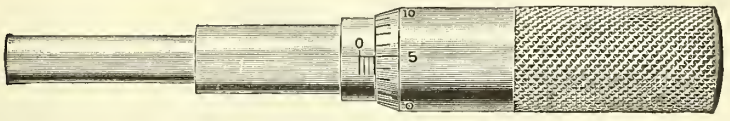
Number	Basic and Maximum Outside Diameter	Threads per Inch	Caliper Reading or Maximum Pitch Diameter	
	D	N	$D-\frac{.6495}{N}$	$\frac{.6495}{N}$
0	.060	80	.0519	.0081
1	.073	72	.064	.0090
2	.086	64	.0759	.0101
3	.099	56	.0874	.0116
4	.112	48	.0985	.0135
5	.125	44	.1102	.0148
6	.138	40	.1218	.0162
7	.151/	36	.1330	.0180
8	.164	36	.146	.0180
9	.177	32	.1567	.0203
10	.190	30	.1684	.0217
12	.216	28	.1928	.0232
14	.242	24	.2149	.0271
16	.268	22	.2385	.0295
18	.294	20	.2615	.0325
20	.320	20	.2875	.0325
22	.346	18	.3099	.0361
24	.372	16	.3314	.0406
26	.398	16	.3574	.0406
28	.424	14	.3776	.0464
30	.450	14	.4036	.0464

As there is no standard of diameter for the finer pitches the columns for diameter and caliper reading, or pitch diameter, are left blank. The column on the right gives the number to be substracted from the diameter to obtain the caliper reading, or pitch diameter.

*These figures give the outside diameter for screws with threads cut theoretically sharp. As it is not practical to make these threads sharp the outside diameter will measure less than the figures given, the pitch diameter remaining the same. The pitch diameter for taps should be larger than for screws.

Micrometer Calipers

Brown & Sharpe



Heads

These Micrometer Heads are easily attached to machines or tools where fine measurements are required.

No. 290 English or Metric Measure

Half-Inch

Graduated to read to thousandths of an inch or hundredths of a millimeter.
With or without Ratchet Stop. Each $3.00
The ½ inch Micrometer Heads differ from the 1 inch only in the size and range.
Length from lower end of barrel to shoulder, ⅜ inch; diameter of barrel, ⅜ inch.

No. 291 English Measure

Graduated to read to ten thousandths of an inch.
With or without Ratchet Stop. Each. $4.00
This tool differs from Micrometer Head No. 290 only in being graduated to read to ten thousandths as well as thousandths of an inch.

No. 294 English or Metric Measure

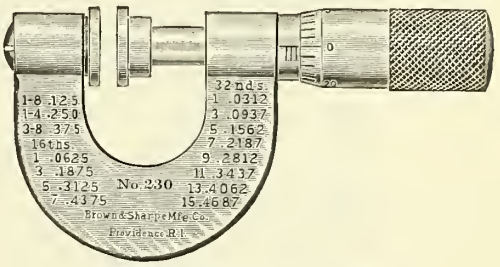
One Inch

Graduated to read to thousandths of an inch or hundredths of a millimetre.
With or without Ratchet Stop. Each $3.50
Length, from lower end of barrel to shoulder, ¾ inch; diameter, ⅜ inch.

No. 295 English Measure

Graduated to read to ten-thousandths of an inch.
With or without Ratchet Stop. Each. $4.50
This tool differs from Micrometer Head No. 294 only in being graduated to read to ten thousandths as well as thousandths of an inch.

Furnished with Clamp Ring if desired



Paper Gauge No. 230

English or Metric Measure

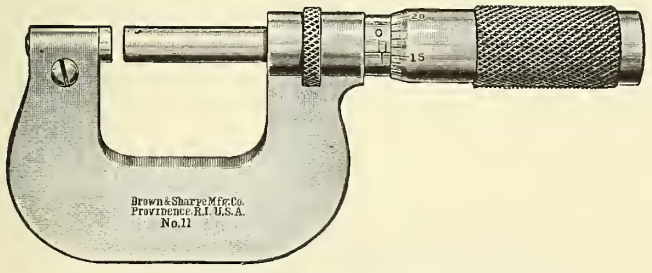
Range, 0 to ⅜-inch or 0 to 9 mm.

Each	$5.50
With Ratchet Stop	6.00
Morocco Case. Extra	.50

This Caliper measures all sizes less than three-eighths of an inch, by thousandths of an inch.

In measuring the thickness of paper, sheet rubber or other yielding substances, it is advantageous to use discs or washers on the ends of the measuring spindle and adjusting screw. The comparatively large sizes have less tendency to compress the objects measured and enable accurate measurements to be quickly obtained.

This Caliper is also made to measure to hundredths of a millimeter. When so made the table of decimal equivalents is omitted.



No. 11 English or Metric Measure

Range, 0 to 1-inch or 0 to 25 mm.

Each	$5.50
With Ratchet Stop	6.00
Morocco Case. Extra	.50

This Caliper is new in design, it differs from the others in the type of frame, and method of graduating.

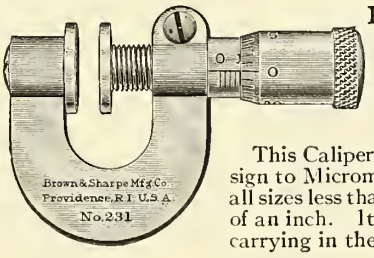
The graduations on the hub that run parallel to the axis of the screw run alternately one above and one below the measuring line. Those above the measuring line are for 0, 50, 100, 150, etc.; those below are for 25, 75, 125, etc. This is an important feature, as it facilitates reading the Caliper at a glance, and eliminates to a certain extent errors likely to arise through reading too rapidly close graduations. The cut illustrates the style of graduations.

This Caliper measures all sizes less than an inch by thousandths of an inch.

The adjustment of the measuring screw to compensate for wear is made by a taper nut.

Every Caliper is provided with a Clamp Ring which clamps the spindle and preserves the setting.

Metric Measure. This Caliper is also made to measure all sizes less than twenty-five millimetres by hundredths of a millimetre.



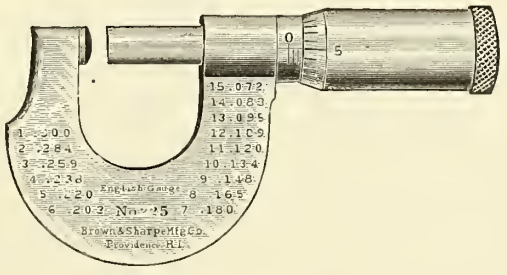
Pocket Paper Gauge No. 231

English Measure

Range, 0 to ¼-inch

Each	$5.00
In Morocco Case	5.50

This Caliper, shown full size, is similar in design to Micrometer Caliper No. 230. It measures all sizes less than one-quarter inch by thousandths of an inch. It will be found well adapted for carrying in the pocket.



Tubing No. 225

This Caliper, shown full size, is designed especially to meet the demand for an instrument to measure accurately the thickness of tubing and is well adapted for use in tube works, boiler shops, bicycle manufactories, etc.

It will measure the thickness of tubing from $\frac{5}{16}$-inch inside diameter upwards by thousandths of an inch.

The anvil or fixed measuring point is rounded on the end so that it touches at only one point on the inside of the tube and, the end of the movable spindle being flat, touches at only one point on the outside, thus giving the exact thickness of the tube.

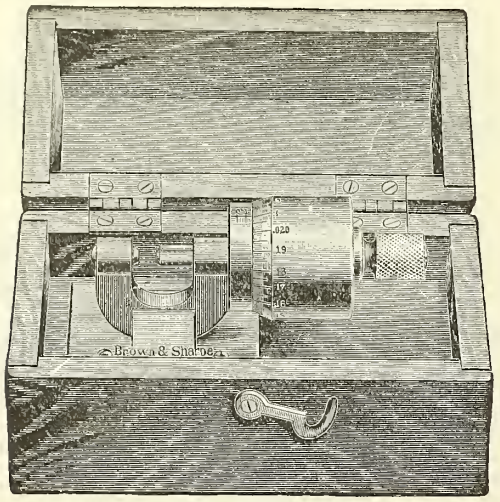
English or Metric Measure

Range, 0 to ½-inch or 0 to 13 mm.

Each	$4.50
With Ratchet Stop	5.00
Morocco Case. Extra	.50

Micrometer Calipers

Brown & Sharpe



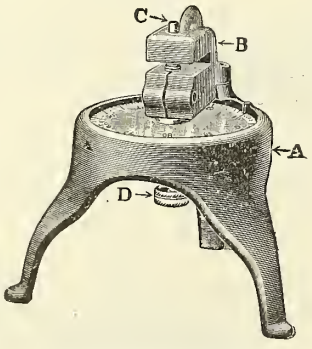
No. 233

This Caliper is shown half size and measures all sizes less than ½ inch by ten-thousandths of an inch. The measurements can be read directly from the barrel; the screw has fifty threads and the barrel is divided into two hundred equal parts.

This Caliper is found of service to wire drawers, watch-makers and others who desire fine measurements and whose work is of such a class that a Micrometer Caliper can be used when placed on a bench.

This Caliper is also made to measure all sizes less than thirteen millimetres by hundredths of a millimetre.

No. 233 English or Metric Measure, range 0 to ½ inch, in case Each..... $15.00



Sheet Metal No. 220

This Micrometer measures to ¼ inch by thousandths of an inch. It is a convenient tool for jewelers, silversmiths, sheet metal rollers and workers, rubber and paper manufacturers, type founders, etc.

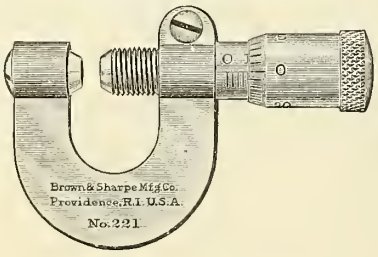
The frame A supports the measuring mechanism. The arm B holds the measuring screw D and he adjusting screw C.

The knurled thumb screw D operates the measuring screw and the movable dial.

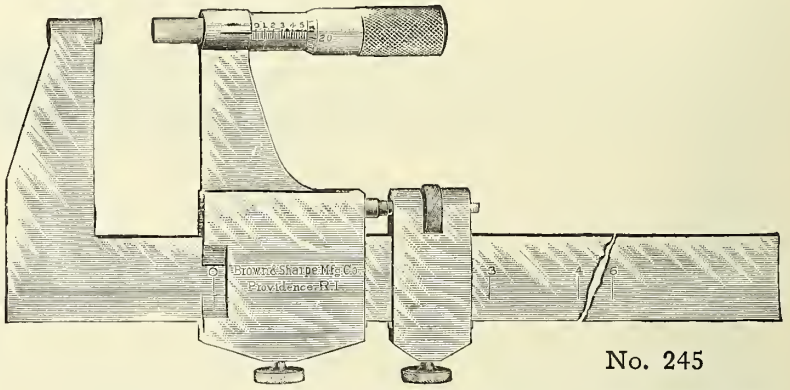
The movable dial is of German silver and the graduations are read by means of the pointer shown at the right of arm B. Provision is made for compensation for wear.

Each..... $10.00

Pocket Sheet Metal



	Each
No. 221 English Measure, 0 to $\frac{3}{10}$ inch, by 1000ths.....	$4.00
With Ratchet Stop.....	4.50
Morocco Case. Extra.....	.50



No. 245

No. 245 English or Metric Measure, range, 0 to 6 inches length, 4 inches diam. or 0 to 150 mm. length, 100 mm. diam., each.... $30.00
With Ratchet Stop, each..... 30.50

This Caliper, shown about half size, measures all sizes to six inches in length and four inches in diameter, by thousandths of an inch.

The outer end of the frame is the same size as the measuring spindle and the edges of the measuring surfaces are not beveled but are left square.

The slide can be set accurately by means of the graduated lines on the bar.

All parts of inches are obtained by means of the micrometer screw.

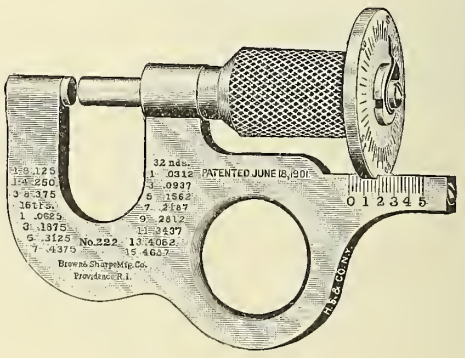
This Caliper is also made to measure all sizes less than 150 mm. in length and 100 mm. in diameter by hundredths of a millimetre.

No. 246 English or Metric Measure, range, 0 to 12 inches length, 6 inches diam. or 0 to 300 mm. length, 150 mm. diam., each....$35.00
With Ratchet Stop, each..... 35.50

This Caliper, similar in design to Micrometer Caliper No. 245, is made to measure all sizes to twelve inches in length and six inches in diameter by thousandths of an inch.

No. 248 English or Metric Measure, range, 0 to 24 inches length, 6 inches diam. or 0 to 600 mm. length, 150 mm. diam. each.... $45.00
With Ratchet Stop, each..... 45.50

This Caliper, similar in design to Micrometer Caliper No. 245, is made to measure all sizes to twenty-four inches in length and six inches in diameter by thousandths of an inch.



Sheet Metal No. 222

This Micrometer is especially convenient for sheet metal workers and handlers.

By placing the middle finger of the right hand through the ring, the Micrometer is held at right angles to the sheet to be measured, and readings made while in this position. The thimble is operated by the forefinger and thumb of the same hand.

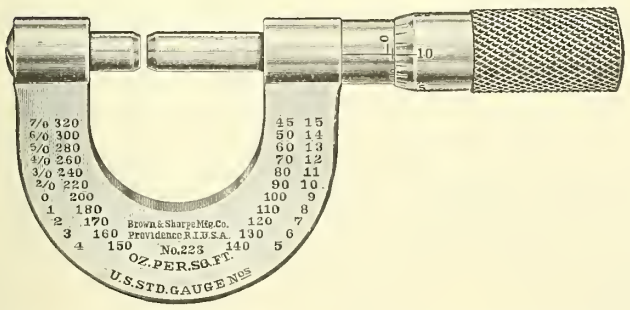
The Micrometer measures all sizes less than one-half of an inch by one-half thousandths of an inch and one-quarter thousandths are estimated.

To facilitate the reading of the Micrometer while held in position, the one-half thousandths readings are taken from the dial at the top of the spindle, the readings being indicated by the pointer; and the twenty-five thousandths readings, or those corresponding to the readings on the barrel of an ordinary Micrometer, are taken from the scale at the top of the frame.

	Each
English Measure, 0 to ½ inch by 1,000ths.....	$5.50
Metric Measure, 0 to 13 mm. by 100ths.....	5.50
Morocco Case. Extra.....	50

Micrometer Calipers

Brown & Sharpe



No. 223 U. S. Standard Gauge for Sheet and Plate Iron and Steel

Range, 0 to 320 ounces per square foot

Each $5.00

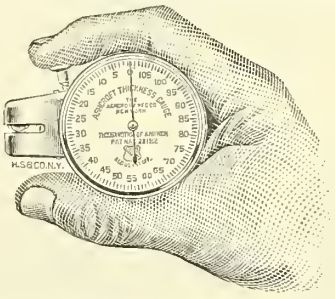
With Ratchet Stop 5.50

Morocco Case. Extra ..... .50

This Caliper is shown nearly full size and is graduated to show the weight of sheet or plate iron or steel in ounces per square foot. It measures all thicknesses less than 0000000, or approximately ½ inch, each of the divisions on the thimble indicating an ounce and each division on the barrel, 20 ounces.

By the table of equivalents stamped on the frame of the Caliper, the gauge number of the sheet or plate can be quickly determined when its weight per square foot has been ascertained.

Ashcroft Instantaneous Thickness Gauge



For accurately and instantly determining the thickness to quarter thousandths of an inch of flat or curved sheet metal, tubing, leather, glass, wire, paper, insulating material for electrical apparatus, small watch parts, etc., etc.

Type "S," with special contact surfaces for measuring flat or curved sheet steel, brass, tin, silver, platinum, gold, watch glasses and dials, also cases, parts of miniature models, tubing, etc., not exceeding 0.11 inch in thickness. Each $10.00

Type "X," with special contact surfaces for measuring wire, small drills, watch springs, dowel and cotter pins, and many other small parts of watches and apparatus, which have to be accurately measured, and are not over 0.11 inch in diameter or thickness. Each 10.00

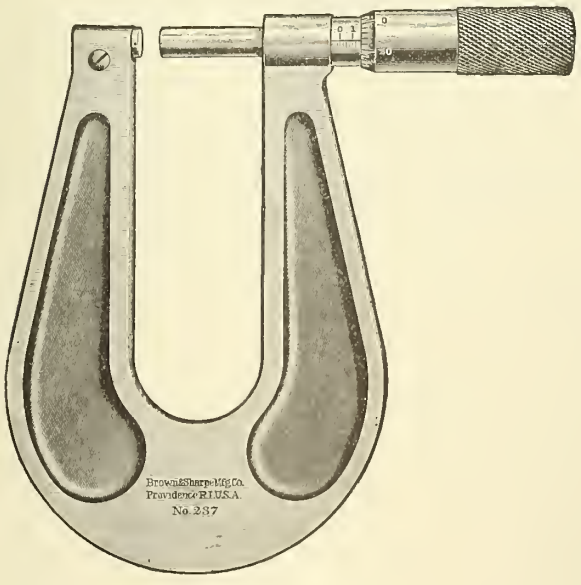
Type "F," for measuring the thickness of paper, Bristol board, box board, glass, insulating materials for electrical apparatus, all kinds of paper stock in various sizes and many other sheet materials. Each 10.00

Type "R," with two flat contact surfaces. This type is made especially for rubber and leather. Each 10.00

Types "S," "X" "F" or "R" will be furnished with metric dial, if so specified.

Extra Black Morocco Cases. Each ..... .50

Brown & Sharpe



No. 237 Rolling Mill Gauge, English or Metric Measure

Range, 0 to 1 inch or 0 to 25 mm.

Each $7.00

With Ratchet Stop 7.50

Morocco Case. Extra 1.50

This Caliper is designed for sheet metal workers' use, although it is also adapted for a wide range of other uses requiring a caliper of unusual depth. The opening in the frame is about 3 inches deep, a feature much appreciated, as it enables sheet metal to be more accurately measured than would be possible with an ordinary Micrometer.

No. 235. Rolling Mill Gauge, English or Metric Measure

Range, 0 to .400 inch or 0 to 12 mm.

Each, including Ratchet Stop $7.00

This Caliper is similar to Micrometer Caliper No. 237, but the readings are taken from a disc mounted on the hub instead of the thimble. Dial reads to half thousandths or .01 mm. Opening in frame about 4½ inches deep.

No. 238 Rolling Mill Gauge, English or Metric Measure

Range, 0 to ½ inch or 0 to 13 mm.

Each $6.00

With Ratchet Stop 6.50

This Caliper differs from Micrometer Caliper No. 237 only in having a smaller range. Opening in frame about 2 inches deep.

No. 239 Rolling Mill Gauge, English or Metric Measure

Range, 0 to 1 inch or 0 to 25 mm.

Each $8.00

With Ratchet Stop 8.50

This Caliper differs from Micrometer Caliper No. 237 only in having a greater measuring capacity. Opening in frame about 6 inches deep.

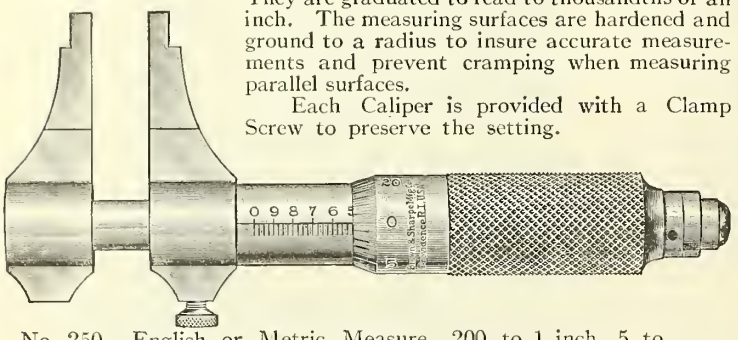
Micrometer Calipers

Brown & Sharpe

Inside

These Calipers are entirely new in design and intended to meet the demand for a tool adapted to measuring small internal dimensions. They are graduated to read to thousandths of an inch. The measuring surfaces are hardened and ground to a radius to insure accurate measurements and prevent cramping when measuring parallel surfaces.

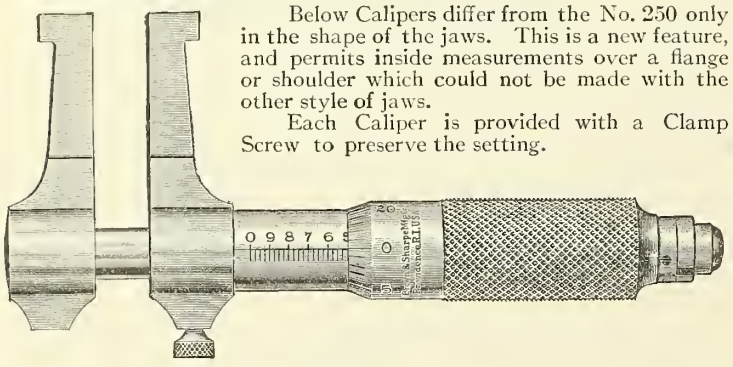
Each Caliper is provided with a Clamp Screw to preserve the setting.



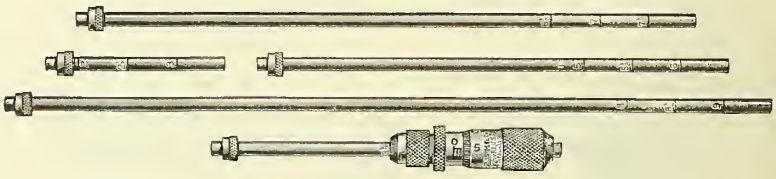
No. 250. English or Metric Measure, .200 to 1 inch, 5 to 25 mm. Each $5.00
Morocco Case. Extra ..... .50

Below Calipers differ from the No. 250 only in the shape of the jaws. This is a new feature, and permits inside measurements over a flange or shoulder which could not be made with the other style of jaws.

Each Caliper is provided with a Clamp Screw to preserve the setting.

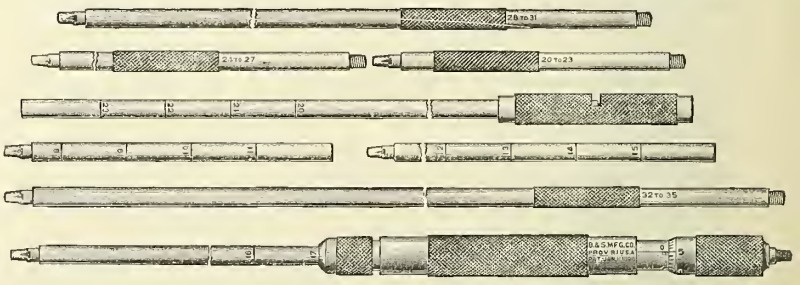


No. 252. English or Metric, ½ to 1½ inches, or 13 to 38 mm. Each $6.00
Morocco Case. Extra ..... .50
No. 254. English or Metric, 1 to 2 inches, or 25 to 50 mm. Each 6.00
Morocco Case. Extra ..... .50



This Micrometer consists of a holder with a micrometer screw and thimble graduated to read to thousandths of an inch and hundredths of a millimeter. The extension rods are graduated by a series of angular grooves of a form and depth that allow the clamping fingers to spring in and the adjustments quickly and positively made.

Number	Number of Rods	Range	Set Without Case	Set With Case
260	5	2 to 9½ inches	$4.50	$5.25
260	6	50 to 230 mm.	4.50	5.25
261	7	2 to 12½ inches	5.50	6.50
261	8	50 to 290 mm.	5.50	6.50



These Gauges consist of a holder with a micrometer screw and thimble graduated to thousandths of an inch and hundredths of a millimeter. The extension rods are graduated by a series of angular grooves of a form and depth that allow the clamping fingers to spring in and the adjustments quickly and positively made.

Number	Number of Rods	Range	Set Without Case	Set With Case
262	8	8 to 36 inches	$7.50	$9.00
262	8	200 to 900 mm.	7.50	9.00

Tubular Inside



The Tubular Inside Micrometers are distinctively new in design, being made of tubing, which renders them very light and convenient to handle, especially those of the longer lengths.

These Micrometers are designed for measuring the inside diameters of rings, cylinders, etc., setting calipers, comparing gauges and work of a similar nature. They are fitted at one end with a micrometer head having a ½ inch or 1 inch movement. The measuring points are hardened, and the faces are ground on a radius, thus adapting them especially for measuring parallel or curved surfaces.

Provision is made for adjustment to compensate for wear on the measuring surfaces by means of a knurled adjusting nut. Fibre grips are also provided to guard against inaccuracies due to the heat of the hand. The small sizes have only one grip, while the larger sizes have two.

Each Micrometer is fitted with a Clamp Screw, which clamps the spindle and preserves the setting.

No. 270, English Measure

Range in Inches	Each	Range in Inches	Each	Range in Inches	Each
2 to 2½	$3.50	12 to 13	$4.50	26 to 27	$5.50
2½ to 3		13 to 14		27 to 28	
3 to 3½		14 to 15		28 to 29	
3½ to 4		15 to 16		29 to 30	
4 to 4½		16 to 17		30 to 31	
4½ to 5		17 to 18		31 to 32	
5 to 6		18 to 19		32 to 33	6.00
6 to 7		19 to 20		33 to 34	
7 to 8		20 to 21		34 to 35	
8 to 9	4.00	21 to 22	5.00	35 to 36	
9 to 10		22 to 23		36 to 37	
10 to 11		23 to 24		37 to 38	
11 to 12		24 to 25	5.50	38 to 39	6.50
		25 to 26		39 to 40	

No. 272, Metric Measure

Range in Millimetres	Each	Range in Millimetres	Each	Range in Millimetres	Each
50 to 63	$3.50	300 to 325	$4.50	650 to 675	$5.50
63 to 75		325 to 350		675 to 700	
75 to 88		350 to 375		700 to 725	
88 to 100		375 to 400		725 to 750	
100 to 113		400 to 425		750 to 775	
113 to 125		425 to 450		775 to 800	
125 to 150		450 to 475		800 to 825	6.00
150 to 175		475 to 500		825 to 850	
175 to 200		500 to 525		850 to 875	
200 to 225	4.00	525 to 550	5.00	875 to 900	
225 to 250		550 to 575		900 to 925	
250 to 275		575 to 600		925 to 950	
275 to 300		600 to 625	5.50	950 to 975	6.50
		625 to 650		975 to 1000	

These Micrometers are also furnished in sets packed in suitable wooden box, as follows:

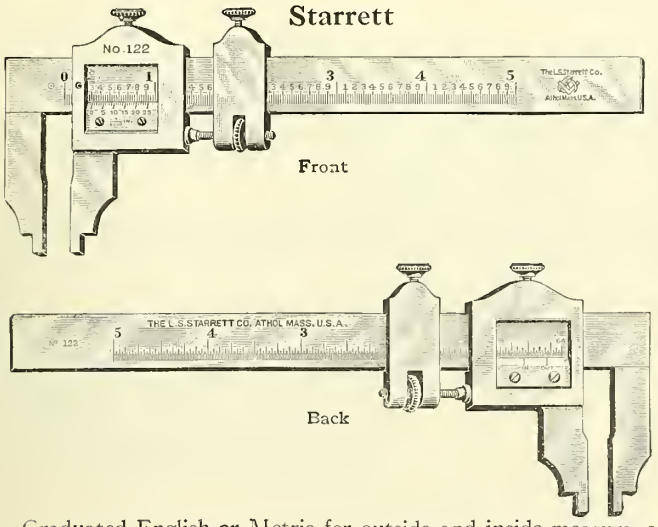
Set No. 273. 7 Micrometers, 2 to 6 inches, or 50 to 150 mm. $25.00

Set No. 274. 13 Micrometers, 2 to 12 inches, or 50 to 300 mm. $49.00

Set No. 285. 41 Micrometers, 2 to 40 inches, or 50 to 1000 mm. $197.50

Vernier Calipers

Starrett



Graduated English or Metric for outside and inside measure, and are warranted accurate. Points are placed on the beams and slides for setting dividers to transfer distances and full directions for using the Vernier are sent with each caliper.

The jaws are carefully hardened and accurately ground.

We can furnish a quarter inch cylindrical plug standard for testing the adjustment of the caliper when desired, $3.00

Finely finished, plush lined wooden cases furnished without extra charge.

English Measure

Graduated on the front to read by means of the Vernier in 1000ths of an inch. Graduated in 64ths on the back.

Number	Size Inches	Length of Jaws Inches	Width of Jaws Inch	Each In Case
122	4	$1\frac{9}{16}$	.250	$13.00
122	6	$1\frac{9}{16}$	.250	15.00
122	9	$2\frac{3}{8}$	.300	18.00
122	12	$2\frac{3}{8}$	.300	20.00
122	24	$2\frac{3}{8}$	.300	25.00

Metric Measure

Same as No. 122, except that it is graduated on the front to read by means of the Vernier in 50ths of a millimeter and is graduated on the back in ½ millimeters.

Number	Size MM.	Length of Jaws MM.	Width of Jaws MM.	Each In Case
122M	100	39.7	6	$13.00
122M	150	39.7	6	15.00
122M	200	60	8	18.00
122M	300	60	8	20.00
122M	600	60	8	25.00

Metric and English Measure

Same as No. 122, except that it has a Vernier on each side and is graduated to read by means of the Verniers, on the front in 50ths of a millimeter and on the back in 1000ths of an inch, with jaws ground to metric widths as in No. 122M.

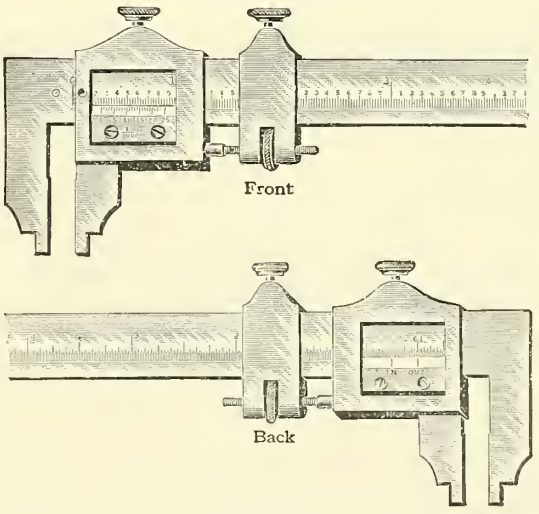
Number	Size MM.	Size Inches	Each In Case
122ME	100	4	$13.00
122ME	150	6	15.00
122ME	200	9	18.00
122ME	300	12	20.00
122ME	600	24	25.00

English and Metric Measure

Same as No. 122, except that it has a Vernier on each side and is graduated to read by means of the Verniers on the front in 1000ths of an inch and on the back in 50ths of a millimeter, with jaws ground to English widths as in No. 122.

Number	Size Inches	Size MM.	Each In Case
122EM	4	100	$13.00
122EM	6	150	15.00
122EM	9	200	18.00
122EM	12	300	20.00
122EM	24	600	25.00

Brown and Sharpe



These Vernier Calipers take inside as well as outside measurements. The jaws are hardened and ground. Points are placed on the bars and slides so that dividers can be set to transfer distances.

The smallest Vernier Caliper is well adapted for carrying in the pocket, and is known as a Pocket Vernier.

An explanation of the Vernier is sent with each Caliper.

A Standard is furnished when desired for testing the accuracy of the adjustment of the caliper.

English Measure

They are graduated on the front to read, by means of a Vernier, to thousandths of an inch, on the back to 64ths of an inch.

Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Each In Case
570	Pocket $1\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{4}$	$10.50
570	6	$1\frac{1}{4}$	$\frac{1}{4}$	15.00
570	12	$2\frac{1}{4}$	$\frac{3}{10}$	20.00
570	24	$2\frac{1}{4}$	$\frac{3}{10}$	25.00

Metric Measure

Same as No. 570, only in reading to metric measure, graduated to $\frac{1}{50}$ of a millimeter on one side and ½ of a millimeter on the other.

Number	Size MM.	Length of Jaws MM.	Width of Jaws Closed MM.	Each In Case
571	Pocket 38	19	6	$10.50
571	150	31	6	15.00
571	300	57	6	20.00
571	600	57	6	25.00

Metric and English Measure

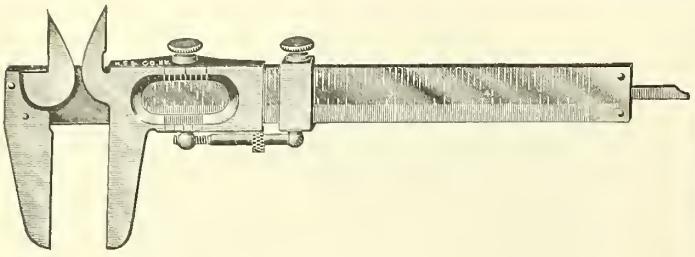
Same as No. 571, only in reading to both metric and English measure. They are graduated to read to $\frac{1}{50}$ of a millimeter on one side and to .001 of an inch on the other.

Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Each In Case
572	Pocket $1\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{4}$	$10.50
572	6	$1\frac{1}{4}$	$\frac{1}{4}$	15.00
572	12	$2\frac{1}{4}$	$\frac{3}{10}$	20.00
572	24	$2\frac{1}{4}$	$\frac{3}{10}$	25.00

For instructions for reading, see page 262

Vernier Calipers

Columbia Pattern



Nos. 1, 2, 3 and 4

5-inch Bar

The graduating lines are sharp and clean, which insures easy and accurate reading of the measurements.

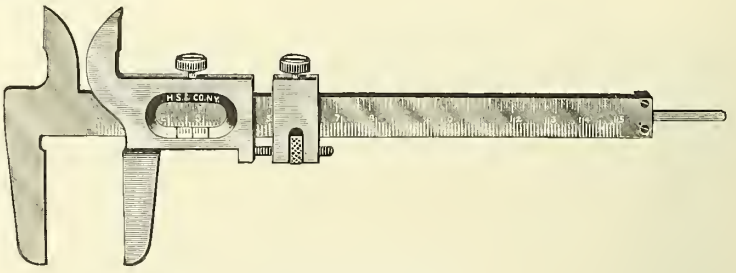
Being flat and light, it can be conveniently carried in the side pocket.

Engineers and superintendents, in inspection work, will find this tool indispensable. In leather case.

		Each
No. 1	Polished, without Micrometer Screw	$2.50
No. 2	Polished, with Micrometer Screw	3.50
No. 3	Nickel-plated, without Micrometer Screw	2.75
No. 4	Nickel-plated, with Micrometer Screw	3.75

Supplied in English (A) or English and Metric graduations (B), as follows:

A Upper Scale: $\frac{1}{16}$ indicating $\frac{1}{128}$ inch with Vernier.
A Lower Scale: $\frac{1}{50}$ indicating $\frac{1}{1000}$ inch with Vernier.
B Upper Scale: $\frac{1}{16}$ indicating $\frac{1}{128}$ inch with Vernier.
B Lower Scale: Millimeters indicating $\frac{1}{10}$ mm., with Vernier.



Nos. 10, 20, 30 and 40

6-inch Bar

An improvement on the Nos. 1, 2, 3 and 4. A strong tool adapted for hard usage in machine shops.

In leather case.

		Each
No. 10	Polished, without Adjusting Screw	$2.50
No. 20	Polished, with Adjusting Screw	3.50
No. 30	Nickel-plated, without Adjusting Screw	2.75
No. 40	Nickel-plated, with Adjusting Screw	3.75

Supplied in English (A) or English and Metric graduations (B), as follows:

A Upper Scale: $\frac{1}{40}$ indicating $\frac{1}{1000}$ inch with Vernier
A Lower Scale: $\frac{1}{16}$ indicating $\frac{1}{128}$ inch with Vernier
B Upper Scale: $\frac{1}{16}$ indicating $\frac{1}{128}$ inch with Vernier
B Lower Scale: Millimeters indicating $\frac{1}{10}$ mm. with Vernier

English Graduations (A) supplied unless other specified

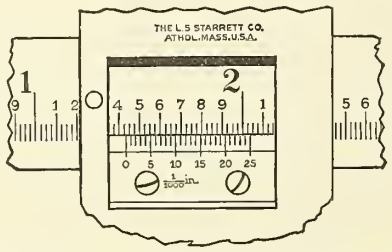
These Calipers combine three precision tools for measuring inside and outside diameters; also depth. These three measurements are obtained at one setting without deducting

Instructions for Reading

Brown & Sharpe and Starrett

The scale of the tool is graduated in fortieths, or .025 of an inch, every fourth division, representing a tenth of an inch, being numbered. On the Vernier plate is a space divided into twenty-five parts and numbered 0, 5, 10, 15, 20, 25. The twenty-five divisions on the Vernier occupy the same space as twenty-four divisions on the scale.

The difference between of width of one of the twenty-five spaces on the Vernier and one of the twenty-four spaces on the scale is therefore $\frac{1}{25}$ of $\frac{1}{40}$ or $\frac{1}{1000}$ of an inch. If the Vernier is set so that the 0 line on the Vernier coincides with the 0 line on the scale, the next two lines will not coincide by $\frac{1}{1000}$ of an inch; the next two lines will be two thousandths apart, and so on.



To read the tool, note how many inches, tenths (or .100) and fortieths (or .025) the 0 mark on the Vernier is from the 0 mark on the scale; then note the number of divisions on the Vernier from 0 to a line which exactly coincides with a line on the scale.

In the engraving above, the Vernier has been moved to the right one and four-tenths and one-fortieth inches (1.425 inches), as shown on the scale, and the eleventh line on the Vernier coincides with a line on the scale. Eleven thousandths of an inch are therefore to be added to the reading on the scale, and the total reading is one and four hundred and thirty-six thousandth inches (1.436 inches), which is the distance the jaws of the tool have been opened.

In making inside measurements the width of the jaws as given in the list is to be added to the apparent readings on the side having the Vernier to allow for the space occupied by the measuring points. No such allowance is necessary when using the back side, without Vernier, as the two lines marked "in" and "out" indicate inside and outside measurements.

Columbia Pattern

Nos. 1, 2, 3 and 4

Furnished in two styles: The upper side of the bar in either style is always divided to read to 128ths of an inch. While the one is arranged to read to thousandths of an inch on the lower side of the bar, the other is designed to read to 10ths of millimeters.

($\frac{1}{128}$ inch.) The bar is divided into a line of inches numbered from 0 to 5. Each inch is divided into 16 parts.

On the sliding jaw is a line of divisions (called Vernier from name of inventor) of 8 parts.

The 8 parts on the Vernier correspond with 7 parts on the bar, consequently each division on the Vernier is smaller than each division on the bar by $\frac{1}{128}$th of an inch.

If the movable jaw of the Caliper is pushed up to the other so that the first line (zero point) on the Vernier corresponds with that marked "O" on the bar, then the two next lines to the right will differ from each other by $\frac{1}{128}$th of an inch, and so the difference will continue to increase $\frac{1}{128}$th of an inch for each division, until they again correspond at the last line of the Vernier.

To read the distance the Caliper is opened. Commence by noting how many inches and 16ths the first line on the Vernier has been moved from the zero point on the bar.

Now count upon the Vernier the number of divisions until one is found which coincides with one on the bar which will be the number of 128ths to be added to the distance read off on the bar.

($\frac{1}{1000}$ inch.) The Vernier in this style shows a division of 20 which in extreme length correspond with 19-50 on the bar. These divisions differ therefore by $\frac{1}{1000}$ths of an inch so that when reading the Vernier, $\frac{1}{1000}$ of an inch must be added every time the slide is moved to the right to make the next succeeding lines correspond.

($\frac{1}{10}$ mm.) The bar in this case is divided into a line of centimeters numbered from 0 to 12, each is divided into 10 parts or millimeters. The Vernier shows a division of 10 parts which correspond in extreme length with 9 mm.

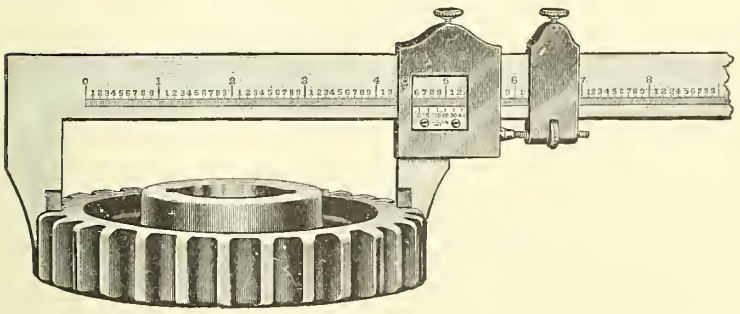
The difference therefore is $\frac{1}{10}$ mm. which must be added each time the slide is moved to the right to make the next succeeding line correspond.

Nos. 10, 20, 30 and 40 read as above, excepting divisions are in $\frac{1}{40}$ of an inch instead of $\frac{1}{50}$.

Vernier Calipers

Brown & Sharpe

Gear Tooth Depth



For Determining Accurately the Depth of Gear Teeth

Measuring the bottom diameter of gears provides an accurate check on the cutting operation and insures the duplication of any desired standard.

This tool, therefore, is found especially valuable in the automobile shop for measuring automobile transmission gears where it is impossible to use regular Vernier Calipers on account of the thickness of the jaws.

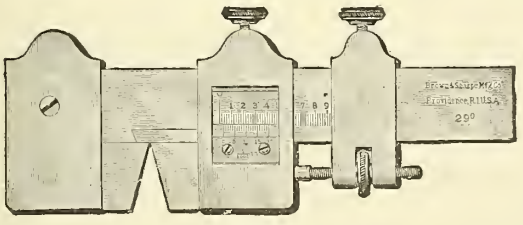
Outside of the measuring jaws this tool is exactly like the Brown & Sharpe 12-inch Vernier Caliper and can be used as such.

Depth of jaws, 1⅞ inches. Width of measuring surface, $\frac{1}{32}$ inch.

An explanation of the Vernier is sent with each Caliper.

No. 573. English or Metric Measure, each.....$20.00

Thread Tool



No. 576

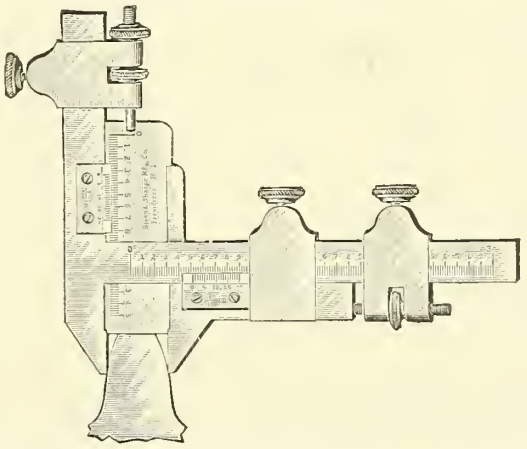
60-Degree Thread Tool Vernier with Morocco Case, each.....$15.00
55-Degree Thread Tool Vernier with Morocco Case, each 15.00
29-Degree Thread Tool Vernier with Morocco Case, each 15.00

To the manufacturer looking for an extremely economical tool for measuring thread tools of different pitches, this tool is recommended. It does away with the large number of gauges formerly kept on hand.

When in use the sliding jaw is set for the width of point of the tool of the required pitch. The thread tool is then ground so that the point bottoms on the hardened steel strip inserted in the blade and the sides rest against the jaws of the tool.

The jaws or measuring surfaces are carefully hardened and ground, the angle being carefully tested for accuracy. The Vernier reads to thousandths of an inch on one side of the tool, and to 50ths of a millimetre on the other side, and the graduations are made with as great care on these tools as on our regular Vernier Calipers. The tool is graduated for one inch only.

Gear Tooth Pitch



This Caliper is for the purpose of accurately measuring the distance from top to pitch line, and thickness at pitch line of gear teeth. By use of this Caliper compensation may be made for variation or error in size of blank.

All pitches from 20 diametral to 1 diametral can be measured.

The sliding jaw moves upon a bar graduated to read, by means of a Vernier, to thousandths of an inch. A tongue, moving at right angles with the jaws, is graduated in the same manner.

Both the sliding jaw and tongue are provided with adjusting screws.

		Each
No. 580	English Measure, 20 to 2 diametral pitch.....	$25.00
No. 580	English Measure, 10 to 1 diametral pitch.....	40.00
No. 581	Metric Measure, graduated to read to $\frac{1}{50}$th millimeter, 1¼ mm. to 12 mm. Module.....	25.00
	2½ mm. to 25 mm. Module.....	40.00

Books on Gears and Gear Cutting

Worm and Spiral Gearing

By F. A. Halsey

Second edition, revised and enlarged. 26 folding plates, 3¾x6, boards, 95 pages. Each $ .50

Contents: *Worm Gearing.* Theory of Worm Efficiency; Examples from Practice; Limiting Speed and Pressure; Step Bearings. *Spiral Gearing.* Spiral Gears Compared with Spur Gears; Speed Ratio; Preliminary Solution; Lengths of Normal Helixes; Final Solution by Changing the Center Distance; Graphical Solution with Changed Center Distance; Final and Graphical Solutions with Unchanged Center Distance; Finding the Pitch of the Tooth Helix; Special and Graphical Solutions for a Helix Angle of 45 Degrees; Special and Graphical Solutions for Gears of Equal Diameters; Selection of the Cutter.

Toothed Gearing

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136 illustrations, 5x7¾, 226 pages. Each $1.25

Contents: Kinematics; The Spur Wheel, Cycloidal Teeth; Annular Wheels, Cyclodial Teeth; The Spur Wheel, Involute Teeth; Obliquity of Action; Pin Gearing; Non-Circular, Lobed, Helical, Bevel and Skew Bevel Wheels; Worm Gearings; Oblique Worm and Wheel; Screw Wheels or Spiral Wheels; Strength of Teeth; Durability Trains of Wheels; the Odontograph.

Toothed Gearing

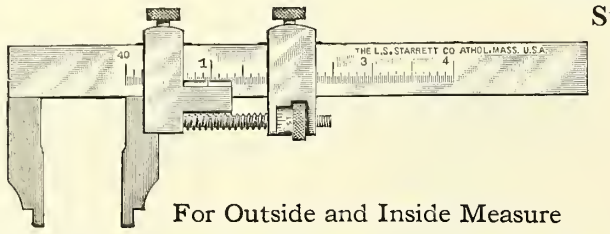
By J. Horner

A practical handbook for offices and workshops. Second edition, 184 illustrations, 5¼x7½, cloth 224 pages. Each $2.25

Contents: The Formation of Tooth Profiles; Proportions of Teeth; Methods of Making Tooth Forms; Involute Teeth; Special Tooth Forms; Bevel Wheels; Screw Gears; Worm Gears; Helical Wheels; Skew Bevels; Variable and Other Gears; Diametrical Pitch; Odontograph; Pattern Gears; Machine Moulded Gears; Machine Cut Gears; Proportions of Wheels.

Micrometer Caliper Squares

Starrett



For Outside and Inside Measure

This instrument enables one to enlarge or decrease work one or more thousandths from that calipered, and fills the bill for both a first-class caliper square and micrometer of large scope and quick adjustment. The jaws are 1⅝ inches long, hardened, and open four inches. One side of the beam is graduated in 64ths and the other in 40ths; and either side may be used as a common caliper square, or, through the micrometer, to show 1,000ths full length, on either inside or outside work. This is done by first setting the indicator mark on the movable jaw to agree with any division nearest the size wanted. Fasten it there, slack binding clasp, and turn the micrometer nut to agree with indicator mark on the clasp; now tighten this, slack movable jaw and turn micrometer nut, counting 1,000ths, adding to or taking from the division shown on beam at the starting point.

An excellent feature of this instrument is the spiral spring between jaw and clasp, which not only takes up all backlash, but limits the pressure against the work to strength of spring. This is instantly felt through released pressure on the nut, and prevents springing the jaws, thus calipering to a nicety.

No. 28, English Measure

	Each		Each
4-inch, with case	$ 8.75,	without,	$8.00
6-inch, with case	11.00,	without,	10.00
9-inch, with case	15.25,	without,	14.00
12-inch, with case	19.50,	without,	18.00

Sent without case unless otherwise ordered

No. 28 M, Metric Measure

Graduated in millimeters on one side and ½ millimeter on the other. The micrometer head is graduated to read in 100ths of a millimeter.

	Each		Each
10 cm., with case	$8.75,	without	$8.00
15 cm., with case	11.00,	without	10.00
20 cm., with case	15.25,	without	14.00
30 cm., with case	19.50,	without	18.00

Sent without case unless otherwise ordered

English and Metric Measure

Graduated in ½ millimeter on one side and 100ths of an inch on the other. The micrometer head is graduated to read in 100ths of a millimeter.

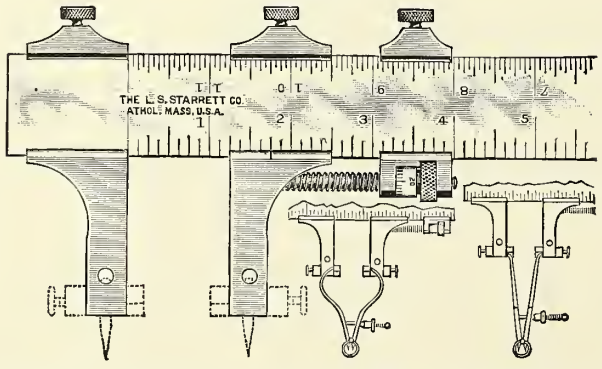
No. 28 M and E

	Each		Each
10 cm., with case	$8.75,	without	$8.00
15 cm., with case	11.00,	without	10.00
20 cm., with case	15.25,	without	14.00
30 cm., with case	19.50,	without	18.00

Sent without case unless otherwise ordered

Micrometer Gauge

Starrett



This gauge is made to fit scales 1¼ inches wide, .085 inch thick, and 12, 18, 24, and 36 inches long, affording longer scope than anything of the kind heretofore made. The head of the gauge carries auxiliary Tram Points. Attachments are also made to slip on and off the ends of the caliper, so that they may be used to set inside or outside calipers for making close or drive fits. These attachments are made of the best tool steel, hardened and ground. The inside calipers are set against the inside face of gauge and resting on the seat of the attachments, which keep them in perfect line. The outside calipers are set against an extended seat of the attachment in line with the inside faces of the gauge, so that both inside and outside calipers may be set to exactly agree with each other.

For measuring distances, the gauge may not only be set by the graduated scale but varied by the micrometer adjusting nut to read additional thousandths. The scale and all necessary working parts are hardened, making a first-class tool in every respect.

No. 24, English Measure

	Each
12-inch	$11.00
18-inch	12.50
24-inch	14.00
36-inch	20.00
48-inch	26.00

No. 24 M, Metric Measure

The same as No. 24, except that the scales are graduated in millimeters and ½ millimeter and the nut to hundredths of a millimeter.

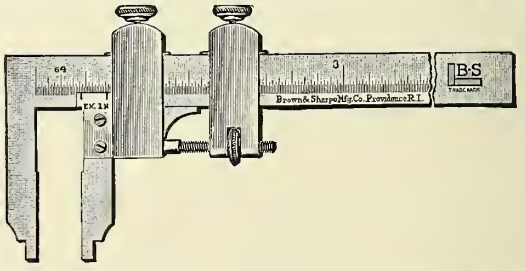
	Each
30 cm	$11.00
50 cm	12.50
60 cm	14.00
90 cm	20.00

Caliper Squares

Brown & Sharpe

Convenient for a large class of work where extreme accuracy is not required and also valuable for use in duplicating work when the number of pieces will not warrant the expense of fixed gauges.

The adjusting screw enables the sliding head to be more accurately set to the graduations than would be possible without its use.



The 4-inch, 6-inch and 9-inch Caliper Squares take inside as well as outside measurements. The 6-inch and 9-inch Squares have hardened jaws. Sent with adjusting screw unless otherwise ordered.

English Measure

Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Without Adjusting Screw, Each	With Adjusting Screw, Each
560	2	¾	..	$2.25	$3.50
560	4	1	..	....	6.00
560	4	1½	¼	3.50	4.50
560	6	2	¼	5.50	7.50
560	9	3¼	⅜	9.00	11.00

Graduated on one side to 64ths, on the other to 100ths of an inch

Metric Measure

Number	Size MM.	Length of Jaws MM.	Width of Jaws Closed MM.	Without Adjusting Screw, Each	With Adjusting Screw, Each
561	50	19	..	$2.25	$3.50
561	100	38	6	3.50	4.50
561	150	50	6	5.50	7.50
561	250	80	10	9.00	11.00

Graduated on one side to ½ millimeter, on the other to 1 millimeter

English and Metric Measure

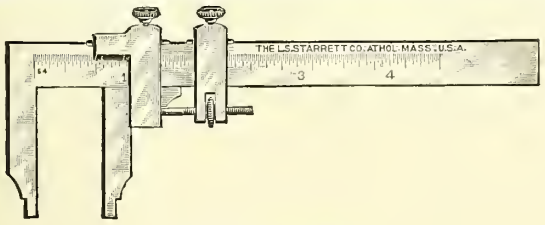
Number	Size Inches	Length of Jaws Inches	Width of Jaws Closed Inch	Without Adjusting Screw, Each	With Adjusting Screw, Each
562	2	¾	..	$2.25	$3.50
562	4	1½	¼	3.50	4.50
562	6	2	¼	5.50	7.50
562	9	3¼	⅜	9.00	11.00

Graduated on one side to ½ millimeter, on the other to 100ths of an inch

Caliper Squares

Starrett

These Caliper Squares are convenient for a large class of work where extreme accuracy is not required and are also valuable for use in duplicating work when the number of pieces will not warrant the expense of fixed gauges.
The adjusting screw enables the sliding head to be more accurately set to the graduations than would be possible without its use.
English measure with adjusting screw and without case always supplied unless otherwise specified.

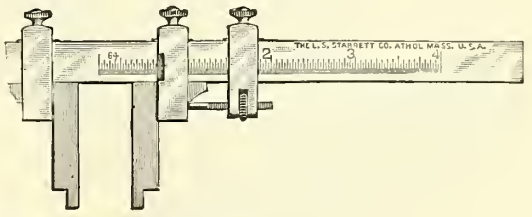


No. 426 English

The beam is nicely graduated on one side in 64ths and on the other in 100ths of an inch. This Caliper Square is designed both for inside and outside measurements. It is made with firm and adjustable jaw.

A 3-inch, with adjusting screw....$3.75 D without.....$3.00
B 4-inch, with adjusting screw.... 4.50 E without..... 3.50
C 6-inch, with adjusting screw.... 7.50 F without..... 5.50
With hardened jaws, extra..... 1.50
Leatherette case, extra..... .75

Sent with adjusting screw and without case unless otherwise ordered.



For both outside and inside measure

No. 25 English

Size Inches	With Adjusting Screw No.	Each	Without Adjusting Screw No.	Each
3	25A	$3.50	25D	$3.00
4	25B	4.00	25E	3.50
6	25C	5.50	25F	5.00

Graduated in 64ths on one side and 100ths on the other.
With hardened jaws, extra. $1.50 In leatherette case, extra.... $ .75

No. 426 M Metric

Same as No. 426 only with beam graduated on one side in ½ millimeters and on the other in millimeters.

A 10 cm., with adjusting screw....$4.50 C without.....$3.50
B 15 cm., with adjusting screw.... 7.50 D without..... 5.50
With hardened jaws, extra..... 1.50
In leather case, extra ..... .75

No. 25 M Metric

Size CM	With Adjusting Screw No.	Each	Without Adjusting Screw No.	Each
10	25MA	$4.00	25MC	$3.50
15	25MB	5.50	25MD	5.00

Graduated in millimeters on one side and ½ millimeters on the other.
With hardened jaws, extra. $1.50 In leatherette case, extra.... $ .75

No. 426 M & E Metric and English

Same as No. 426, except that the beam is graduated on one side in ½ millimeters and on the other in one-hundredths of an inch.

A 4-inch, with adjusting screw....$4.50 C without.....$3.50
B 6-inch, with adjusting screw.... 7.50 D without..... 5.50
With hardened jaws, extra..... 1.50
In leather case, extra ..... .75

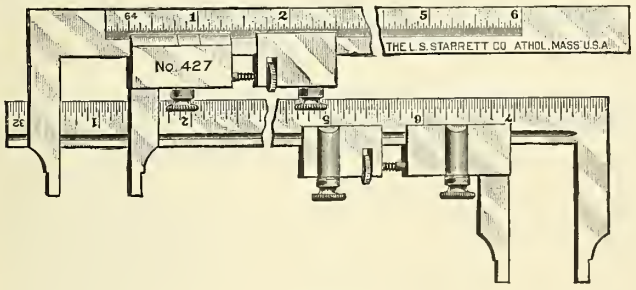
No. 25 M & E English and Metric

Size Inches	With Adjusting Screw No.	Each	Without Adjusting Screw No.	Each
4	25MEA	$4.00	25MEC	$3.50
6	25MEB	5.50	25MED	5.00

Graduated in ½ millimeters on one side and 64ths inch on the other.
With hardened jaws, extra. $1.50 In leatherette case, extra.... $ .75

Nos. 427 and 428

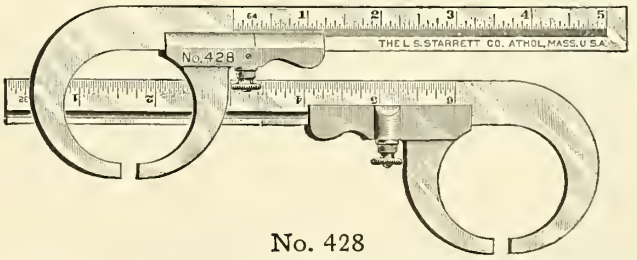
Nos. 427 and 428 are made both plain and adjustable, the front graduated to read in sixty-fourths, and the reverse side graduated whole lengths in thirty-seconds.
As shown by the cuts, the graduations on one side are brought down to the edge of the tool with nothing to interfere with applying the graduated edge close to the article to be measured.



No. 427

4-inch plain, whole length 6 inches..... $6.50 In leather case..$7.50
6-inch plain, whole length 8 inches..... 8.50 In leather case.. 9.75
4-inch adjustable, whole length 7 inches.. 8.00 In leather case.. 9.00
6-inch adjustable, whole length 9 inches..10.00 In leather case..11.50

No. 427 M In Metric sizes, 100 mm. and 150 mm. graduated in half millimeters on one side and millimeters on the other. Prices same as for No. 427.



No. 428

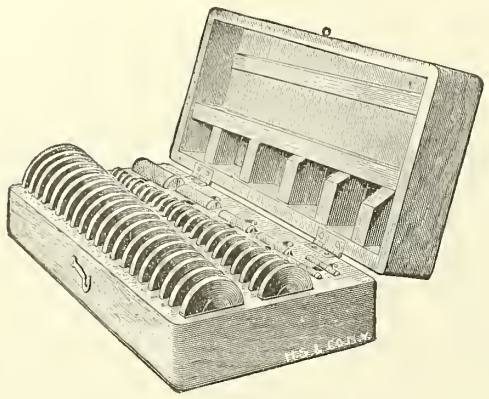
This tool is especially desirable for taking measurements around shafts, etc., that heretofore has been done with an outside transfer caliper. It is also suitable for measuring pulleys and is so shaped that it can be used in many difficult positions, such as measuring over flanges, etc.

4-inch plain, whole length $7\frac{9}{16}$ inches..... $6.50 In leather case $7.50
6-inch plain, whole length $9\frac{9}{16}$ inches..... 8.50 In leather case 9.75
4-inch adjustable, whole length $8\frac{3}{16}$ inches 8.00 In leather case 9.00
6-inch adjustable, whole length $10\frac{3}{16}$ inches 10.00 In leather case 11.50

No. 428 M In Metric sizes, 100 mm. and 150 mm. graduated in half millimeters on one side and millimeters on the other. Prices same as for No. 428.

Standard Reference Discs

Brown & Sharpe



When a Gauge or Caliper has been long in use, the question arises whether constant use has not impaired its accuracy.

The Standard Reference Discs are for reference sizes in shop practice, such as testing measuring tools, setting calipers, etc. They are used generally without handles. With handles, however, they may be used in place of Standard Cylindrical Gauges, but are not recommended for constant use as substitutes for them; being designed to serve principally as reference, not as working Gauges. These Discs are hardened, ground and accurately lapped to size; the width of the measuring surfaces is suitably proportioned to the size of the Disc. They are furnished singly of any desired size, but are usually furnished in sets, consisting of 45 Discs from ¼ inch to 3 inches, varying by 16ths, including 6 handles. Each complete set is neatly arranged in a substantial case.

Metric Discs are also supplied, in sizes from 6 mm. to 50 mm., varying by 2 mm. and 55 mm. to 100 mm., varying by 5 mm.

Special sizes made to order.

Set..... $50.00

No. 657 English

Size Inches	Each	Size Inches	Each	Size Inches	Each
*1/4	$1.50	1 3/16	$1.10	2 1/8	$1.65
*5/16	1.50	1 1/4	1.10	2 3/16	1.65
3/8	90	1 5/16	1.25	2 1/4	1.65
7/16	90	1 3/8	1.25	2 5/16	1.80
1/2	1.00	1 7/16	1.25	2 3/8	1.80
9/16	1.00	1 1/2	1.25	2 7/16	1.80
5/8	1.00	1 9/16	1.40	2 1/2	1.80
11/16	1.00	1 5/8	1.40	2 9/16	1.95
3/4	1.05	1 11/16	1.40	2 5/8	1.95
13/16	1.05	1 3/4	1.40	2 11/16	1.95
7/8	1.05	1 13/16	1.55	2 3/4	2.10
15/16	1.05	1 7/8	1.55	2 13/16	2.10
1	1.10	1 15/16	1.55	2 7/8	2.25
1 1/16	1.10	2	1.55	2 15/16	2.25
1 1/8	1.10	2 1/16	1.65	3	2.25

No. 658 Metric

Size MM.	Each	Size MM.	Each	Size MM.	Each
*6	$1.50	28	$1.10	50	$1.55
*8	1.50	30	1.10	55	1.65
10	.90	32	1.10	60	1.80
12	1.00	34	1.25	65	1.95
14	1.00	36	1.25	70	2.10
16	1.00	38	1.25	75	2.25
18	1.00	40	1.40	80	2.50
20	1.05	42	1.40	85	2.50
22	1.05	44	1.40	90	2.50
24	1.05	46	1.55	95	2.75
26	1.10	48	1.55	100	2.75

*These sizes are furnished with handles

Handles

For 3/8 to 9/16-inch, or 10 to 14 mm. Discs..... $ .65
For 5/8 to 1 1/16 inches, or 16 to 26 mm. Discs..... .75
For 1 1/8 to 1 3/4 inches, or 28 to 44 mm. Discs..... .80
For 1 13/16 to 3 inches, or 46 to 75 mm. Discs..... .90
For 80 mm. to 100 mm. Discs..... .90

Standard End Measuring Rods

Brown & Sharpe



With Spherical Ends

The Standard End Measuring Rods are made of steel hardened on the ends and accurate y ground, so that the ends are sections of true spheres having diameters equal to those of the length of the rods. These Rods can be used for measuring rings, cylinders, etc., setting calipers, comparing gauges or work of like character and are especially useful for measuring parallel surfaces.

The Rods from 3 inches to 6 inches are ¾ inch in diameter and larger than 6 inches ½ inch in diameter.

No. 655 English

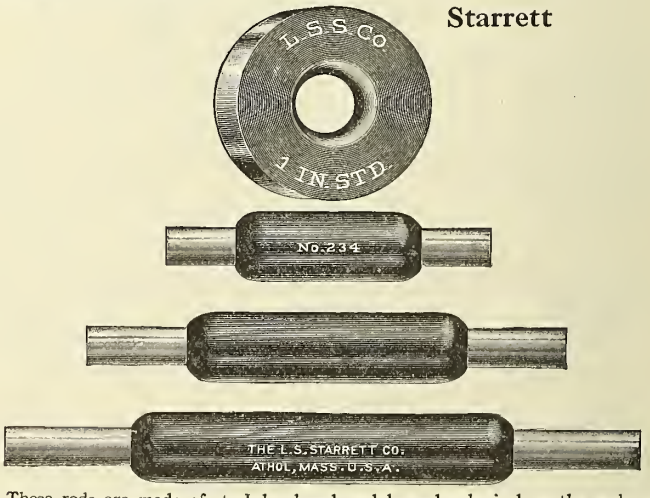
Length Inches	Each	Length Inches	Each
3	$1.40	10	$2.80
4	1.60	11	3.00
5	1.80	12	3.20
6	2.00	13	3.40
7	2.20	14	3.60
8	2.40	15	3.80
9	2.60	16	4.00

No. 656 Metric

Length MM.	Each	Length MM.	Each
75	$1.40	250	$2.80
100	1.60	275	3.00
125	1.80	300	3.20
150	2.00	325	3.40
175	2.20	350	3.60
200	2.40	375	3.80
225	2.60	400	4.00

All intermediate sizes furnished at the price of the size next larger given in the list.

Starrett



These rods are made of steel, hardened and lapped spherical on the ends with a radius of one-half the length of the rod. The handles are of rubber, two-thirds the length of the rod, and guard against any expansion due to change in temperature when held in the hands, thereby maintaining their accuracy under adverse conditions. The one inch and 25 mm. are in the form of a round disc, as shown in cut.

2 inches to 6 inches are ¼ inch diameter with handles 7/16-inch diameter.
6 inches to 12 inches are ⅜ inch diameter with handles ⅝-inch diameter.

English Measure No. 234

1 inch Disc....$1.00	5 inch.....$1.80	9 inch.....$2.60
2 inch Rod.... 1.25	6 inch..... 2.00	10 inch..... 2.80
3 inch..... 1.40	7 inch..... 2.20	11 inch..... 3.00
4 inch..... 1.60	8 inch..... 2.40	12 inch..... 3.20

Metric Measure No. 234 M

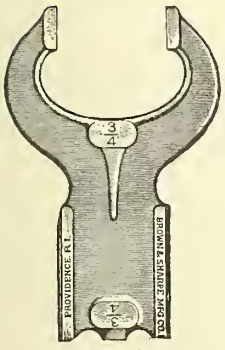
25 mm. Disc.$1.00	125 mm.....$1.80	225 mm.....$2.60
50 mm. Rod.. 1.25	150 mm..... 2.00	250 mm..... 2.80
75 mm..... 1.40	175 mm..... 2.20	275 mm..... 3.00
100 mm..... 1.60	200 mm..... 2.40	300 mm..... 3.20

Standard Caliper Gauges

Brown & Sharpe

Carefully hardened and ground and accurately lapped to size. By their use mistakes in the setting of calipers and variations in measurements by different workmen will be in a great measure avoided. Their form gives lightness and strength, making them preferable to plugs and rings for frequent use. The measuring surfaces are amply large to insure accurate measurements and the maintenance of Gauge sizes. As furnishing convenient and reliable standard sizes for every day use in the workshop, they are of great advantage, and their use will contribute to uniformity in the production of the working parts of machinery.

External



Internal

External and Internal—Both Ends Finished

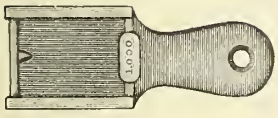
No. 665 English

Size Inches	Each	Size Inches	Each
1/4	$2.50	1 5/8	$3.30
5/16	2.50	1 11/16	3.40
3/8	2.50	1 3/4	3.50
7/16	2.50	1 13/16	3.60
1/2	2.50	1 7/8	3.70
9/16	2.50	1 15/16	3.80
5/8	2.50	2	3.90
11/16	2.50	2 1/16	3.95
3/4	2.50	2 1/8	4.00
13/16	2.55	2 3/16	4.10
7/8	2.60	2 1/4	4.20
15/16	2.65	2 5/16	4.30
1	2.70	2 3/8	4.40
1 1/16	2.75	2 7/16	4.50
1 1/8	2.80	2 1/2	4.60
1 3/16	2.85	2 9/16	5.00
1 1/4	2.90	2 5/8	5.25
1 5/16	2.95	2 11/16	5.50
1 3/8	3.00	2 3/4	5.50
1 7/16	3.05	2 13/16	6.00
1 1/2	3.10	2 7/8	6.00
1 9/16	3.20	2 15/16	6.00

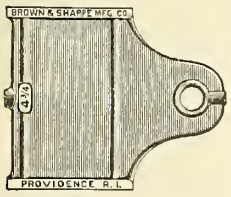
No. 666 Metric

Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
5	$2.50	23	$2.65	41	$3.30	59	$4.30
6	2.50	24	2.65	42	3.40	60	4.40
7	2.50	25	2.70	43	3.40	61	4.50
8	2.50	26	2.75	44	3.50	62	4.50
9	2.50	27	2.75	45	3.50	63	4.60
10	2.50	28	2.80	46	3.60	64	4.60
11	2.50	29	2.85	47	3.70	65	5.00
12	2.50	30	2.85	48	3.70	66	5.25
13	2.50	31	2.90	49	3.80	67	5.25
14	2.50	32	2.90	50	3.90	68	5.50
15	2.50	33	2.95	51	3.90	69	5.50
16	2.50	34	3.00	52	3.95	70	5.50
17	2.50	35	3.00	53	3.95	71	6.00
18	2.50	36	3.05	54	4.00	72	6.00
19	2.50	37	3.05	55	4.10	73	6.00
20	2.55	38	3.10	56	4.10	74	6.00
21	2.55	39	3.20	57	4.20	75	6.00
22	2.60	40	3.20	58	4.30		

Internal



Style up to and including 3 inches or 75 mm.



Style over 3 inches or 75 mm.

No. 667 English

Size Inches	Each	Size Inches	Each
1/4	$1.40	1 7/8	$2.10
5/16	1.40	1 15/16	2.10
3/8	1.40	2	2.20
7/16	1.40	2 1/16	2.20
1/2	1.40	2 1/8	2.20
9/16	1.40	2 3/16	2.30
5/8	1.40	2 1/4	2.30
11/16	1.40	2 5/16	2.30
3/4	1.45	2 3/8	2.40
13/16	1.45	2 7/16	2.40
7/8	1.45	2 1/2	2.50
15/16	1.45	2 9/16	2.80
1	1.50	2 5/8	2.90
1 1/16	1.50	2 11/16	3.00
1 1/8	1.55	2 3/4	3.00
1 3/16	1.55	2 13/16	3.30
1 1/4	1.60	2 7/8	3.30
1 5/16	1.60	2 15/16	3.30
1 3/8	1.65	3 to 3 1/4	3.30
1 7/16	1.65	3 5/16 to 3 1/2	3.50
1 1/2	1.70	3 9/16 to 3 3/4	3.75
1 9/16	1.75	3 13/16 to 4	4.00
1 5/8	1.80	4 1/16 to 5	4.25
1 11/16	1.90	5 1/16 to 6	4.50
1 3/4	2.00	6 1/16 to 7	4.75
1 13/16	2.00	7 1/16 to 8	5.00

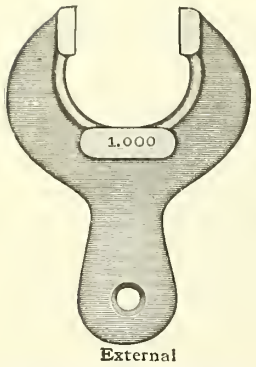
No. 668 Metric

Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
5	$1.40	29	$1.55	53	$2.20	77	$3.30	105	$4.25
6	1.40	30	1.55	54	2.30	78	3.30	110	4.25
7	1.40	31	1.60	55	2.30	79	3.30	115	4.25
8	1.40	32	1.60	56	2.30	80	3.30	120	4.25
9	1.40	33	1.60	57	2.30	81	3.30	125	4.25
10	1.40	34	1.65	58	2.30	82	3.30	130	4.50
11	1.40	35	1.65	59	2.40	83	3.50	135	4.50
12	1.40	36	1.65	60	2.40	84	3.50	140	4.50
13	1.40	37	1.70	61	2.40	85	3.50	145	4.50
14	1.40	38	1.70	62	2.50	86	3.50	150	4.50
15	1.40	39	1.75	63	2.50	87	3.50	155	4.75
16	1.40	40	1.80	64	2.80	88	3.50	160	4.75
17	1.40	41	1.80	65	2.80	89	3.75	165	4.75
18	1.45	42	1.90	66	2.90	90	3.75	170	4.75
19	1.45	43	2.00	67	3.00	91	3.75	175	4.75
20	1.45	44	2.00	68	3.00	92	3.75	180	5.00
21	1.45	45	2.00	69	3.00	93	3.75	185	5.00
22	1.45	46	2.00	70	3.30	94	3.75	190	5.00
23	1.45	47	2.10	71	3.30	95	3.75	195	5.00
24	1.50	48	2.10	72	3.30	96	4.00	200	5.00
25	1.50	49	2.10	73	3.30	97	4.00		
26	1.50	50	2.20	74	3.30	98	4.00		
27	1.55	51	2.20	75	3.30	99	4.00		
28	1.55	52	2.20	76	3.30	100	4.00		

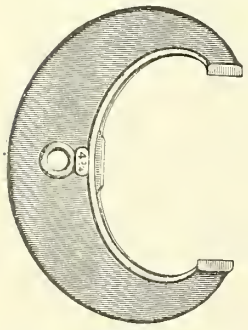
Standard Caliper Gauges

Brown & Sharpe

(See preceding page for detailed description)



External
Style up to and including 3 inches or 75 mm.



External
Style over 3 inches or 75 mm.

External

No. 669 English

Size Inches	Each	Size Inches	Each
1/4	$1.40	2 1/16	$2.20
5/16	1.40	2 1/8	2.20
3/8	1.40	2 3/16	2.30
7/16	1.40	2 1/4	2.30
1/2	1.40	2 5/16	2.30
9/16	1.40	2 3/8	2.40
5/8	1.40	2 7/16	2.40
11/16	1.40	2 1/2	2.50
3/4	1.45	2 9/16	2.80
13/16	1.45	2 5/8	2.90
7/8	1.45	2 11/16	3.00
15/16	1.45	2 3/4	3.00
1	1.50	2 13/16	3.30
1 1/16	1.50	2 7/8	3.30
1 1/8	1.55	2 15/16	3.30
1 3/16	1.55	3 to 3 1/4	3.50
1 1/4	1.60	3 5/16 to 3 1/2	3.30
1 5/16	1.60	3 9/16 to 3 3/4	3.50
1 3/8	1.65	3 13/16 to 4	3.75
1 7/16	1.65	4 1/16 to 5	4.00
1 1/2	1.70	5 1/16 to 6	4.25
1 9/16	1.75	6 1/16 to 7	4.50
1 5/8	1.80	7 1/16 to 8	4.75
1 11/16	1.90	8 1/16 to 9	5.00
1 3/4	2.00	9 1/16 to 10	5.65
1 13/16	2.00	10 1/16 to 11	6.25
1 7/8	2.10	11 1/16 to 12	7.00
1 15/16	2.10	.....	8.00
2	2.20		

No. 670 Metric

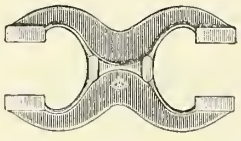
Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
5	$1.40	33	$1.60	61	$2.40	89	$3.75	185	$5.00
6	1.40	34	1.65	62	2.50	90	3.75	190	5.00
7	1.40	35	1.65	63	2.50	91	3.75	195	5.00
8	1.40	36	1.65	64	2.80	92	3.75	200	5.00
9	1.40	37	1.70	65	2.80	93	3.75	205	5.65
10	1.40	38	1.70	66	2.90	94	3.75	210	5.65
11	1.40	39	1.75	67	3.00	95	3.75	215	5.65
12	1.40	40	1.80	68	3.00	96	4.00	220	5.65
13	1.40	41	1.80	69	3.00	97	4.00	225	5.65
14	1.40	42	1.90	70	3.30	98	4.00	230	6.25
15	1.40	43	2.00	71	3.30	99	4.00	235	6.25
16	1.40	44	2.00	72	3.30	100	4.00	240	6.25
17	1.40	45	2.00	73	3.30	105	4.25	245	6.25
18	1.45	46	2.00	74	3.30	110	4.25	250	6.25
19	1.45	47	2.10	75	3.30	115	4.25	255	7.00
20	1.45	48	2.10	76	3.30	120	4.25	260	7.00
21	1.45	49	2.10	77	3.30	125	4.25	265	7.00
22	1.45	50	2.20	78	3.30	130	4.50	270	7.00
23	1.45	51	2.20	79	3.30	135	4.50	275	7.00
24	1.50	52	2.20	80	3.30	140	4.50	280	8.00
25	1.50	53	2.20	81	3.30	145	4.50	285	8.00
26	1.50	54	2.30	82	3.30	150	4.50	290	8.00
27	1.55	55	2.30	83	3.50	155	4.75	295	8.00
28	1.55	56	2.30	84	3.50	160	4.75	300	8.00
29	1.55	57	2.30	85	3.50	165	4.75		
30	1.55	58	2.30	86	3.50	170	4.75		
31	1.60	59	2.40	87	3.50	175	4.75		
32	1.60	60	2.40	88	3.50	180	5.00		

Unfinished Caliper Gauges

Vulcan

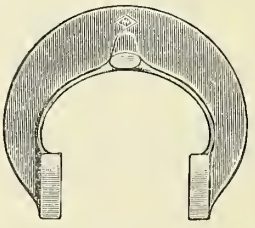
These Gauges are drop-forged from a mild steel, suitable for hardening. They furnish an inexpensive basis for all shop-made gauges. The lettering panels and sides of jaws are on the same plane, and may be finished by a single grinding or polishing operation.

External—Double End



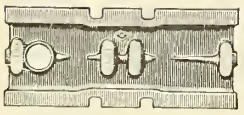
Number	Capacity	Extreme Dimensions Length Inches	Extreme Dimensions Width Inches	Dimensions of Measuring Pad Length Inches	Dimensions of Measuring Pad Width Inch	Unfinished Each
2	1/4 to 3/8	2 1/8	15/16	15/32	3/16	$ .20
4	3/8 to 1/2	2 1/2	1 1/8	1/2	3/16	.22
6	1/2 to 3/4	3 1/8	1 15/16	19/32	1/4	.25
8	3/4 to 1	3 5/8	1 15/16	21/32	9/32	.30
10	1 to 1 1/4	4 3/8	2 3/8	3/4	9/32	.39
12	1 1/4 to 1 1/2	5	2 3/4	27/32	5/16	.53
14	1 1/2 to 1 3/4	5 9/16	3 1/16	15/16	5/16	.72
16	1 3/4 to 2	6 5/16	3 1/2	1	5/16	.96
18	2 to 2 1/2	7 1/4	4 5/16	1 5/32	15/32	1.25
20	2 1/2 to 3	8 9/16	5 1/8	1 11/32	1/2	1.60

External—Single End



Number	Capacity	Extreme Dimensions Length Inches	Extreme Dimensions Width Inches	Dimensions of Measuring Pad Length Inches	Dimensions of Measuring Pad Width Inch	Unfinished Each
22	3 to 3 1/2	5 1/8	5 3/4	1 1/2	1/2	$1.00
24	3 1/2 to 4	5 11/16	6 1/2	1 11/16	17/32	1.20
26	4 to 4 1/2	6 1/4	7 3/16	1 13/16	17/32	1.45
28	4 1/2 to 5	6 25/32	7 25/32	2	9/16	1.75
30	5 to 5 1/2	7 7/16	8 19/32	2 1/8	9/16	2.10
32	5 1/2 to 6	7 15/16	9 3/16	2 9/32	9/16	2.50

Internal—Double End



Number	Capacity	Extreme Dimensions Length Inches	Extreme Dimensions Width Inches	Dimensions of Measuring Pad Length Inches	Dimensions of Measuring Pad Width Inch	Length Center Pad Inch	Unfinished Each
110	1 to 1 1/4	3	1 11/32	1	9/32	5/8	$ .39
112	1 1/4 to 1 1/2	3 1/2	1 5/8	1 1/4	5/16	5/8	.53
114	1 1/2 to 1 3/4	4 1/4	1 27/32	1 1/2	5/16	3/4	.72
116	1 3/4 to 2	4 7/8	2 1/8	1 3/4	5/16	13/16	.96
118	2 to 2 1/2	5 3/8	2 19/32	1 15/16	15/32	7/8	1.25
120	2 1/2 to 3	6 3/8	3 1/8	2 5/16	1/2	1	1.60

Standard Cylindrical Gauges

Brown & Sharpe

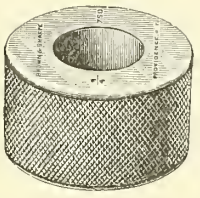
These gauges have exceptionally large measuring surfaces and are recommended for the most accurate work. Each gauge is plainly stamped with its size, both in decimals and common fractions; and a rigid inspection is exacted before gauges are prepared for shipment.

The Internal Gauges or "Plugs" are convenient for ordinary machine work, as calipers can be set and dimensions transferred more accurately than from a rule, and from measuring work internally, they can be employed directly without the use of calipers.

The large sizes are unusually light in proportion to their size. They consist of a hardened steel ring on an aluminum center, and while this construction makes the gauges very light and convenient, it does not in any way impair their accuracy.

The External Gauges or "Rings" can be used direct for measuring shafts, spindles and work of a similar class.

External



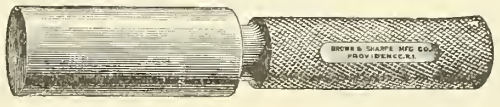
No. 662 English

Size Inches	Each	Size Inches	Each	Size Inches	Each
1/8	$4.45	1 1/8	$6.75	2 1/8	$11.25
3/16	4.45	1 3/16	7.00	2 3/16	11.50
1/4	4.45	1 1/4	7.25	2 1/4	11.75
5/16	4.60	1 5/16	7.50	2 5/16	12.00
3/8	4.75	1 3/8	7.75	2 3/8	12.25
7/16	4.90	1 7/16	8.00	2 7/16	12.50
1/2	5.05	1 1/2	8.25	2 1/2	12.75
9/16	5.20	1 9/16	8.50	2 9/16	13.00
5/8	5.35	1 5/8	8.75	2 5/8	13.25
11/16	5.50	1 11/16	9.00	2 11/16	13.50
3/4	5.65	1 3/4	9.25	2 3/4	13.75
13/16	5.80	1 13/16	9.50	2 13/16	14.00
7/8	5.95	1 7/8	9.75	2 7/8	14.25
15/16	6.10	1 15/16	10.00	2 15/16	14.50
1	6.25	2	10.25	3	14.75
1 1/16	6.50	2 1/16	11.00		

No. 663 Metric

Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM	Each
5	$4.45	23	$6.10	41	$8.75	59	$12.00
6	4.45	24	6.10	42	9.00	60	12.25
7	4.60	25	6.25	43	9.00	61	12.50
8	4.60	26	6.50	44	9.25	62	12.50
9	4.75	27	6.50	45	9.25	63	12.75
10	4.75	28	6.75	46	9.50	64	12.75
11	4.90	29	6.75	47	9.75	65	13.00
12	5.05	30	7.00	48	9.75	66	13.25
13	5.05	31	7.25	49	10.00	67	13.25
14	5.20	32	7.25	50	10.25	68	13.50
15	5.35	33	7.50	51	10.25	69	13.75
16	5.35	34	7.75	52	11.00	70	13.75
17	5.50	35	7.75	53	11.00	71	14.00
18	5.50	36	8.00	54	11.25	72	14.00
19	5.65	37	8.00	55	11.50	73	14.25
20	5.80	38	8.25	56	11.50	74	14.50
21	5.80	39	8.50	57	11.75	75	14.50
22	5.95	40	8.50	58	12.00		

Internal



No. 660 English

Size Inches	Each	Size Inches	Each	Size Inches	Each
1/8	$3.00	1 1/8	$4.30	2 1/8	$7.15
3/16	3.00	1 3/16	4.40	2 3/16	7.30
1/4	3.00	1 1/4	4.50	2 1/4	7.45
5/16	3.00	1 5/16	4.65	2 5/16	7.60
3/8	3.10	1 3/8	4.80	2 3/8	7.85
7/16	3.20	1 7/16	4.95	2 7/16	8.10
1/2	3.30	1 1/2	5.10	2 1/2	8.25
9/16	3.40	1 9/16	5.25	2 9/16	8.40
5/8	3.50	1 5/8	5.40	2 5/8	8.55
11/16	3.60	1 11/16	5.55	2 11/16	8.70
3/4	3.70	1 3/4	5.70	2 3/4	8.85
13/16	3.80	1 13/16	5.85	2 13/16	9.00
7/8	3.90	1 7/8	6.00	2 7/8	9.15
15/16	4.00	1 15/16	6.15	2 15/16	9.30
1	4.10	2	6.30	3	9.45
1 1/16	4.20	2 1/16	7.00		

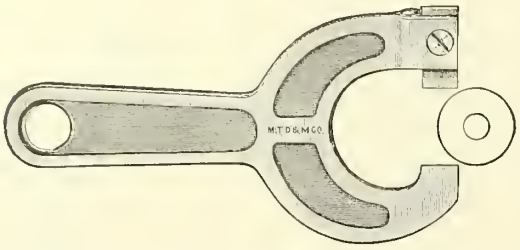
No. 661 Metric

Size MM.	Each	Size MM.	Each	Size MM.	Each	Size MM.	Each
5	$3.00	23	$4.00	41	$5.40	59	$7.60
6	3.00	24	4.00	42	5.55	60	7.85
7	3.00	25	4.10	43	5.55	61	8.10
8	3.00	26	4.20	44	5.70	62	8.10
9	3.10	27	4.20	45	5.70	63	8.25
10	3.10	28	4.30	46	5.85	64	8.25
11	3.20	29	4.30	47	6.00	65	8.40
12	3.30	30	4.40	48	6.00	66	8.55
13	3.30	31	4.50	49	6.15	67	8.55
14	3.40	32	4.50	50	6.30	68	8.70
15	3.50	33	4.65	51	6.30	69	8.85
16	3.50	34	4.80	52	7.00	70	8.85
17	3.60	35	4.80	53	7.00	71	9.00
18	3.60	36	4.95	54	7.15	72	9.00
19	3.70	37	4.95	55	7.30	73	9.15
20	3.80	38	5.10	56	7.30	74	9.30
21	3.80	39	5.25	57	7.45	75	9.30
22	3.90	40	5.25	58	7.60		

SEE DISCOUNT SHEET PAGE 269

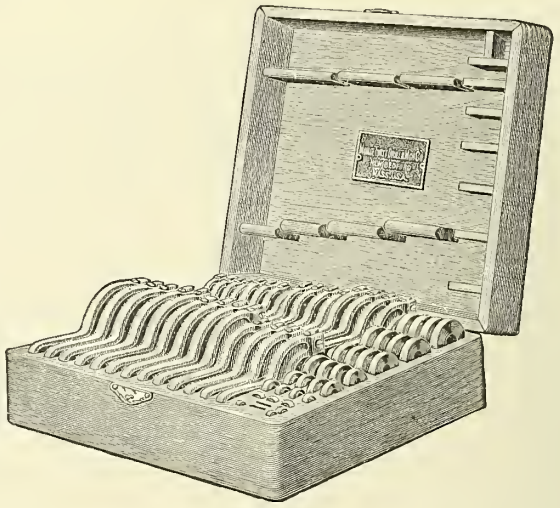
Adjustable Caliper Gauges

Morse No. 128A



These Gauges are hardened, ground and lapped to size, and are fitted with an adjustable jaw. A disk accurately ground and lapped to size is furnished with each Gauge for testing and correcting the same. Sizes 2 to 3 inches have no handles.

Size	Each	Size	Each	Size	Each	Size	Each	Size	Each
1/4	$3.75	13/16	$3.85	1 3/8	$4.50	1 15/16	$5.70	2 1/2	$6.90
5/16	3.75	7/8	3.90	1 7/16	4.60	2	5.85	2 9/16	7.50
3/8	3.75	15/16	4.00	1 1/2	4.65	2 1/16	5.95	2 5/8	7.90
7/16	3.75	1	4.05	1 9/16	4.80	2 1/8	6.00	2 11/16	8.25
1/2	3.75	1 1/16	4.15	1 5/8	4.95	2 3/16	6.15	2 3/4	8.25
9/16	3.75	1 1/8	4.20	1 11/16	5.10	2 1/4	6.30	2 13/16	9.00
5/8	3.75	1 3/16	4.30	1 3/4	5.25	2 5/16	6.45	2 7/8	9.00
11/16	3.75	1 1/4	4.35	1 13/16	5.40	2 3/8	6.60	2 15/16	9.00
3/4	3.75	1 5/16	4.45	1 7/8	5.55	2 7/16	6.75	3	9.75

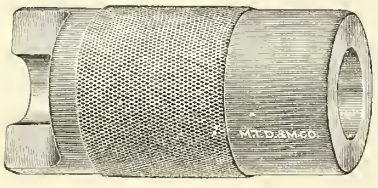


A Set of Adjustable Caliper Gauges in box, sizes from 1/4 inch to 2 inches, inclusive, varying by 16ths.
Price.....$125.00

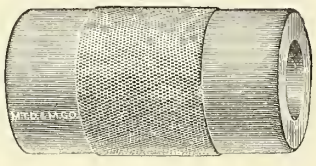
For Set, sizes 1/4 inch to 3 inches, inclusive, by 16ths.
Price..... 245.00

Taper Plug and Ring Cylindrical Gauges

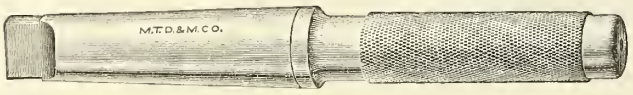
Morse No. 128C



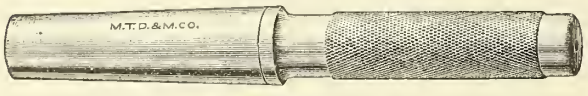
Style A Ring



Style B Ring



Style A Plug



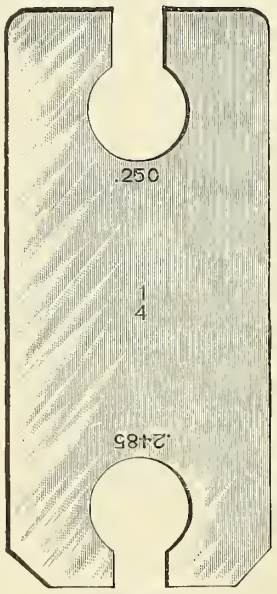
Style B Plug

Number	Plug Gauge Each	Ring Gauge Each	Plug and Ring Both
0	$3.50	$7.00	$10.50
1	3.50	7.00	10.50
2	4.50	9.00	13.50
3	5.50	11.00	16.50
4	7.00	14.00	21.00
5	9.50	17.00	26.50
6	13.00	22.00	35.00
7	40.00	80.00	120.00

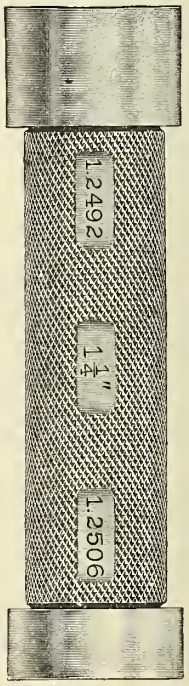
When ordering, give style of Plug or Ring as well as number.
The line on each Plug Gauge denotes the depth of hole.
Gauges for Short Shanks made to order. Prices quoted on application.

Limit Gauges

Brown & Sharpe



External



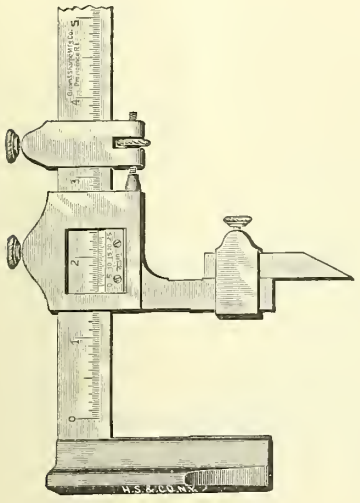
Internal

The advantages derived from the use of Limit Gauges are that the time consumed in testing and gauging is reduced to a minimum and the accurate duplication of parts is insured. The two ends are of different shape, thus furnishing means of identifying the larger end from the smaller without reference to the size stamped on the Gauge.

In addition to their value for finishing sizes they are of great advantage in roughing work for finishing, the same amount of stock being left on each piece, making it much easier to finish them to size.

Prices are quoted on Limit and Special Gauges of all descriptions, when specifications, drawings or samples of work are sent. The dimensions required at each end of the Gauge must be plainly stated in thousandths or fractions of thousandths of an inch.

Vernier Height Gauge



Brown & Sharpe

This Height Gauge is used for obtaining the height of projections from a plane surface or the location of bushing in jigs, etc. The bar is 10 inches long, admits of measurements to 8 inches in height, and is graduated to read by means of a vernier to thousandths of an inch. It reads on one side to outside measurements and on the other to inside measurements. The jaws are approximately 2 inches long and 1 inch wide when closed. The fixed jaw is 1 inch thick, allowing gauge to stand upright, and is rounded on the end for use close to a projection. An extension for the movable jaw is furnished.

Metric Measure. Graduated to read $\frac{1}{50}$ mm. on one side and to $\frac{1}{2}$ mm. on the other.

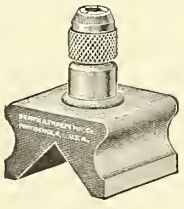
English and Metric Measure. Graduated to read to $\frac{1}{50}$ mm. on one side and to thousandths of an inch on the other. All measurements outside only.

No. 585 In English, Metric or English and Metric Measure, in Morocco Case, each..... $25.00

For explanation of Vernier, see page 262. 18-inch price on application

Height Gauge Attachments

Brown & Sharpe

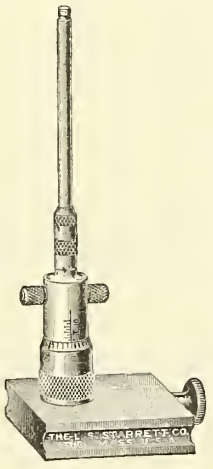


Designed for use in connection with the B. & S. Inside Micrometers Nos. 260 and 261, thus making a reliable Height Gauge.

The measuring rod is inserted upwards through the under side of the base and the clamping fingers; and by turning the knurled nut the rod is held firmly in an upright position. The micrometer is then adjusted and clamped to the upper end of the rod.

The base has a V-shaped groove in the bottom, which adapts the tool for use in cylindrical work.

No. 598, each ..... $ .75



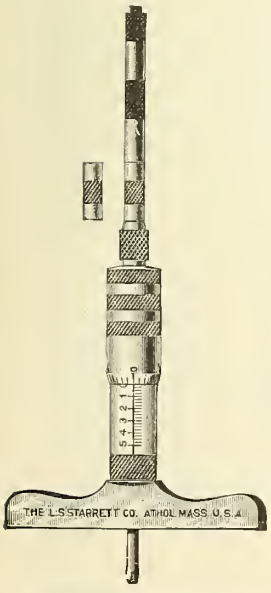
Starrett

This cut shows a steel base for holding Starrett Inside Micrometer No. 124, sets A and B, for use as a height gauge. The anvil end is even with the bottom of the base and the micrometer is held perpendicularly, making a reliable gauge. A slight turn of the knurled screw instantly clamps it to or releases it from the base.

Attachment only..... $1.50

Micrometer Depth Gauges

Starrett



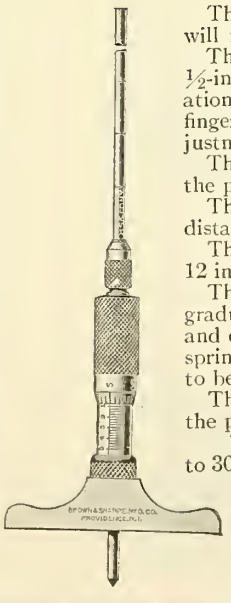
This gauge is designed for measuring the depth of grooves, holes or irregular parts. It has ½-inch movement of the screw, reading in thousandths; and with two ½-inch and one 1-inch standard collars to slip off or on the spindle, 2½ inches, reading in thousandths, can be obtained. The split nut is covered and protected by patent graduated sleeve, which not only protects the nut from dirt, but provides a quick and accurate way of taking up wear and adjusting the micrometer to insure correct reading. The sleeve, being held by a stiff friction, may be rotated by a spanner wrench, accompanying each gauge, so that the zero lines will coincide for correct reading. The head is about $\frac{3}{10}$-inch thick; this and the point of measuring rod are hardened.

	Each
No. 446A 2¼-inch base.....	$4.50
No. 446B 4-inch base.....	5.00

Metric Measure

	Each
No. 446 M-A 2¼-inch base.....	$4.50
No. 446 M-B 4-inch base.....	5.00
Cases for Nos. 446A and 446M-A are, extra	.50
Cases for Nos. 446B and 446M-B are, extra.....	.75

Brown & Sharpe



The 2-inch and 4-inch base Micrometer Depth Gauge will measure all distances to 2½ inches by .001-inch.

The screw in each of these Gauges has a movement of ½-inch. The rod is graduated in ½-inch. The graduations are of such a form and depth that the clamping fingers, at end of gauge, spring in, allowing the ½-inch adjustments of the rod to be quickly and positively made.

The base is about $\frac{7}{16}$-inch thick and, together with the point of the rod, is hardened.

These Depth Gauges are also made to measure all distances to 63 mm. by hundredths of a millimeter.

The 4½-inch base Gauge measures all distances to 12 inches by .001-inch.

The screw has a movement of 1-inch. The rod is graduated in 1-inch. The graduations are of such a form and depth that the clamping fingers at end of gauge spring in, allowing the 1-inch adjustments of the rod to be quickly and positively made.

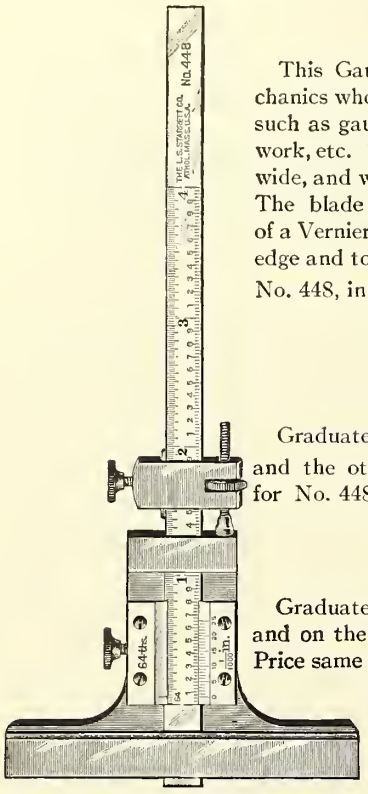
The base is about $\frac{9}{16}$-inch thick and, together with the point of rod, is hardened.

This Gauge is also made to measure all distances to 300 millimeters by hundredths of a millimeter.

No. 605 English or Metric Measure

	Each		Each
2-inch Base.....	$4.50	In Morocco Case	$5.00
4-inch Base.....	5.00	In Morocco Case	5.50
4½-inch Base ..	6.00	In Morocco Case	8.00

Vernier Depth Gauges



Starrett

This Gauge appeals to that class of mechanics whose work requires very close limits, such as gauging the depth of recesses, in jig work, etc. The blade is 6 inches long, $\frac{9}{32}$-inch wide, and will measure to 3½ inches depth. The blade is graduated to read by means of a Vernier to thousandths of an inch on one edge and to 64ths on the other.

No. 448, in leather case.....$10.00

No. 448 M

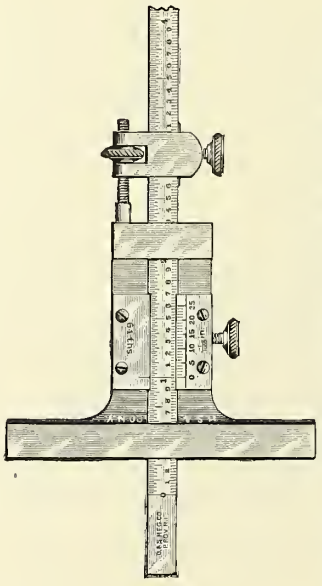
Metric

Graduated to read on one edge in $\frac{1}{50}$ mm. and the other in ½ mm. Price same as for No. 448.

No. 448 M & E

Metric and English

Graduated to read on one edge in $\frac{1}{50}$ mm. and on the other in thousandths of an inch. Price same as for No. 448.



Brown & Sharpe

This Depth Gauge is used in obtaining the depth of holes, recesses in dies, distance from a plane surface to a projection, etc. The blade is 5 inches long, ¼-inch wide, allows of measurements to 3½ inches being made, and is graduated on the front to read, by means of a Vernier, to thousandths of an inch and 64ths of an inch.

This Depth Gauge is also furnished graduated to read to $\frac{1}{50}$th of a mm. on one side and to ½ mm. on the other corner of the same side; or $\frac{1}{50}$th of a mm. on one side, and by means of a Vernier, to $\frac{1}{1000}$th of an inch on the other side.

No. 600

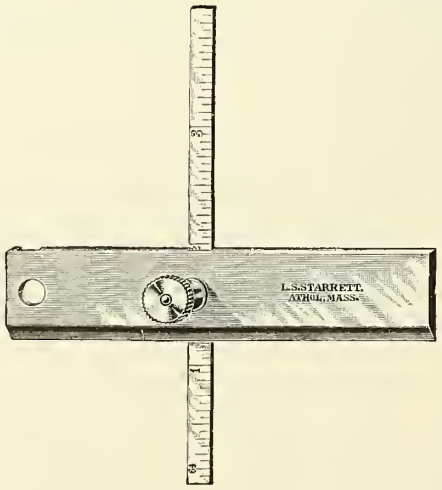
English, Metric, or English and Metric Measure, in Morocco Case.....$10.00

For explanation of Vernier, see page 262

Depth Gauges

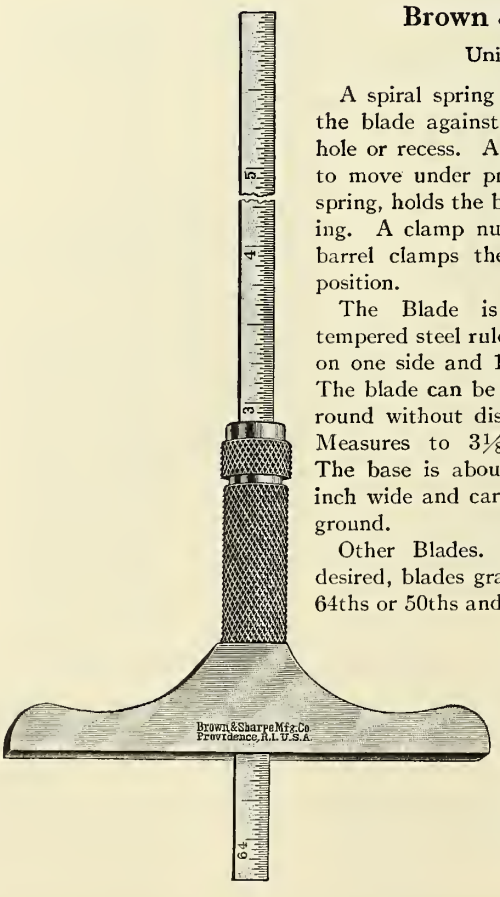
Starrett

Has a 4-inch or 6-inch Scale, $\frac{3}{16}$-inch wide, graduated in either 32ds and 64ths, 50ths and 100ths, or 64ths and 100ths, indicating exact measurements, and may be used separately from the gauge.



	Each
No. 46A with 3½-inch stock and 4-inch scale	$1.25
No. 46B with 3½-inch stock and 6-inch scale	1.50
No. 46C with 6-inch stock and 4-inch scale	1.50
No. 46D with 6-inch stock and 6-inch scale	1.75
No. 46E with 10-inch stock and 6-inch scale	2.25

This Gauge is also made in corresponding metric sizes at above prices.



Brown & Sharpe

Universal

A spiral spring in the barrel forces the blade against the bottom of the hole or recess. A friction clutch, free to move under pressure of the spiral spring, holds the blade without clamping. A clamp nut at the top of the barrel clamps the blade securely in position.

The Blade is a narrow 6-inch tempered steel rule graduated to 64ths on one side and 100ths on the other. The blade can be swiveled completely round without disturbing the setting. Measures to 3⅛ inches in depth. The base is about 3 inches long, $\frac{7}{16}$ inch wide and carefully hardened and ground.

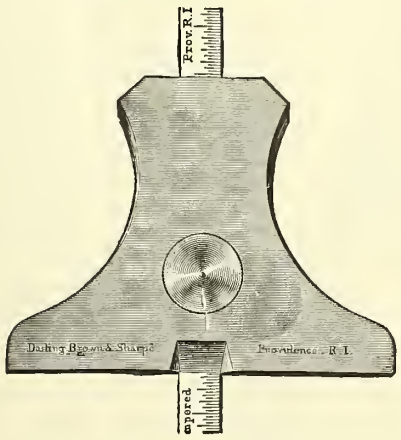
Other Blades. We furnish, when desired, blades graduated to 32ds and 64ths or 50ths and 100ths.

Metric Measure. This Depth Gauge is also furnished to read to 1 millimeter on one side and to ½ millimeter on the other. Measures to 95 millimeters in depth.

No. 610 English or Metric Measure $3.00

Depth Gauges

Brown & Sharpe



6-Inch Rule

The head can be conveniently held. It is made of steel ⅛-inch thick, hardened.

The Blade is a 6-inch narrow tempered steel rule.

The Blade sent with the Gauge is divided into 64ths and 100ths of inches.

This Depth Gauge is also furnished with a blade 15 cm. long, graduated on one corner to ½ mm. and on the other corner to 1 mm.

No. 615, English or Metric Measure, each..... $1.25

Starrett

The head of this Gauge is steel, nicely finished and case-hardened; 2 inches wide across the base, ⅛-inch thick.

The Blade, which is conveniently held in the groove of the head by a knurled lock nut, is a 6-inch narrow spring-tempered rule, and can be used separately from the gauge. Blades graduated in 32nds and 64ths of an inch will be sent unless otherwise ordered, but we can also supply them graduated in 50ths and 100ths or 64ths and 100ths.

No. 237, each $1.25

Metric Measure. Same as above except that blade is graduated in millimeters on one side and ½ millimeters on the other, and is 13 cm. long.

No. 237 M, each..... $1.25



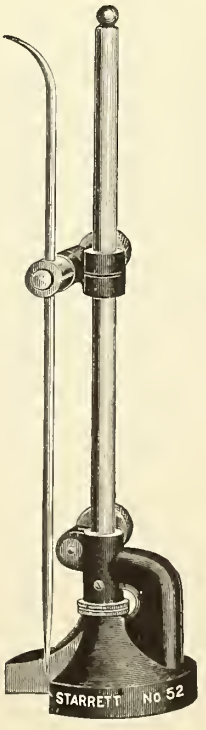
Surface Gauges

Explanatory

The laying out of work often includes the scribing of lines at a given height from some face of the work or the continuation of lines around the several surfaces. A surface gauge has been devised for holding the scriber. This consists of a heavy base and pivoted upright to which is attached a scriber held by a clamp which may be turned through a complete revolution. By resting both the surface gauge and the work upon a plane surface, usually a cast-iron surface plate, it is possible to set the point of the scriber at a given height, either by use of a scale or some other standard, and draw lines at this height on all faces of the work or on any number of pieces when duplicate parts are being made. Thus the height of a standard bearing may be transferred to the faces of any number of castings from which duplicate bearings are to be made.

It is necessary in some cases to prepare the surface of the work so that the line made by the scriber will be sufficiently clean cut to enable the workman to distinguish it quickly. This is done in the case of rough castings by chalking the surface and rubbing in with the finger. In the case of a highly finished surface some other method is necessary. The usual way is to use a solution containing copper sulphide and nitric acid in the proportions of one ounce of copper sulphide, four ounces of water, and a teaspoonful of acid. This solution gives a reddish-brown color against which the lines will show. In cases where the temper of the metal is not to be considered, heating it to a blue will give a satisfactory result.

The use of the Surface Gauge is not confined to scribing on vertical surfaces only, it may be used on other surfaces or as a height gauge as well. The bent end on the scriber permits lines to be drawn on horizontal surfaces while a groove in the base of the gauge makes it possible to mark out desired distances from the radius of circular pieces.



Starrett

This Gauge, with the improvements made in the few years past, gives great satisfaction to all who use it.

The sleeve and needle clasp, when loosened for adjustment, are both held by a slight spring friction, and by a single knurled nut, both are rigidly clamped. For fine adjustment, the spindle in the base is raised or lowered by a knurled nut, and all backlash is taken up by a spiral spring in the base.

For above 12-inch lengths, an extension is provided to couple on to the spindle.

	Each
No. 52A 8-inch.....	$2.00
No. 52B 12-inch.....	2.75
No. 52C 12-inch, with 6-inch extension.....	3.25
Sleeve alone.....	.75

Universal Surface Gauges

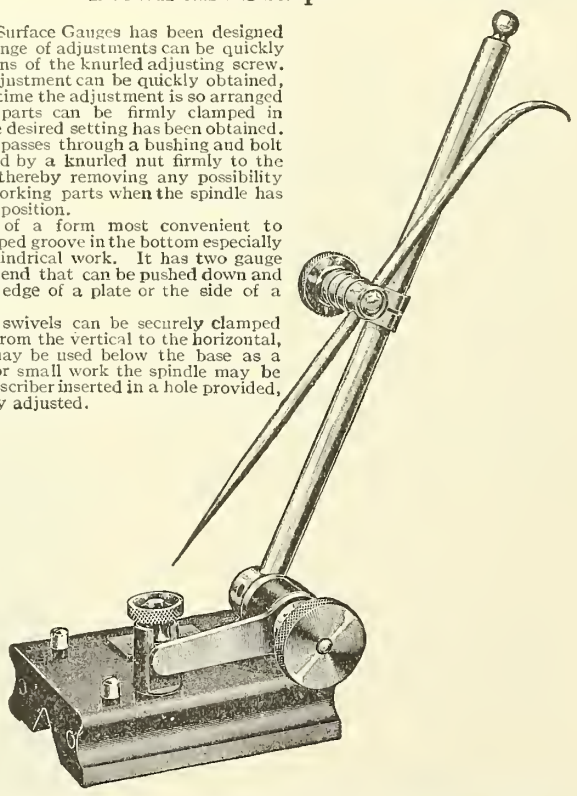
Brown and Sharpe

This line of Surface Gauges has been designed so that a wide range of adjustments can be quickly obtained by means of the knurled adjusting screw. The maximum adjustment can be quickly obtained, and at the same time the adjustment is so arranged that all moving parts can be firmly clamped in position when the desired setting has been obtained.

The spindle passes through a bushing and bolt which are clamped by a knurled nut firmly to the boss on the base, thereby removing any possibility of play in the working parts when the spindle has been clamped in position.

The base is of a form most convenient to handle. A V-shaped groove in the bottom especially adapts it for cylindrical work. It has two gauge pins in the rear end that can be pushed down and used against the edge of a plate or the side of a T-slot.

The spindle swivels can be securely clamped in any position from the vertical to the horizontal, and the scriber may be used below the base as a depth gauge. For small work the spindle may be removed and the scriber inserted in a hole provided, where it is readily adjusted.



No. 622 Hardened Base		No. 623 Heavy Hardened Base
No. 622	With 6-inch spindle, each	$3.00
No. 622	With 9-inch spindle, each	3.00
No. 622	With 12-inch spindle, each	3.50
No. 623	With 12-inch spindle, each	3.50
No. 623	With 12-inch and 18-inch spindles, each	4.00

Starrett

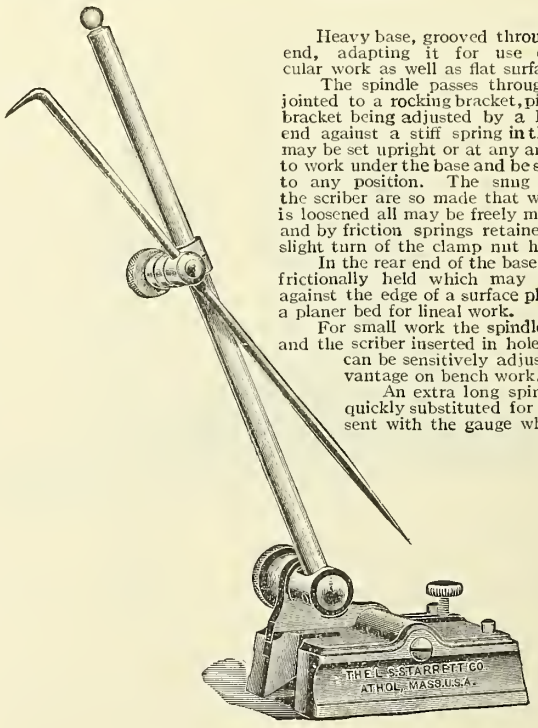
Heavy base, grooved through the bottom and end, adapting it for use on or against circular work as well as flat surfaces.

The spindle passes through a rotating head, jointed to a rocking bracket, pivoted in base. The bracket being adjusted by a knurled screw in one end against a stiff spring in the other, the spindle may be set upright or at any angle, or turned so as to work under the base and be sensitively adjusted to any position. The snug and head carrying the scriber are so made that when the clamp nut is loosened all may be freely moved to any position and by friction springs retained in place until a slight turn of the clamp nut holds them firm.

In the rear end of the base are two gauge pins frictionally held which may be pushed to bear against the edge of a surface plate or in the slot of a planer bed for lineal work.

For small work the spindle may be removed and the scriber inserted in hole provided where it can be sensitively adjusted and used to advantage on bench work.

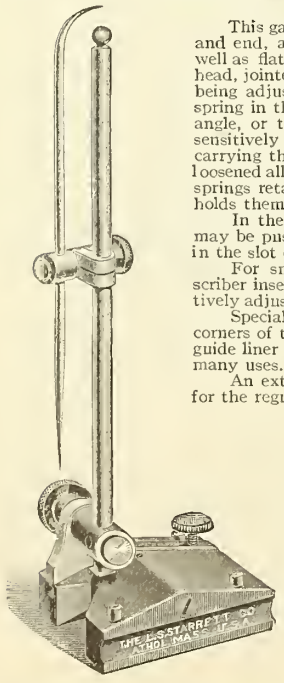
An extra long spindle which may be quickly substituted for the regular will be sent with the gauge when ordered.



		Each
No. 57A	3-inch base, with 9-inch spindle	$2.50
No. 57B	3-inch base, with 9 and 12-inch spindles	2.85
No. 57C	3¾-inch base, with 12-inch spindle	3.00
No. 57D	3¾-inch base, with 12 and 18-inch spindles	3.50

Starrett

With Case-hardened Steel Base



This gauge has a heavy base, grooved through the bottom and end, adapting it for use on or against circular work as well as flat surfaces. The spindle passes through a rotating head, jointed to a rocking bracket, pivoted in base, the bracket being adjusted by a knurled screw in one end against a stiff spring in the other. The spindle may be set upright or at any angle, or turned so as to work under the base, and can be sensitively adjusted to any position. The snug and head carrying the scriber are so made that when the clamp nut is loosened all may be freely moved to any position, and by friction springs retained in place until a slight turn of the clamp nut holds them firmly.

In the base are four gauge pins, frictionally held, which may be pushed to bear against the edge of a surface plate, or in the slot of a planer bed for lineal work.

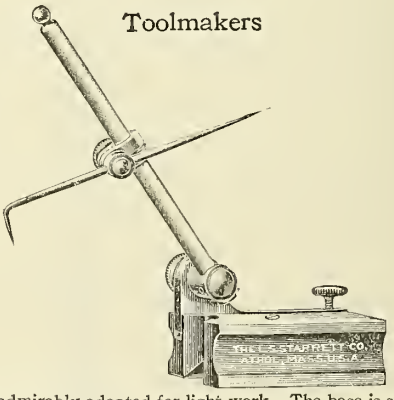
For small work the spindle may be removed and the scriber inserted in a hole provided for it, where it can be sensitively adjusted and used to advantage on bench work.

Special attention is called to the four gauge pins in the corners of the base, which adapt it to be used as a locomotive guide liner and make it more convenient than other gauges for many uses.

An extra long spindle, which may be quickly substituted for the regular, will be sent with the gauge when ordered.

		Each
No. 257A	3-inch base, with 9-inch spindle	$3.00
No. 257B	3-inch base, with 9 and 12-inch spindles	3.35
No. 257C	3½-inch base, with 12-inch spindle	3.50
No. 257D	3½-inch base, with 12 and 18-inch spindles	4.00

Toolmakers



This Gauge is admirably adapted for light work. The base is steel, nicely finished and case-hardened, with depressions milled in the sides for the thumb and finger to grasp. The top side of it is slotted, and the rocking bracket is pivoted in the same. There is a stiff spring under one end of the bracket and a knurled adjusting screw in other; the spindle jointed to this may be set and rigidly held in any position from vertical to horizontal, and the scriber placed in position to be used below its base for depth gauge or (with bent end down) a scribing gauge. A V-shaped groove in the end and bottom adapts it for use on cylindrical work. There is a small hole in the clamp next to the base in which the scriber may be used for light work, the spindle being removed.

An auxiliary guide piece (as above) is furnished to clamp to the base.

It weighs but ten ounces, and is five inches high, and folding the spindle (which is four inches long) horizontally over the base, it may be packed in 1⅜x1½x4 inches space in the tool chest.



No. 56A With 4-inch spindle and auxiliary guide $3.00
No. 56B Without auxiliary guide 2.50

Sent with guide unless otherwise ordered.
A 7-inch spindle is furnished when ordered at an extra cost of 25 cents.

For explanatory notes see preceding page

Standard Gauges

Dimensions of Sizes in Decimal Parts of an Inch

Number of Gauge	American or Brown & Sharpe *Wire	Washburn & Moen Iron Wire	English Birmingham or Stubs Iron Wire	New British or Imperial Wire	Old English or London Wire	H. S. & Co. F. & G. Steel Music Wire	W. & M. Steel Music Wire	American Steel and Wire Co. Music Wire	Webster and Horsfall Music Wire	Common Steel Music Wire	U. S. Legal Standard Sheet and Plate Iron and Steel	Number of Gauge
00000000	.....	.....	....	....	....	....	.0083	....	....	....	.....	00000000
0000000	.....	.....	....	....	....	....	.0087	....	....	....	.....	0000000
000000	.....	.....	....	.464	....	....	.0095	.004	....	....	.46875	000000
00000	.5165	.4305	.5	.432	....	....	.010	.005	....	....	.4375	00000
0000	.46	.3938	.454	.406	.454	.0068	.011	.006	.006	....	.40625	0000
000	.40964	.3625	.425	.372	.425	.0075	.012	.007	.007	....	.375	000
00	.3648	.331	.38	.348	.380	.0087	.0133	.008	.008	.008	.34375	00
0	.32486	.3065	.34	.324	.340	.0093	.0144	.009	.009	.009	.3125	0
1	.2893	.283	.3	.300	.300	.0098	.0156	.010	.010	.010	.28125	1
2	.25763	.2625	.284	.276	.284	.0106	.0166	.011	.011	.011	.265625	2
3	.22942	.2437	.259	.252	.259	.0114	.0178	.012	.012	.012	.25	3
4	.20431	.2253	.238	.232	.238	.0122	.0188	.013	.013	.013	.234375	4
5	.18194	.207	.22	.212	.220	.0138	.0202	.014	.014	.014	.21875	5
6	.16202	.192	.203	.192	.203	.0157	.0215	.016	.016	.016	.203125	6
7	.14428	.177	.18	.176	.180	.0177	.023	.018	.018	.018	.1875	7
8	.12849	.162	.165	.160	.165	.0197	.0243	.020	.020	.020	.171875	8
9	.11443	.1483	.148	.144	.148	.0216	.0256	.022	.022	.022	.15625	9
10	.10189	.135	.134	.128	.134	.0236	.027	.024	.024	.024	.140625	10
11	.090742	.1205	.12	.116	.120	.0260	.0284	.026	.026	.026	.125	11
12	.080808	.1055	.109	.104	.109	.0283	.0296	.029	.029	.028	.109375	12
13	.071961	.0915	.095	.092	.095	.0303	.0314	.031	.031	.030	.09375	13
14	.064084	.08	.083	.080	.083	.0323	.0326	.033	.033	.032	.078125	14
15	.057068	.072	.072	.072	.072	.0342	.0345	.035	.035	.034	.0703125	15
16	.05082	.0625	.065	.064	.065	.0362	.036	.037	.037	.036	.0625	16
17	.045257	.054	.058	.056	.058	.0382	.0377	.039	.039	.038	.05625	17
18	.040303	.0475	.049	.048	.049	.04	.0395	.041	.041	.040	.05	18
19	.03589	.041	.042	.040	.040	.042	.0414	.043	.043	.042	.04375	19
20	.031961	.0348	.035	.036	.035	.044	.0434	.045	.045	.044	.0375	20
21	.028462	.03175	.032	.032	.0315	.046	.046	.047	.047	.046	.034375	21
22	.025347	.0286	.028	.028	.0295	.048	.0483	.049	.052	.048	.03125	22
23	.022571	.0258	.025	.024	.027	.051	.051	.051	.055	.051	.028125	23
24	.0201	.023	.022	.022	.025	.055	.055	.055	.059	.055	.025	24
25	.0179	.0204	.02	.020	.023	.059	.0586	.059	.061	.059	.021875	25
26	.01594	.0181	.018	.018	.0205	.063	.0626	.063	.065	.063	.01875	26
27	.014195	.0173	.016	.0164	.01875	.067	.0658	.067	.070	.067	.0171875	27
28	.012641	.0162	.014	.0149	.0165	.071	.072	.071	.072	.071	.015625	28
29	.011257	.015	.013	.0136	.155	.074	.076	.075	.077	.074	.0140625	29
30	.010025	.014	.012	.0124	.01375	.078	.080	.080	.083	.078	.0125	30
31	.008928	.0132	.01	.0116	.01225	.082	.....	.085	....	.082	.0109375	31
32	.00795	.0128	.009	.0108	.01125	.086	.....	.090	....	.086	.01015625	32
33	.00708	.0118	.008	.0100	.01025	....	.....	.095	....	.090	.009375	33
34	.006304	.0104	.007	.0092	.0095	....	.....	.100	....	.094	.00859375	34
35	.005614	.0095	.005	.0084	.009	....	.....	.106	....	.098	.0078125	35
36	.005	.009	.004	.0076	.0075	....	.....	.112	....	.102	.00703125	36
37	.004453	.0085	....	.0068	.0065	....	.....	.118	....	....	.006640625	37
38	.003965	.008	....	.0060	.00575	....	.....	.124	....	....	.00625	38
39	.003531	.0075	....	.0052	.005	....	.....	.130	....	....	.....	39
40	.003144	.007	....	.0048	.0045	....	.....	.138	....	....	.....	40

See next page for balance of gauges

*Also used for sheet brass, copper and aluminum

Standard Gauges and Decimal Equivalents

(Continued from preceding page)

Dimensions of Sizes in Decimal Parts of an Inch

Number of Gauge	Stubs Steel Wire	Twist Drills
1	.227	.2280
2	.219	.2210
3	.212	.2130
4	.207	.2090
5	.204	.2055
6	.201	.2040
7	.199	.2010
8	.197	.1990
9	.194	.1960
10	.191	.1935
11	.188	.1910
12	.185	.1890
13	.182	.1850
14	.180	.1820
15	.178	.1800
16	.175	.1770
17	.172	.1730
18	.168	.1695
19	.164	.1660
20	.161	.1610
21	.157	.1590
22	.155	.1570
23	.153	.1540
24	.151	.1520
25	.148	.1495
26	.146	.1470
27	.143	.1440
28	.139	.1405
29	.134	.1360
30	.127	.1285
31	.120	.1200
32	.115	.1160
33	.112	.1130
34	.110	.1110
35	.108	.1100
36	.106	.1065
37	.103	.1040
38	.101	.1015
39	.099	.0995
40	.097	.0980
41	.095	.0960
42	.092	.0935
43	.088	.0890
44	.085	.0860
45	.081	.0820
46	.079	.0810
47	.077	.0785
48	.075	.0760
49	.072	.0730
50	.069	.0700
51	.066	.0670
52	.063	.0635
53	.058	.0595
54	.055	.0550
55	.050	.0520
56	.045	.0465
57	.042	.0430
58	.041	.0420
59	.040	.0410
60	.039	.0400
61	.038	.0390
62	.037	.0380
63	.036	.0370
64	.035	.0360
65	.033	.0350
66	.032	.0330
67	.031	.0320
68	.030	.0310
69	.029	.0292
70	.027	.0280
71	.026	.0260
72	.024	.0250
73	.023	.0240
74	.022	.0225
75	.020	.0210
76	.018	.0200
77	.016	.0180
78	.015	.0160
79	.014	.0145
80	.013	.0135

Stubs Steel Wire and Twist Drills
LETTER SIZES

Size by Gauge	Decimal Equivalent
A	.234
B	.238
C	.242
D	.246
E	.250
F	.257
G	.261
H	.266
I	.272
J	.277
K	.281
L	.290
M	.295
N	.302
O	.316
P	.323
Q	.332
R	.339
S	.348
T	.358
U	.368
V	.377
W	.386
X	.397
Y	.404
Z	.413

For Machine and Wood Screws

The difference between consecutive sizes is .01316 inch for American Screw Co. Standard; .013 inch for A. S. M. E. Standard

Number of Gauge	American Screw Co.	A. S. M. E. Basic and Maximum Outside Diameter
000	.03152	
00	.04468	
0	.05784	.060
1	.07100	.073
2	.08416	.086
3	.09732	.099
4	.11048	.112
5	.12364	.125
6	.13680	.138
7	.14996	.151
8	.16312	.164
9	.17628	.177
10	.18944	.190
11	.20260	
12	.21576	.216
13	.22892	
14	.24208	.242
15	.25524	
16	.26840	.268
17	.28156	
18	.29472	.294
19	.30788	
20	.32104	.320
21	.33420	
22	.34736	.346
23	.36052	
24	.37368	.372
25	.38684	
26	.40000	.398
27	.41316	
28	.42632	.424
29	.43948	
30	.45264	.450
31	.46580	
32	.47896	
33	.49212	
34	.50528	
35	.51844	
36	.53160	
37	.54476	
38	.55792	
39	.57108	
40	.58424	
41	.59740	
42	.61056	
43	.62372	
44	.63688	
45	.65004	
46	.66320	
47	.67636	
48	.68952	
49	.70268	
50	.71584	

Decimal Equivalents of Fractional Sizes

Equivalents Fractional	Decimal
$\frac{1}{64}$	.01563
$\frac{1}{32}$	.03125
$\frac{3}{64}$	.04688
$\frac{1}{16}$	.0625
$\frac{5}{64}$	.07813
$\frac{3}{32}$	.09375
$\frac{7}{64}$	.10938
$\frac{1}{8}$	.125
$\frac{9}{64}$	.14063
$\frac{5}{32}$	.15625
$\frac{11}{64}$	.17188
$\frac{3}{16}$	.1875
$\frac{13}{64}$	.20313
$\frac{7}{32}$	.21875
$\frac{15}{64}$	.23438
$\frac{1}{4}$	.25
$\frac{17}{64}$	.26563
$\frac{9}{32}$	.28125
$\frac{19}{64}$	.29688
$\frac{5}{16}$	.3125
$\frac{21}{64}$	.32813
$\frac{11}{32}$	.34375
$\frac{23}{64}$	.35938
$\frac{3}{8}$	.375
$\frac{25}{64}$	.39063
$\frac{13}{32}$	.40625
$\frac{27}{64}$	.42188
$\frac{7}{16}$	.4375
$\frac{29}{64}$	.45313
$\frac{15}{32}$	.46875
$\frac{31}{64}$	.48438
$\frac{1}{2}$	.5
$\frac{33}{64}$	.51563
$\frac{17}{32}$	.53125
$\frac{35}{64}$	.54688
$\frac{9}{16}$	.5625
$\frac{37}{64}$	.57813
$\frac{19}{32}$	.59375
$\frac{39}{64}$	.60938
$\frac{5}{8}$	.625
$\frac{41}{64}$	.64063
$\frac{21}{32}$	.65625
$\frac{43}{64}$	.67188
$\frac{11}{16}$	.6875
$\frac{45}{64}$	.70313
$\frac{23}{32}$	.71875
$\frac{47}{64}$	.73438
$\frac{3}{4}$	.75
$\frac{49}{64}$	.76563
$\frac{25}{32}$	.78125
$\frac{51}{64}$	.79688
$\frac{13}{16}$	.8125
$\frac{53}{64}$	.82813
$\frac{27}{32}$	.84375
$\frac{55}{64}$	.85938
$\frac{7}{8}$	.875
$\frac{57}{64}$	.89063
$\frac{29}{32}$	.90625
$\frac{59}{64}$	.92188
$\frac{15}{16}$	.9375
$\frac{61}{64}$	.95313
$\frac{31}{32}$	.96875
$\frac{63}{64}$	.98438
1	1.00000

SEE DISCOUNT SHEET

Gauges and Calipers

Hardened and Tempered, all sizes are carefully tested after hardening

Wire Gauges



American Standard

Adopted by the Brass Manufacturers, January, 1858. Decimal equivalents stamped on reverse side.

Brown & Sharpe No. 688 Nos. 0 to 36, each..... $2.50
Brown & Sharpe No. 688 Nos. 5 to 36, each..... 2.00

English Standard

The same as Stubs Iron Wire or Birmingham Gauge

Decimal equivalents stamped on reverse side.

Brown & Sharpe No. 690 Nos. 1 to 36, each..... $2.00
Brown & Sharpe No. 690 Nos. 6 to 36, each..... 1.50

Washburn & Moen Standard Iron

Brown & Sharpe No. 692 Sizes 0 to 36, each..... 2.50

U. S. Standard

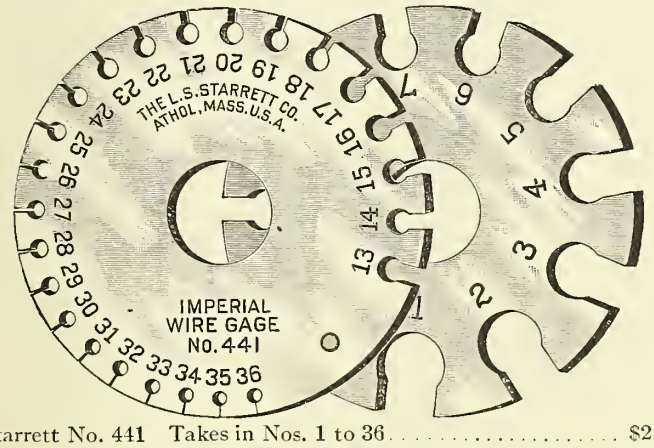
Foe Sheet and Plate Iron and Steel, adopted by Congress, March 3, 1893

Brown & Sharpe No. 694 Sizes 0 to 36, each..... $2.50

Imperial Standard

*Starrett No. 442 Takes in Nos. 1 to 36, each..... 2.00

Imperial Standard



*Starrett No. 441 Takes in Nos. 1 to 36..... $2.50



Washburn & Moen (Steel)

Brown & Sharpe No. 695 (Music) round, sizes 12 to 28, each.... $1.50

H. S. & Co. Standard (For measuring Felton & Guilleaume Wire)

No. 127 (Music), round, sizes 6 to 28, each..... 3.00
No. 128 (Music), oblong sizes 0 to 30, each..... 3.00
Starrett No. 295 New Am. S. & W. Co. Standard, takes in Nos. 6-0 to 33, each..... 2.50

*Decimal equivalents stamped on reverse side.

Rolling Mill Gauges



English or Birmingham Standard

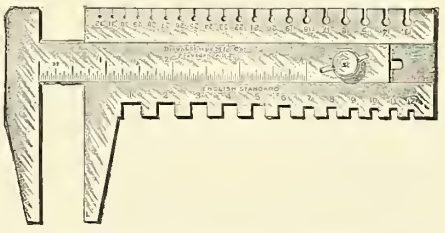
About one-half size cut, made of steel, hardened and tempered. About $\frac{3}{16}$ of an inch thick and well adapted to the rough usage they are likely to have in rolling mills or in other places where many measurements are to be taken quickly.

Brown & Sharpe No. 684 Nos. 000 to 25, each..... $2.50
Brown & Sharpe No. 684 Nos. 1 to 32, each..... 3.00

U. S. Standard Gauge for Sheet and Plate Iron and Steel, adopted by Congress, March 3, 1893.

Brown & Sharpe No. 685 Nos. 000 to 25, each..... $2.50

Caliper and Wire Gauges



English or Birmingham Standard

Tongue graduated to 32nds on both sides.

This Caliper and Gauge is of steel, $5\frac{3}{4}$ inches long and about $\frac{3}{16}$-inch thick. The jaws are 2 inches deep. The tongue is graduated on both sides to 32nds of an inch and can be drawn out to measure 4 inches. The Gauge numbers are those of the English or Birmingham Standard and run from 1 to 32.

The tool is found especially useful for stock and store room purposes in selecting iron, steel and sheet stock, also for iron and steel rollers use. The Caliper is used for odd sizes of stock.

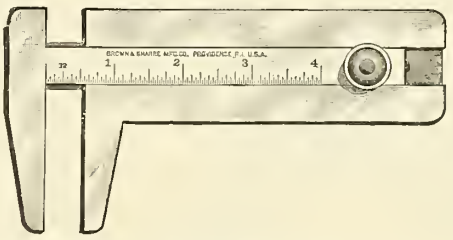
Brown & Sharpe No. 677, each..... $7.00

U. S. Standard for Sheet and Plate Iron and Steel.

This Caliper and Gauge is similar in general design to that shown and described above, with the exception that the gauge numbers which run from 1 to 32 are those of the U. S. Standard for Sheet and Plate Iron and Steel, adopted by Congress March 3, 1893.

Brown & Sharpe No. 680, each..... $7.00

Rolling Mill Caliper Gauge



This Rolling Mill Caliper Gauge is intended for use on the heavy class of work found in rolling mills in measuring sheet iron and steel but can be used equally well in stock and store rooms.

It is $5\frac{13}{16}$ inches long and $\frac{7}{32}$-inch thick. The jaws are $3\frac{1}{4}$ inches deep and can be drawn apart to measure 4 inches. The tongue is graduated on one side to 32nds of an inch.

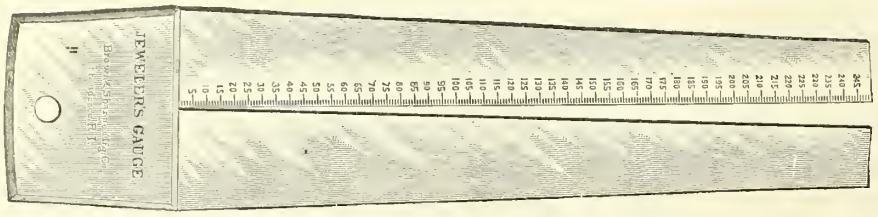
The Caliper is made of tool steel, drop-forged and is strong enough to withstand any strain to which it may be subjected. When the jaws are set they can be securely clamped so that measurements of different sheets of stock of the same thickness can be made without the necessity of resetting the Caliper.

Brown & Sharpe No. 674, each..... $6.00

Gauges

Hardened and Tempered, all sizes are carefully tested after hardening

Slotted Wire



W & M Standard (Iron)

No. 129 Sizes 15 to 36, including half sizes, each..... $7.25

F & G Standard Music Wire

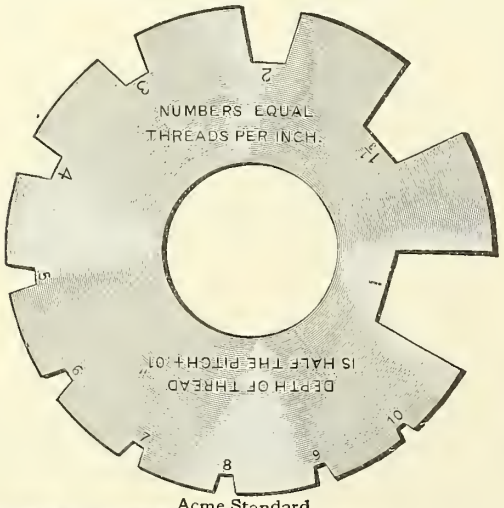
No. 128A. Sizes 12 to 26, each..... 7.25

Brown & Sharpe Jewelers No. 698

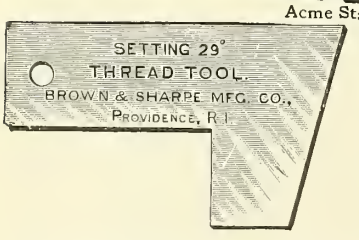
Made especially for use by Manufacturing Jewelers. Hardened angular slot. One edge of the slot is graduated into 250 parts and figured to give the size in thousandths of an inch. For example, a size of wire which passes down half way into the slot, and stops opposite 125, is $\frac{125}{1000}$ of an inch in diameter. The angular slot has no sharp edge to injure the stock gauged.

Each..... $5.00

29-Degree Screw Thread Tool



Acme Standard



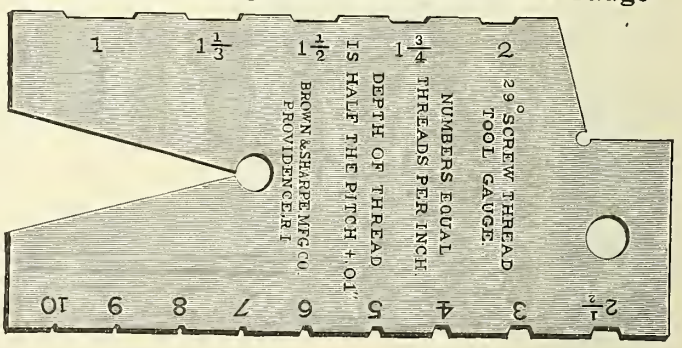
For the purpose of furnishing a correct standard to which tools can be ground to cut threads, of a uniform angle, to take the place of square threads, and to standardize the threads of various angles and depths now in use. This thread has the same depth as the square threads, but is stronger.

The sides are at an inclination of 14½ degrees, or 29 degrees included angle, which angle is the same as is now generally adopted in cutting worms.

A tool setting gauge is furnished and included in the price of each gauge.

Brown & Sharpe No. 715, each..... $2.75

Improved 29-Degree Screw Thread Tool Gauge



Acme Standard

This Gauge furnishes a correct standard to which tools can be ground to cut threads of a uniform angle to take the place of square threads.

The thread has the same depth as the square threads, but as the sides are at an inclination of 14½ degrees (29 degrees included angle), this form of thread is stronger and is now generally adopted in cutting worms.

This Gauge is made of the best steel, tempered, adjusted and all angles carefully tested after hardening.

Brown & Sharpe No. 716, each..... $2.50

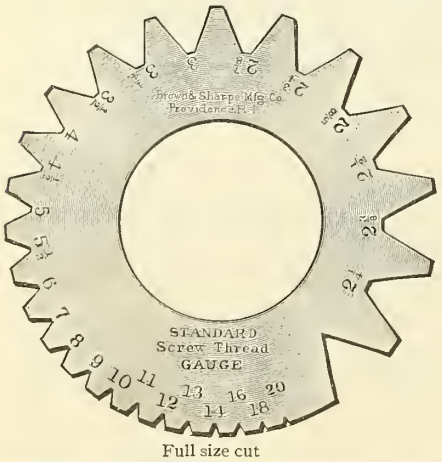
Depth of Gear Tooth



No. 725, each 25 cents
Sizes to 3 Pitch, made to order, each 75 cents
Larger sizes $1.25

One Gauge answers for each pitch and indicates the extreme depth to be cut.

Screw Thread



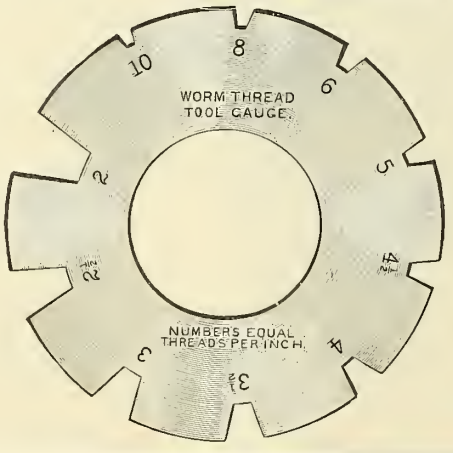
Full size cut

This Gauge is to be used as a standard for grinding tools to cut threads according to the United States Standard.

The angles are 60 degrees and the flat surfaces at top and bottom of threads are equal to ⅛ of the pitch.

Brown & Sharpe
No. 724, each. $2.00

Worm Thread Tool Gauge



This Gauge furnishes the correct form for tools used in turning the threads of worms, when the worm wheels are cut with involute cutters.

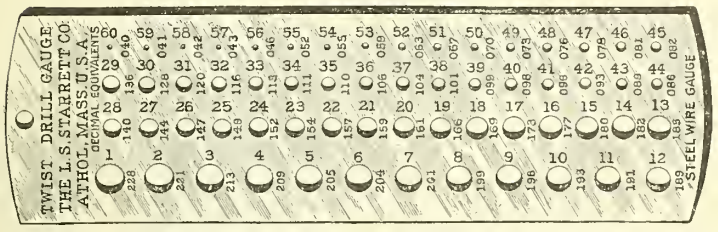
Brown & Sharpe
No. 720, each. $2.50

With Tool Setting Gauge, each.. 2.75

Gauges

Hardened and Tempered, all sizes are carefully tempered after hardening

Tap and Wire Drill



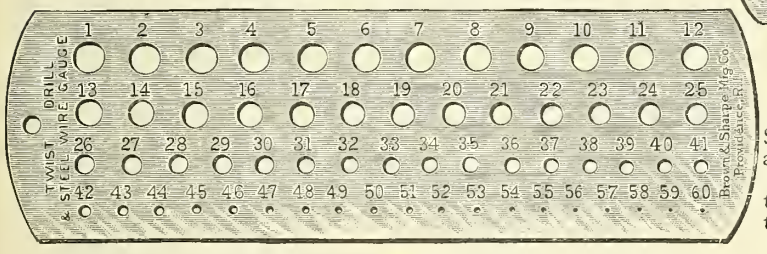
By the use of this Gauge one is enabled to select at once the right size drill to suit machine screw tap most commonly used, leaving just stock enough for the tap to cut as near a full thread as is practicable for one tap without breaking it, thus saving much time and uncertainty of result attending the former crude ways of making a selection.

Explaining the chart, the first row of figures, for an example, read thus, 14x20 10¼. The number 14 (in the first row of figures) means the number or size of tap; 20 the pitch or size of thread; 10 the size of drill to use which will leave the right stock for proper thread; and ¼, size of drill to use to let this tap or screw through outside of the thread.

The figures—1, etc., up to 60—designate the number of drill (size agreeing with the holes). Other figures, 228, 221, etc., designate the size of hole in thousandths of an inch.

Starrett Time Saver No. 185 ..... $1.75

Twist Drill and Steel Wire



Number Sizes

Brown & Sharpe No. *705, sizes 1 to 60, polished $1.50
Brown & Sharpe No. 705, sizes 61 to 80, polished 2.00

The following Gauges are light in weight, but absolutely accurate. The No. 5 has stamped on the back the proper drill size for ten sizes of machine screw taps from 2-56 to 18-18.

	Each
Blodgett No. 5, sizes 1 to 60	$ .75
Blodgett No. 6, sizes 61 to 80	1.50

Fractional Sizes

	Each
Brown & Sharpe No. 710, polished	$2.25

Letter Sizes A to Z

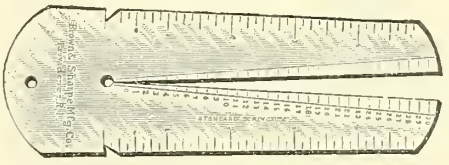
Morse, *No. 127C	3.00

Millimeter Sizes

Morse* No. 127D, 1 to 13 mm	3.00
Morse* No. 127E, 1 to 6 mm	2.50

*Decimal Equivalents stamped on the reverse side.

Screw and Wire



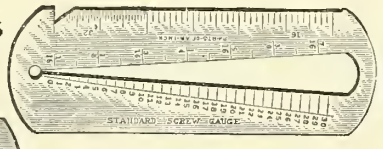
Graduated on both sides of slot to show American Standard Screw Gauge from 0 to 30 and will measure wire as well as machine and wood screws.

Can also be used to show the sizes of A. S. M. E. Standard screws. Although there is a slight difference in size for the same gauge number it is not enough to affect the reading of the gauge.

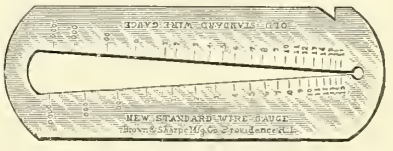
The front is also graduated on both edges to 8ths of an inch. An angle cut in the side allows the head of the screw to be placed against a positive stop when measuring the length.

The back is graduated as the old or English wire gauge from 17 to 0000 on the right, and to 32nds of an inch on the left of slot. The outer left hand edge is graduated to 32nds of an inch.

	Each
Brown & Sharpe, large, No. 702	$3.50
Extra thick	4.50



Front View



Back View

Graduated on front, on left of slot, to show American standard Screw Gauge from 0 to 30, and will measure wire as well as machine and wood screws.

A screw or wire is measured by passing it into the angular opening till it touches on both sides; the division at the point of contact indicates the number of the gauge stamped on the side of the slot.

In addition to the gauge numbers, the front is also graduated on the left of slot to 32nds of an inch.

The back is graduated as the old or English wire gauge, from 17 to 0000 on the right, and the new or American wire gauge from 15 to 0000 on the left of slot.

Brown & Sharpe No. 700 ..... $2.50

Key Ring and Vest Pocket

Blodgett No. 20 is 3 inches long and measures wood or machine screws in diameter, Nos. 1 to 24, and in length to 2 inches, having a scale graduated by $\frac{1}{16}$ inch; also a B. & S. Standard Wire Gauge, covering 15 sizes, Nos. 00 to 13.

Each ..... $ .25

Blodgett No. 25 is 3¼ inches long, and has a scale of 3 inches, graduated the same as No. 20.

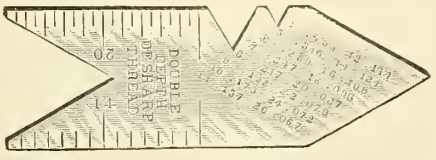
Each ..... $ .25

Blodgett No. 10, 2⅜ inches long, similar to Nos. 20 and 25, measures screws Nos. 1 to 20 only.

Each ..... $ .15

Center

And Gauges for grinding and setting Screw Cutting Tools



Brown & Sharpe

With table for determining the size of tap drills for 60 degree V threads.

U. S. Standard, 60 degrees

No. 650	$ .25
Tempered	.35

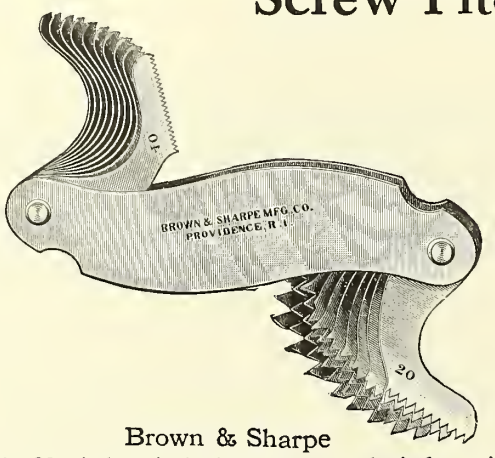
Whitworth or English Standard, 55 Degrees

No. 651	.25
Tempered	.35

Metric, 60 degrees

No. 652	.25
Tempered	.35

Screw Pitch Gauges



Brown & Sharpe

No. 630 22 pitches, including pipe thread pitches, viz: 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38 and 40.
Each..... $1.00

No. 631 24 pitches, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28 and 30.
Each..... $1.25

No. 632 Same in design as No. 630, 30 pitches, V-thread, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40 and 42.
Each..... $1.50

No. 634 Similar to No. 630 and designed especially for use of automobile manufacturers, electricians and others using screws with fine V threads. Has 22 pitches, viz: 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72 and 74.
Each..... $1.00

No. 635 Same in design as No. 634. 25 pitches, viz: 2¼, 2⅜, 2½, 2⅝, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18 and 20. It also contains a blade with a gauge for grinding thread tools.
Each..... $1.50

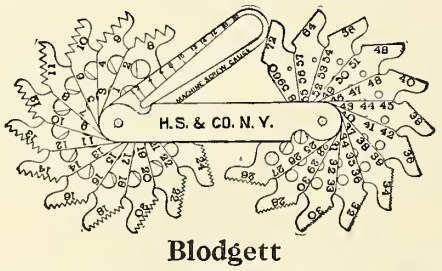
No. 636 Metric or International, 17 pitches, viz: ½, ¾, 1, 1¼, 1½, 1¾, 2, 2½, 3, 3½, 4, 4½, 5, 5½, 6, 6½ and 7 millimeters. Also contains a blade with a gauge for grinding thread tools.
Each..... $1.00

No. 637 Whitworth Standard, 22 pitches, viz: 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40 and 48.
Each..... $1.25

Blodgett Key Ring

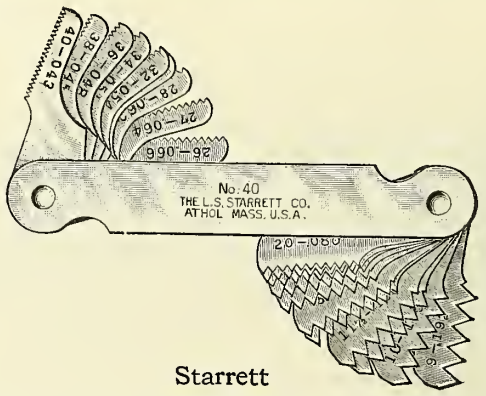
Blades are strung on key ring instead of being mounted in steel handle, as above. Contains 26 pitches, viz: 8, 9, 10, 11, 11½, 12, 13, 14, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 48, 56, 64 and 74. Also contains a screw gauge, measuring wood and machine screws from 1 to 20. Blades can be taken off the ring and used separately.
No. 9..... $ .75

Thread, Screw and Twist Drill Gauge



Blodgett

No. 7. The blades of this gauge are case-hardened, and are sufficiently narrow to enter an opening $\frac{3}{16}$ inch in diameter. Gauges 24 thread pitches, viz: 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 48, 56, 64 and 72; gauges the sixty sizes of twist drills from 1 to 60, and against the proper size drill hole is stamped the corresponding sizes of machine screw taps as follows: 2-56, 3-48, 4-40, 6-32, 8-32, 10-24, 12-24, 14-20, 16-20 and 18-18. The Screw Gauge measures from Nos. 1 to 20, the even numbers being stamped in.
Each..... $2.00



Starrett

No. 40 22 pitches, including pipe thread. Pitches, viz: 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38 and 40.
Each..... $1.00

No. 4 24 pitches, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28 and 30. Has also a blade with gauge for grinding threading tools.
Each..... $1.25

For Electricians and Automobile Manufacturers

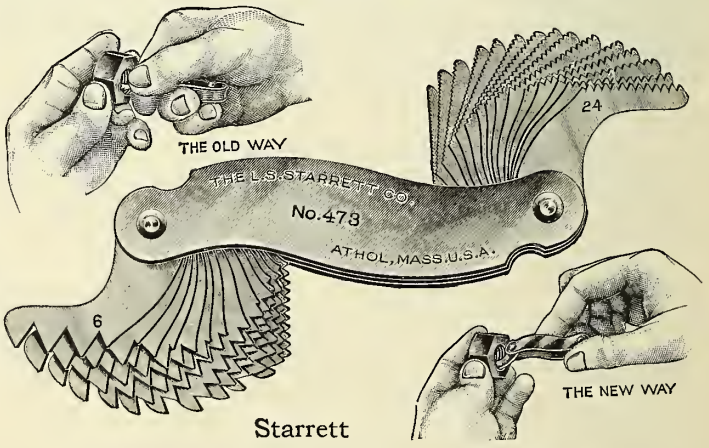
No. 5 26 pitches, viz: 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82.
Each..... $1.25

No. 6 30 pitches, viz: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40 and 42.
Each..... $1.50

No. 7 26 pitches, viz: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40, 48, 60. For Whitworth Standard Thread only.
Each..... $1.25

A feature of the above Gauges is that each blade has stamped upon it the double depth of thread, so that by subtracting this from the full diameter of the screw, the proper drill size for a full V-thread is obtained.

Positive Stop



Starrett

No. 473 Holds the blade in a fixed and convenient position for use, enabling operator to hold handle while determining gauge. 30 pitches, V-thread, viz: 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 48, 50, 56 and 60.
Each..... $1.50

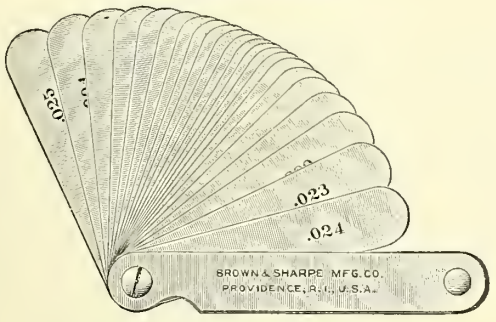
No. 474 Similar in design to No. 473, but has finer pitches and will therefore meet the requirements of automobile and bicycle manufacturers, electricians and others. 30 pitches, V-thread, viz: 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52 in one end of the case, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82 in the other.
Each..... $1.50

No. 475 Similar in design to the No. 473, but larger and has coarse pitches. 26 pitches, V-thread, viz: 3½, 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12 in one end of the case; 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32 in the other.
Each..... $1.25

No. 476 Put up in the same size case as the No. 473, and contains 30 pitches, Whitworth Standard, viz: 3½, 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 40, 44, 48, 50 and 60.
Each..... $1.50

Thickness Gauges

Brown & Sharpe



With Straight Blades

Blades may be used either singly or in combination. Plain figures, easily read, indicate the thickness of each blade.

No. 640 22 blades, varying from .004 to .025 of an inch, by 1000ths $1.50

No. 641 Metric, same design as No. 640, and consists of 14 blades of following thicknesses: .05, .06, .07, .08, .09, .10, .15, .20, .25, .30, .40, .50, .75 and 1 mm. 1.50

No. 642 9 blades, .0015, .002, .003, .004, .006, .008, .010, .012 and .015 of an inch in thickness 1.00

No. 643 Metric, same design as No. 642, and consists of nine blades of following thicknesses: .04, .05, .08, .10, .15, .20, .25, .30 and 35 mm. 1.00

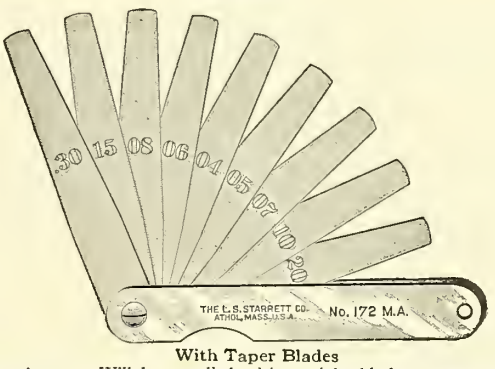
Starrett

The blades of these Gauges may be used either singly or in combination. The thickness of each blade is designated by the number on it.

No. 72 22 blades, varying from .004 to .025 of an inch, by 1000ths $1.50

No. 72 M 12 blades, varying from $\frac{3}{50}$ths of a millimeter to 3 millimeters by 50ths of a millimeter 1.50

Starrett



With Taper Blades

As shown in cut. Will be supplied with straight blades, same style as No. 72 when specially ordered.

B and C have 8 blades, viz: .002, .003, .004, .006, .008, .010, .012, .015. A has a .0015 blade in addition.

No. 172 A Case $3\frac{3}{8}$ inches long x $\frac{1}{2}$-inch wide; leaves $3\frac{1}{16}$ inches long x $\frac{1}{2}$-inch wide $1.00

No. 172 B Case $4\frac{3}{4}$ inches long x $\frac{1}{2}$-inch wide; leaves $4\frac{1}{2}$ inches long x $\frac{1}{2}$-inch wide 1.50

No. 172 C Case $6\frac{1}{4}$ inches long x $\frac{1}{2}$-inch wide; leaves 6 inches long x $\frac{1}{2}$-inch wide 2.00

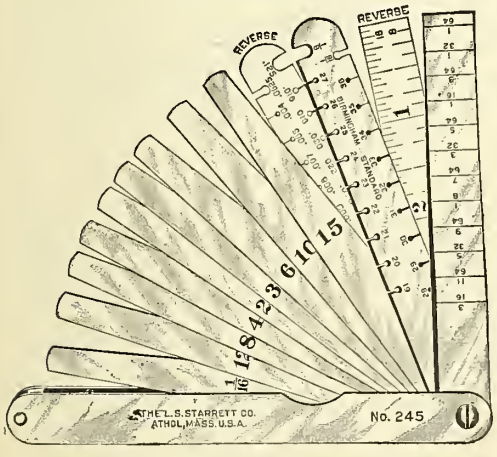
Metric, with 9 blades, marked in 100ths of a millimeter, as follows, 4, 5, 6, 7, 8, 10, 13, 15, 20 and 30 100ths of a millimeter.

No. 172 MA Case 8 cm. long x 8 mm. wide; leaves 7 cm. long x 8 mm. wide $1.00

No. 172 MB Case 12 cm. long x 8 mm. wide; leaves 11 cm. long x 8 mm. wide 1.50

No. 172 MC Case 16 cm. long x 8 mm. wide; leaves 15 cm. long x 8 mm. wide 2.00

Engineer Taper, Wire and Thickness Gauge



Especially designed for use of engineers, machinists and others desiring a set of gauges in compact form.

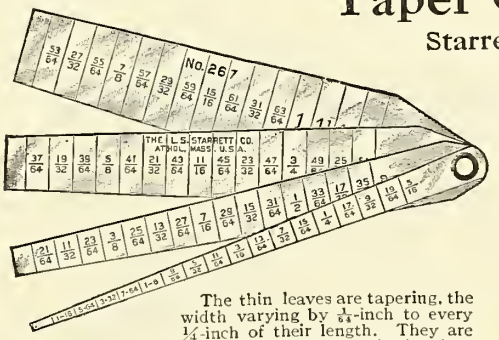
The Taper Gauge shows the thickness in 64ths to $\frac{1}{16}$ of an inch on one side, and on the reverse side is graduated as a rule three inches of its length, reading in 8ths and 16ths.

The Wire Gauge, English Standard, shows on one side sizes numbered from 19 to 36, with two extra slots, one $\frac{1}{16}$, the other $\frac{1}{8}$ of an inch, and on the reverse side shows the decimal equivalents expressed in thousandths. This Gauge has also 9 thicknesses or feeler gauge leaves, approximately 4 inches long, of the following thicknesses: .002, .003, .004, .006, .008, .010, .012, .015 and $\frac{1}{16}$ of an inch, all folded within the case, which is $4\frac{3}{4}$ inches long.

Starrett No. 245 ..... $4.00

Taper Gauges

Starrett

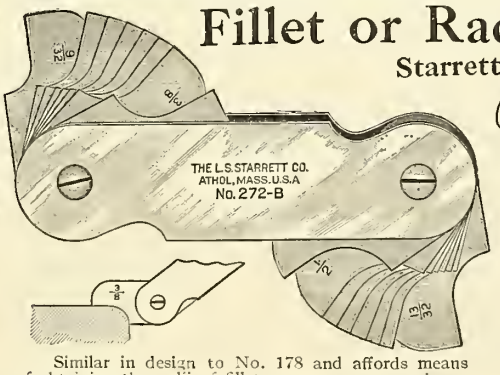


The thin leaves are tapering, the width varying by $\frac{1}{64}$-inch to every $\frac{1}{4}$-inch of their length. They are graduated in $\frac{1}{4}$-inch and figured to read in fractions of an inch from $\frac{1}{16}$ inch up to $1\frac{1}{16}$-inches. Designed for brass and steel tube manufacturers for inside measurements, and it is also very convenient for mechanics use to measure the width of slots and size of holes in nuts drilled for tapping. It is also useful for setting calipers to sizes within its capacity.

	Each
No. 267 About $5\frac{1}{4}$ inches long, plain, with 4 leaves	$4.00
Nickel-plated	5.00
No. 269 A is $2\frac{1}{2}$ inches long, and is graduated to read from $\frac{1}{10}$ to $\frac{1}{2}$-inch in thousandths of an inch, with 8 leaves	5.00
No. 269 B is $2\frac{3}{4}$ inches long, and is graduated to read from $\frac{1}{2}$ to 1-inch in thousandths of an inch, with 10 leaves	6.00

Fillet or Radius Gauges

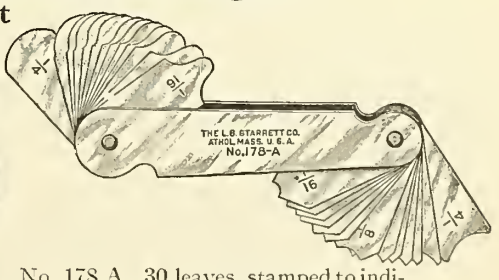
Starrett



Similar in design to No. 178 and affords means of obtaining the radii of fillets, corners, etc., as shown by the illustrations. Each blade is stamped with the radius in 64ths, the external being on one side and the internal on the other. It can be used in any position or at any angle, the formation allowing it to be used up to a shoulder, and for duplicating sample pieces. The studs holding blades in place are eccentric with the round end of case. This is of advantage a when the gauge is opened the edge of case stands w away from the edge of blades.

No. 272 A 16 leaves, with radii from $\frac{1}{32}$ to $\frac{17}{64}$ inch, inclusive, by 64ths.. $1.00

No. 272 B 16 leaves, with radii from $\frac{9}{32}$ to $\frac{33}{64}$ inch, inclusive, by 64ths... 1.50



No. 178 A 30 leaves, stamped to indicate radii by 64ths from $\frac{1}{32}$ to $\frac{1}{4}$ inch (one half diameter size) $1.00

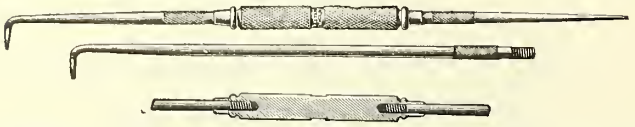
No. 178 B 32 leaves stamped to indicate radii by 64ths from $\frac{17}{64}$ to $\frac{1}{2}$ inch 1.50

No. 178 MA Metric, 17 leaves, indicating the following radii: 1, 1.25, 1.5, 1.75, 2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7 millimeters 1.00

No. 178 MB Metric, 16 leaves, indicating following radii: 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 12, 12.5, 13, 13.5, 14, 14.5, 15 millimeters 1.50

Marking Awls or Scribers

Starrett

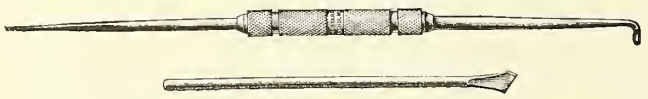


Made of a fine grade of steel, nicely tempered. The knurled stock is of sufficient size to be easily held without cramping or turning in the fingers. The long, bent point will be found a valuable auxiliary for reaching through holes, etc. Length, with short, bent point, 9 inches; with long point, 12 inches. All parts are interchangeable. The knurled sleeve is nickeled.

No. 67

Complete	$ .50
Without long point	.35
Straight point, long or short bent point, each	.10

The tool will be sent complete unless otherwise ordered.



The knurled sleeve has hole clear through and a clamping device at one end, adapting it for slipping on or off different tools, securely holding them near to or away from the working point. The knurled sleeve is nickeled.

This scriber is made in two lengths, 8 inches and 12 inches. For pattern makers a knife scriber, made of a fine grade of steel, is supplied as an auxiliary.

No. 68

Either size, without knife point	$ .50
Knife point, extra	.15
Extra scriber points, each	.20

The 8-inch will be sent (without knife point) unless otherwise ordered.

H. S. & Co.



No. 1 Twisted steel, polished points, 6¾ inches long, each .... $ .40



No. 5 Polished and nickel-plated, 6 inches long. Chuck holds firmly ordinary sewing needles. Hollow handle for extra needles, each ..... $ .60

Brown & Sharpe



Style 1



Style 2



Style 3

The Scribers are of high grade manufacture, the points are of tool steel, finely tempered. They are threaded to screw into the holder and knurled for a finger grip.

			Each
No. 778	Style 1	3½ inches long, closed	$ .40
No. 778	Style 2	5 inches long	.30
No. 778	Style 3	8 inches long	.35

In Style 1 the point may be reversed and the scriber closed for carrying in the pocket.

Starrett



This tool is made from steel tubing, knurled and nickel-plated. The scriber is made from the best quality of steel, nicely tempered, and is held by a knurled chuck. The scriber is reversible, telescoping into the stock, and is held by a slight turn of the chuck so that it is always as safe to carry in the pocket as a penknife.

No. 70A Handle ¼-inch diameter; blade, 2⅜ inches long; weight, 1 ounce ..... $ .25

No. 70B Handle, ⅜-inch diameter; blade, 2⅞ inches long; weight, 1½ ounces ..... .35

Scratch Gauge

Starrett No. 29



This Gauge is made of steel with hardened cast steel head. Through it is a split bushing against which the set screw acts to hold it firm. The beam is graduated in either 50ths or 64ths of an inch. The marker is a thin square piece of steel, nicely tempered, which is firmly held against the end of beam, presenting four marking points.

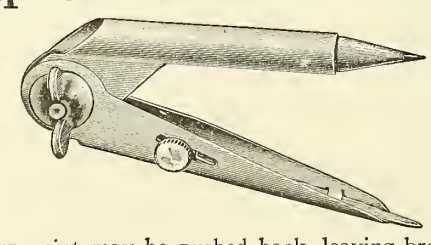
5-inch (beam $\frac{15}{64}$-inch), graduated	$1.00	Not graduated.	$ .65
6-inch (beam $\frac{5}{16}$-inch), graduated	1.25	Not graduated.	.75

Unless otherwise ordered, we shall send those graduated in 64ths.

Two extra cutters will be sent with each gauge, fastened to the case. They should last for years.

No. 29M	Graduated in millimeters. 10 cm	$1.00
	15 cm	1.25

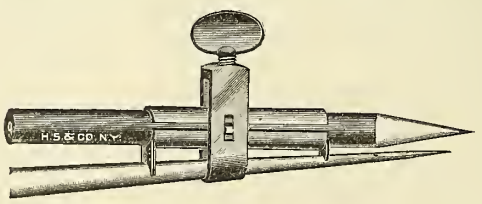
Improved Gem Scriber



The sharp point may be pushed back, leaving broad, dull point for use in scribing from a small hole and for protection when carrying in pocket. Also prevents scratching plaster walls, fine woodwork, etc.

Dozen $4.35

Excelsior Pencil Holders



Can be attached to any divider or compass for marking circles.

Brass, tinned, dozen $2.75

SEE DISCOUNT SHEET

Calipers and Dividers

Starrett

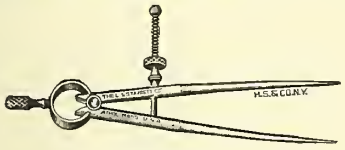
While nearly everyone is acquainted with the uses of calipers and dividers, it may be stated briefly that in general calipers are used for measuring distances between or over surfaces or for comparing distances or sizes with standards, such as those on graduated rules. Dividers are for measuring distances between points, for transferring distances taken direct from a scale, and for scribing circles or arcs.

To those who are not familiar with the use of calipers, a word of caution may not be out of place. Calipers should never be used on work while it is revolving in a lathe or in any other machine, because if one contact of the caliper is placed against the work the other is likely to be drawn over the work by the friction of the moving surfaces. Only slight force is necessary to spring the legs of a caliper so that measurements taken from moving pieces are never accurate—frequently they are very misleading.

Toolmakers

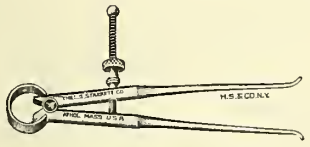
With Solid Nut

A new line of Calipers and Dividers made from round stock with legs drawn down, making them hard and stiff. The fulcrum stud is hardened, bows extra strong, screw and nut nicely fitted, all finely finished and are the best tools in their line.

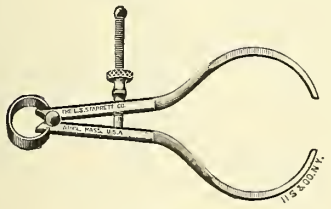


No. 277 Divider

Size Inches	Each
2	$1.00
3	1.25
4	1.50
5	1.50
6	1.75



No. 274 Inside



No. 275 Outside

Calipers

Size Inches	Inside No. 274	Each
2		$1.00
3		1.25
4		1.50
5		1.50
6		1.75
	Outside No. 275	
2		1.00
3		1.25
4		1.50
5		1.50
6		1.75

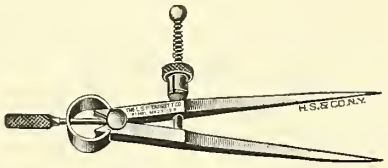
Duplicate Parts Toolmaker Calipers and Dividers

Screw and Ball	$ .15
Thumb Attachment	.15
Nut	.10
Leg	.35
Spring	.25
Jam Washer	.10
Fulcrum Stud	.10

Fay Patent Spring

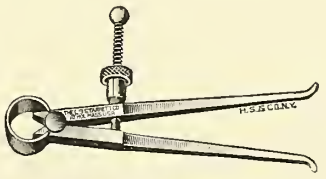
With Spring Nut

A new quick adjusting automatic closing spring nut, which will save much valuable time in opening and closing spring-bow calipers and dividers.

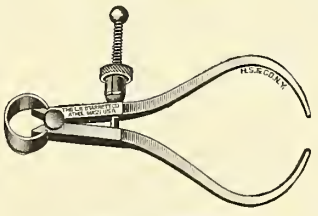


No. 77 Divider

Size Inches	Each
2½	$1.15
3	1.15
4	1.40
5	1.40
6	1.75
8	2.00



No. 74 Inside



No. 75 Outside

Calipers

Size Inches	Inside No. 74	Each
2½		$1.15
3		1.15
4		1.25
5		1.25
6		1.50
8		1.75
	Outside No. 75	
2½		1.15
3		1.15
4		1.25
5		1.25
6		1.50
8		1.75

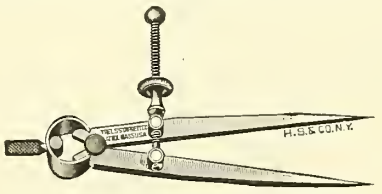
Duplicate Parts of Fay Calipers or Dividers

Screw and Ball	$ .15
Thumb Attachment	.15
Solid Nut	.10
Spring Nut	.25
Leg	.35
Spring	.25
Jam Washer	.10
Fulcrum Stud	.10

Yankee Spring

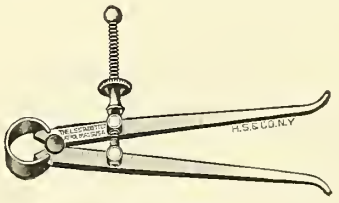
With Solid Nut

Not quite so heavy as the Fay, and preferred by many to the higher cost tools.

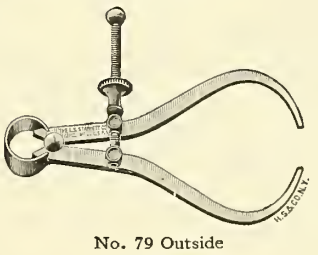


No. 83 Divider

Size Inches	Each
2½	$ .65
3	.70
4	.75
5	.80
6	.85
8	1.10
10	1.35
12	1.50



No. 73 Inside



No. 79 Outside

Calipers

Size Inches	Inside No. 73 and Outside No. 79	Each
2½		$ .65
3		.70
4		.75
5		.80
6		.85
8		1.00
10		1.35
12		1.50

Duplicate Parts of Yankee Calipers or Dividers

Screw and Ball	$ .15
Thumb Attachment	.15
Solid Nut	.10
Spring Nut	.25
Leg	.25
Spring	.25
Jam Washer	.10
Fulcrum Stud	.10
Stud	.10

Calipers and Dividers

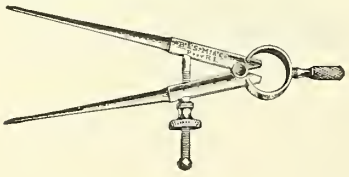
Brown & Sharpe

Toolmakers

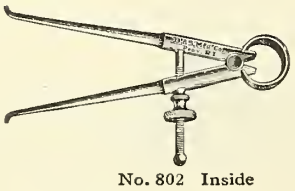
With Solid Nut

Possessing features not previously embodied in tools of this class. The fulcrum stud is hardened. The spring is unusually stiff and of a construction that insures rigidity, prevents side deflection of the legs and gives uniform pressure. The legs are of steel, round and highly polished; the measuring points come together evenly.

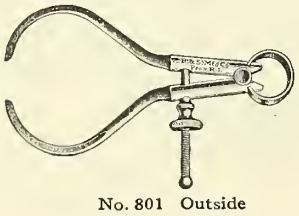
Especial attention is called to the 2-inch sizes, as they are convenient for small, light work and for the pocket.



Size Inches	No. 800 Dividers Each
2	$1.00
3	1.25
4	1.50
5	1.50
6	1.75



No. 802 Inside



No. 801 Outside

Calipers

Size Inches	No. 801 Outside Each
2	$1.00
3	1.25
4	1.50
5	1.50
6	1.75
No. 802 Inside	
2	1.00
3	1.25
4	1.50
5	1.50
6	1.75

Duplicate Parts

For Toolmaker Calipers and Dividers

	Each
Leg	$ .35
Screw and Ball	.15
Nut	.10
Spring	.25
Thumb Attachment	.15
Nut Washer	.05
Fulcrum Stud	.10

Spring

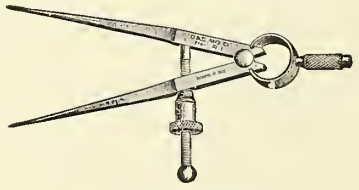
With Spring Nut

The legs are steel drop-forgings, finished in the best manner possible.

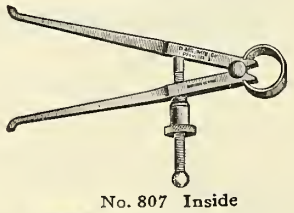
The spring is unusually stiff and of improved form, with convex ends that fit into concave grooves, milled in the ends of the legs, insuring great rigidity.

The Spring Nut is constructed on the principle of the spring chuck with the jaws hardened. It is positive in action when closing, the thread engaging the screw on the slightest pressure. When the pressure is withdrawn the nut is released at once and slides freely on the screw. It is dust proof and combines all the advantages of the solid nut with that of quick adjustment. There are no loose pieces.

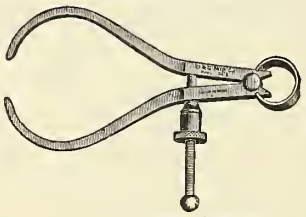
The screw is of steel hardened to prevent wear and a thumb attachment is provided for Spring Dividers.



Size Inches	No. 805 Dividers Each
2½	$1.15
3	1.15
4	1.40
5	1.40
6	1.75



No. 807 Inside



No. 806 Outside

Calipers

Size Inches	No. 806 Outside Each
2½	$1.15
3	1.15
4	1.25
5	1.25
6	1.50
No 807 Inside	
3	1.15
4	1.25
5	1.25
6	1.50

Duplicate Parts

For Spring Calipers and Dividers

	Each
Leg	$ .35
Screw and Ball	.15
Solid Nut	.10
Spring	.25
Spring Nut	.25
Nut Washer	.10
Thumb Attachment	.15

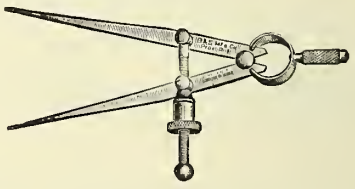
Rex Spring

With Solid Nut

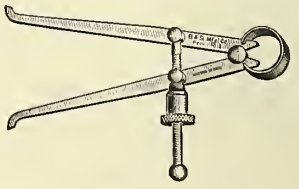
Somewhat lighter than Nos. 805, 806 and 807, but the same care is taken in their construction as in the more expensive line; the same spring is used fitted to the legs in a somewhat different manner.

Neat and attractive in appearance and durable.

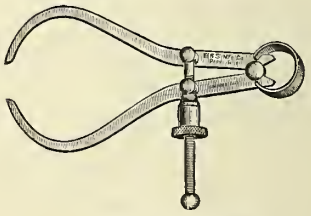
The adjusting screw is hardened to prevent wear, and a thumb attachment is provided for the Spring Dividers.



Size Inches	No. 810 Dividers Each
2½	$ .65
3	.70
4	.75
5	.80
6	.85
8	1.00



No. 812 Inside



No. 811 Outside

Calipers

Size Inches	No. 811 Outside Each
2½	$ .65
3	.70
4	.75
5	.80
6	.85
8	1.00
No. 812 Inside	
2½	.65
3	.70
4	.75
5	.80
6	.85
8	1.00

Duplicate Parts

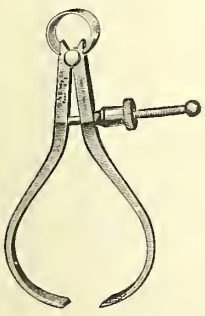
For Rex Calipers and Dividers

	Each
Leg	$ .25
Screw and Ball	.15
Solid Nut	.10
Spring	.25
Spring Nut	.25
Nut Washer	.10
Thumb Attachment	.15

Spring Calipers

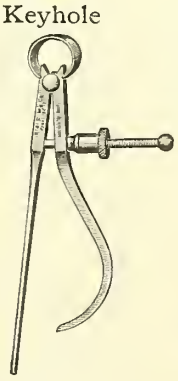
Brown & Sharpe

Thread



No. 808 Outside

Keyhole

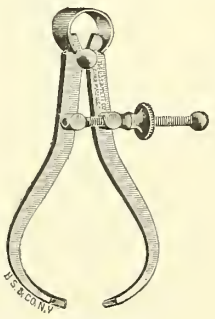


No. 809

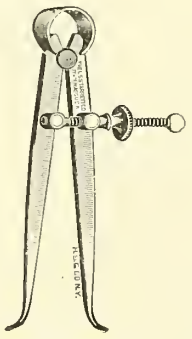
Size Inches	No. 808 Outside Thread	With Spring Nut Each
3		$1.15
4		1.25
5		1.25
	No. 809 Keyhole	
3		$1.15
4		1.25

Starrett

Thread



No. 179 Outside

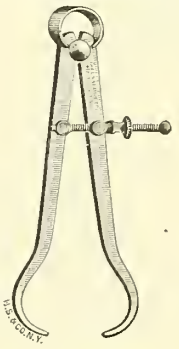


No. 184 Inside

Size Inches	With Solid Nut Each	With Spring Nut Each
4	$ .75	$ .90
5	.80	.95
6	.85	1.00
No. 184 Inside Thread		
4	$ .75	$ .90
5	.80	.95
6	.85	1.00

Starrett

Crank Shaft



No. 180 Outside

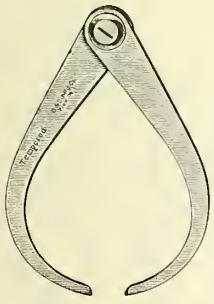
These Calipers were designed for use in turning automobile crank shafts and for reaching into difficult places. They are very stiff and nicely finished and can be depended upon for accurate results.

		Each
No. 180	6-inch, with Solid Nut	$1.00
No. 180	6-inch, with Spring Nut	1.15

Firm Joint Calipers

Brown & Sharpe Tempered

Transfer

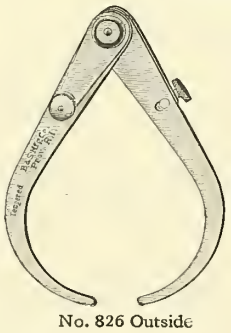


No. 821 Outside

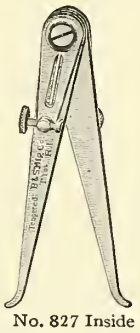


No. 822 Inside

Size Inches	No. 821 Outside Each	No. 822 Inside Each
3	$ .40	$ .40
4	.50	.50
5	.55	.55
6	.65	.65
8	.80	.80
10	.90	.90
12	1.00	1.00
14	1.50	1.50
16	1.75	1.75
18	2.10	2.10
20	2.50	2.50
24	3.00	3.00



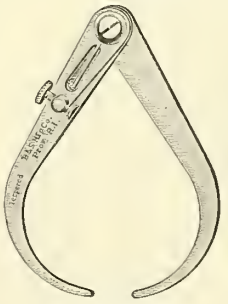
No. 826 Outside



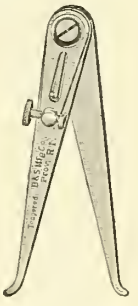
No. 827 Inside

Size Inches	No. 826 Outside Each	No. 827 Inside Each
4	$1.10	$1.10
5	1.25	1.25
6	1.35	1.35
8	1.60	1.60
10	1.85	1.85
12	2.10	2.10
14	2.35	2.35
16	2.60	2.60
18	2.85	2.85
20	3.35	3.35
24	4.10	4.10

Screw Adjusting



No. 831 Outside



No. 832 Inside

Size Inches	No. 831 Outside Each	No. 832 Inside Each
4	$ .90	$ .90
5	.95	.95
6	1.00	1.00
8	1.25	1.25
10	1.50	1.50
12	1.75	1.75
14	2.00	2.00
16	2.25	2.25
18	2.50	2.50
20	2.75	2.75
24	3.50	3.50



Hermaphrodite

Brown & Sharpe

No. 835 Tempered

Size Inches	With Adjustable Point Each	With Solid Point Each
4	$ .65	$ .50
6	.80	.65
8	1.00	.80



Narrow

This Caliper is the same in design as the regular 4-inch Firm Joint Caliper, excepting that the legs are much narrower and allow it to be used to measure the diameter of deep holes at the bottom.

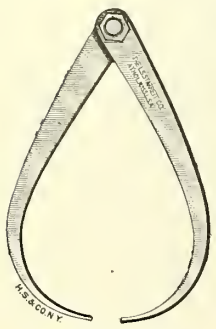
It can be inserted 2½ inches in a hole ¼-inch in diameter.

No. 837 Inside ..... $ .60

Firm Joint Calipers

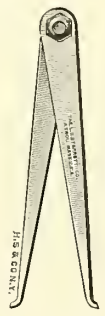
Starrett Tempered

Improved



No. 26 Outside

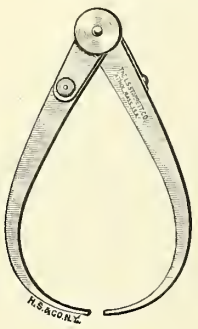
Size Inches	Each
3	$ .40
4	.50
5	.55
6	.65
8	.80
10	.90
12	1.00
14	1.50
16	1.75
18	2.10
20	2.50
24	3.00
30	5.00
36	6.00



No. 27 Inside

Size Inches	Each
3	$ .40
4	.50
5	.55
6	.65
8	.80
10	.90
12	1.00
14	1.50
16	1.75
18	2.10
20	2.50
24	3.00

Transfer



No. 36 Outside

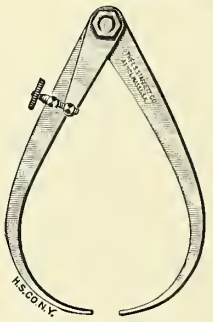
Size Inches	Each
4	$1.25
5	1.40
6	1.50
8	1.75
10	2.00
12	2.25
14	2.50
16	2.75
18	3.00
20	3.50
24	4.25



No. 37 Inside

Size Inches	Each
4	$1.25
5	1.40
6	1.50
8	1.75
10	2.00
12	2.25
14	2.50
16	2.75
18	3.00
20	3.50
24	4.25

Screw Adjusting



No. 34 Outside

Size Inches	Each
4	$ .90
6	1.00
8	1.25
10	1.50
12	1.75
14	2.00
16	2.25
18	2.50
20	2.75
24	3.50
30	6.00
36	7.00



No. 35 Inside

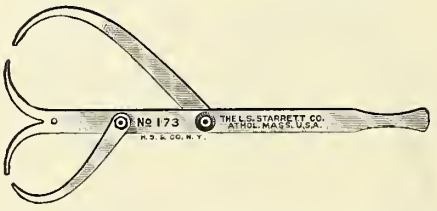
Size Inches	Each
4	$ .90
6	1.00
8	1.25
10	1.50
12	1.75
14	2.00
16	2.25
18	2.50
20	2.75
24	3.50

No. 41 Hermaphrodite
With Adjustable Point



	Each
4-inch	$ .65
6-inch	.80
8-inch	1.00
10-inch	1.20

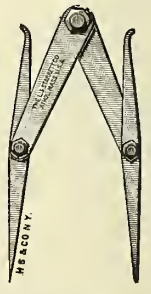
No. 173 Blacksmith Double



With long handle to caliper hot forgings with comfort—the long arm to be used for the greater and the short one for the smaller or finished size. The difference in the length of arms prevents using the wrong caliper when there is but slight variation in the work measured. The caliper is 22 inches in length over all and has a 6-inch caliper on one side and a 12-inch caliper on the other side.

No. 173, each $2.00

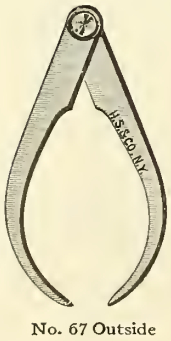
No. 44 Double



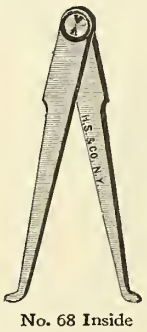
Combining Outside and Inside Calipers and Dividers. Firm joint.

	Each
6-inch	$1.25
8-inch	1.50

Plain Calipers



No. 67 Outside

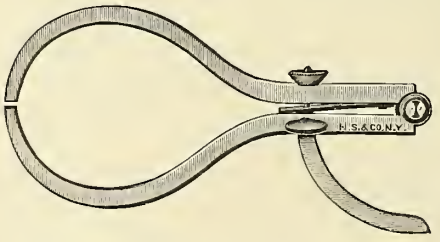


No. 68 Inside

Polished Steel

Inches	3	4	5	6	7	8	9	10	12	18
Either No. dozen	$2.65	2.85	3.30	3.75	4.40	5.35	5.90	6.50	8.00	25.00

Winged Calipers

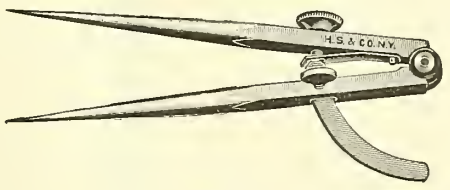


Polished Cast Steel, with Set Screw

Inches	6	8	10	12
No. 101, dozen	$7.00	9.00	11.00	13.00

Dividers and Ball Points

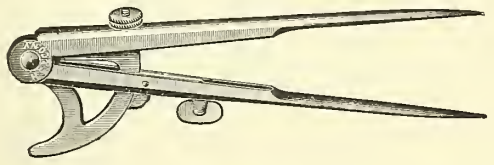
Winged Dividers



No. 35

Forged steel, polished, with brass joints.

Inches	5	6	7	8	9	10	12	15	18	24
Dozen	$5.50	5.50	6.50	7.50	9.00	10.00	12.00	18.00	35.00	50.00

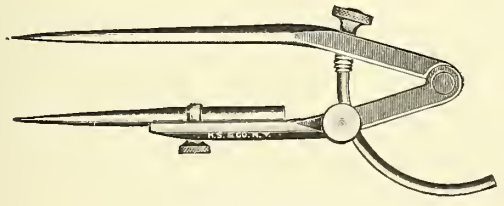


Excelsior

The method of adjustment makes this tool practically a spring divider, adaptable for fine adjustments. The points are made of Stubbs' Steel Wire. Fully nickel-plated.

Inches	6	8	10
Dozen	$7.50	10.50	13.50

Extension Dividers



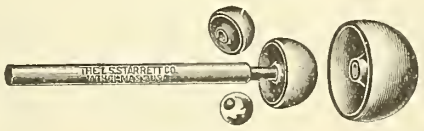
Starrett No. 92

Both points are crucible forged steel, tempered. The quadrant passes through the leg and the clamp screw frictionally locks it firm. After fine adjustments are made, lock nut between the arms locks the spring, curing the defect in the old style dividers of the points dodging out and in with the grain of the wood. The adjustable point may be removed and pencil inserted in its place.

Inches	6	7	8	9
Plain, each	$ .85	$ .90	$1.00	$1.15
Nickeled, each	1.10	1.15	1.25	1.40

Sent plain unless otherwise ordered

Ball Points



Starrett No. 88

For Use with No. 85 or No. 90 Dividers and No. 59 Trammels

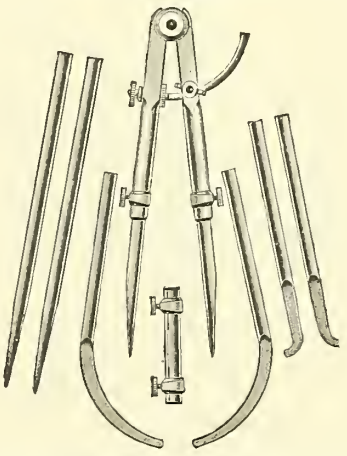
This attachment consists of four balls, of $1\frac{9}{16}$-inch, 1-inch, $\frac{3}{4}$-inch, and $\frac{1}{2}$-inch diameter, respectively, and a holder which fits either divider leg or trammel head. It is used to form a seat for the divider leg in describing circles around a hole.

In ordering this set for use with Trammels, please give tool number of the Trammel, so that the proper holder may be sent.

Complete, 4 Balls and Holder, set	$1.25
Either Ball or Holder, each	.25

Improved Dividers

Bronze



The head and socket legs of this tool are made from drawn (not cast) bronze metal, are finely finished and nickel-plated.

The joint is large and firm. The patent locking nut between the arms, against which a spiral spring acts, is a valuable feature. After the fine adjustment is made, the nut may be turned back, locking spring and arms firmly, thus remedying the weak point in the common wing divider, which is only as stiff as the adjusting spring. The quadrant is fastened by our improved method.

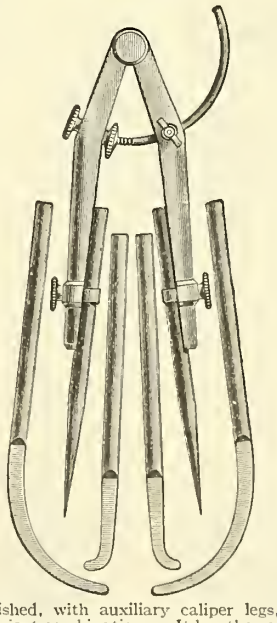
A pencil fits either socketed leg, while an auxiliary holder fits reversed end of either short point for an extension. The head, with short point, is eight inches long; may be extended two inches more; will caliper 10 inches outside and $12\frac{1}{2}$ inches inside. With short points it will scribe a 24-inch and with long points a 34-inch circle.

Starrett		Set
No. 90A	With short points only	$2.25
No. 90B	Set complete	4 00

Sent complete (No. 90B) unless otherwise ordered.

Improved Steel Extension Divider

Steel

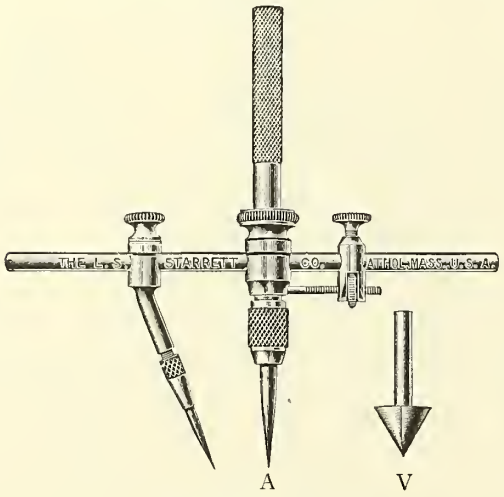


Well-made, nicely finished, with auxiliary caliper legs, which, together with a common pencil, form convenient combinations. It has the patent locking nut described above, same as on No. 90 line. A full-threaded nut on the stud, through which the quadrant passes, is a more durable fastener than two or three threads tapped in the arm to hold the wing of the old style. The head and arms of this tool are made from best malleable iron, the rest of steel. The points are hardened and warranted first class. The smallest size is 7 inches long; by adjustment of points it becomes 9 inches, and will scribe a 22-inch circle; will caliper 11 inches outside and 13 inches inside. The second size is 9 inches; by adjustment of points it becomes 12 inches, and will scribe a 30-inch circle and caliper 14 inches outside and 16 inches inside.

Starrett		Set
No. 85A	7-inch, with divider legs only	$1.25
No. 85B	9-inch, with divider legs only	1.50
No 85C	7-inch, complete	2.25
No. 85D	9-inch, complete	2.50
No. 85E	12-inch, with divider legs only	2.25
No. 85F	12-inch, complete	3.25

No. 85C sent unless otherwise ordered.

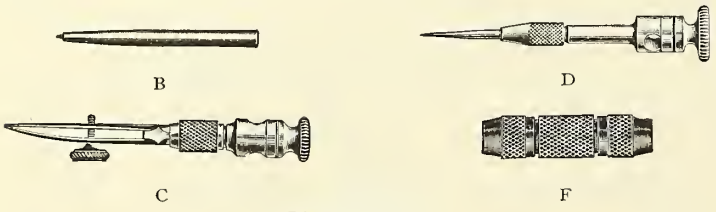
Universal Dividers



Starrett No. 89

The adjustable scriber holder is reversible and carries either a fine tempered steel point "A" or a pencil lead, held in a split socket by a knurled nut. With the holder turned outward it is possible to work close to shoulders, something that cannot be done by a similar tool of any other make; turned inward, points may be brought close together to scribe the smallest circle. With 4-inch beam 7½ inches and under may be scribed. An auxiliary beam 13 inches long is furnished, with which a 25-inch circle may be drawn. The V-center point may be substituted for the regular point, adapting the tool for scribing around a drilled hole. We also furnish a pen attachment.

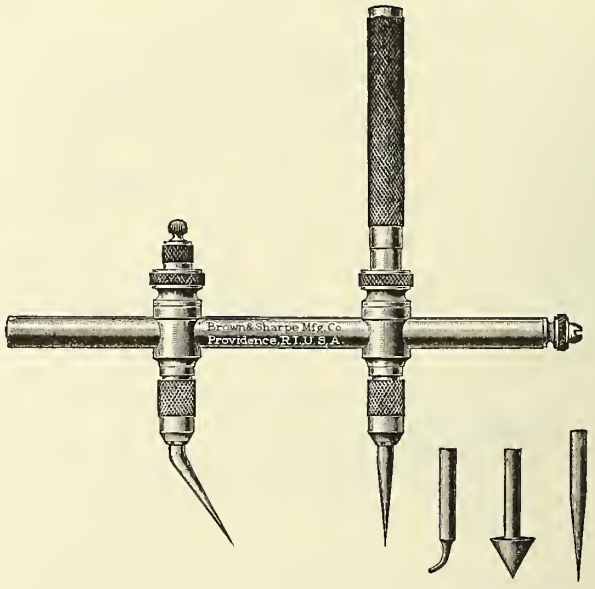
Tool, with 4-inch beam and V-center point $1.75



List of Extras

A	Extra Steel Points, each	$ .10
B	Needle Points, each	.15
C	Pen Attachment	1.00
D	Extra Straight Point and Socket	.50
E	Extra 13-inch Beam to scribe 25-inch circle	.25
F	Coupling	.35
	Total for tool and all attachments	$4.00

Tool and V-Center Point, listing at $1.75, sent unless otherwise ordered.



Brown & Sharpe No. 843

This Tool shows many points of excellence in design and construction.

The Scriber Point Holder has both fine and quick adjustment; the fine adjustment is obtained by a screw, enclosed in a beam, which engages the nut on the scriber point holder. By pulling up the small knurled knob, at top of post, the screw is released and the post can be quickly adjusted; this knob springs into place as soon as released.

The scriber point is adjustable either side of the center, and can be set for scribing small circles or for working close to a shoulder. The adjustable center point is held by a spring chuck and can be removed easily and replaced by a pencil or other special points. The posts are clamped by knurled nuts and held in place by spring friction when the nuts are unclamped for setting the points.

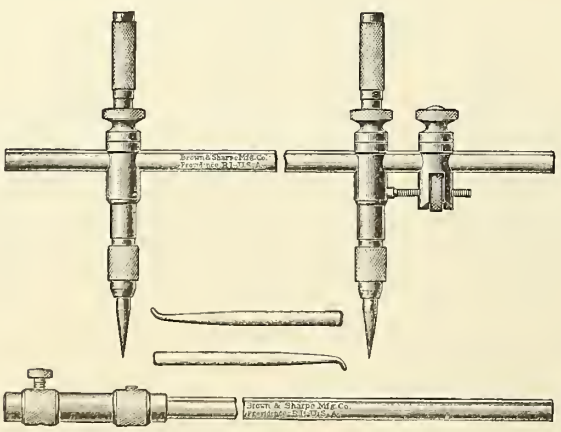
A V-point is furnished for use in describing a circle about a hole already drilled. A caliper point is also included.

The beam is 4 inches long and the points can be set to describe a circle 8 inches in diameter.

Complete $3.00

Improved Steel Beam Trammels

Brown & Sharpe No. 845



The Trams are clamped by knurled nuts to the beam, which is flattened on top, and the thrust taken by washers to prevent marring the bearing surfaces. A spring friction holds the trams in place when the nuts are loosened for setting. One tram has an adjusting screw and slide, which is convenient for fine adjustment of the points.

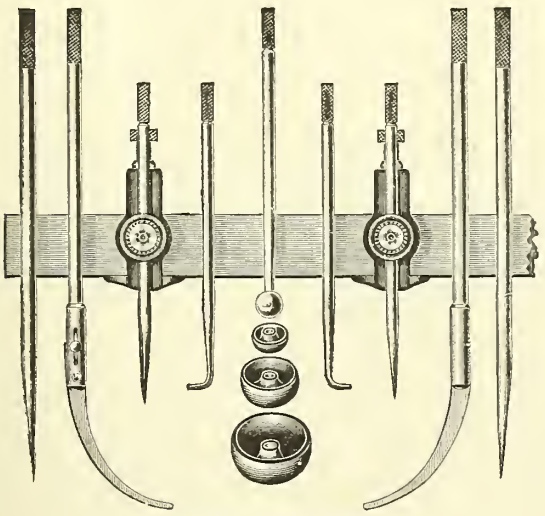
A swivel handle at the top of each tram is a noticeable advantage, as it enables the trammels to be much more conveniently and accurately used than is possible with fixed handles. The adjustable points are held by spring chucks and can be removed easily and replaced by pencil or other special points.

	Each
With 9-inch beam, will describe a circle 18 inches in diameter..	$3.00
With 13-inch beam, will describe a circle 26 inches in diameter..	3.00
With 27-inch beam, will describe a circle 54 inches in diameter..	3.50

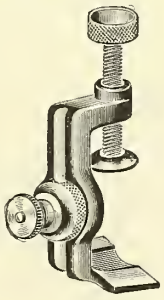
A pair of calipering points is furnished with these trammels.

A pair of "V" points, one large and one small, can be furnished when desired for $1.00 extra.

Trammels



Starrett No. 59



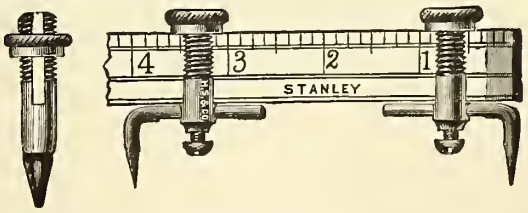
This cut shows the trammels fastened to a wooden beam, which may be any size from ¾-inch to 1⅝ inches wide, and of any thickness desired (requiring no fitting), giving stiffness according to the length and adapting it for small or large work.

The auxiliaries designed to go with the trammel heads are as shown above, viz., inside and outside caliper legs, an extra pair of long points, a set of four ball points with holder, which enables one to scribe a circle from the center of any hole up to 1½ inches and under. A lead pencil may be used in place of either of the steel points. The clamping device is adapted to take in either a small or common sized pencil. The trammels are furnished with or without auxiliaries.

The small engraving gives a more detailed representation of one of the heads.

		Each
No. 59A	Trammel Heads (with one pair of points)	$2.00
No. 59B	Balls and Holder, per set (see page 287)	1.25
No. 59C	Small Caliper Legs, per pair	.50
No. 59D	Large Caliper Legs, per pair	.75
No. 59E	Large Divider Points, per pair	.50
No. 59F	Set complete	4.75

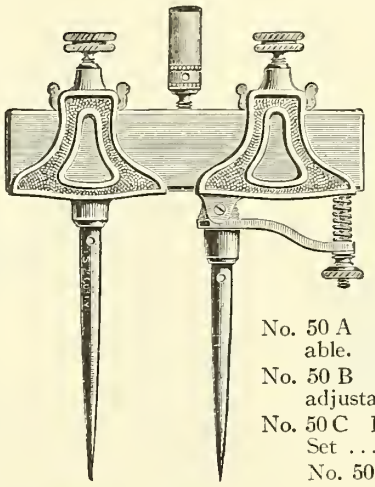
Trammel heads with one pair of points (No. 59A) will be sent unless otherwise ordered.



Stanley No. 99

Can be attached to folding rules of any ordinary width. A set consists of two brass trammel heads with movable steel points, and one head with a pencil socket.

Set ..... $ .50



Starrett

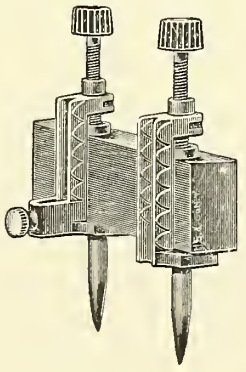
Nickel-plated, made of bronze metal, with forged-steel points, hardened.

Either point can be removed, and the pencil socket accompanying each pair put in its place.

Adjustable like spring dividers. Light and durable.

No. 50 A	With 3-inch points, adjustable. Set	$2.50
No. 50 B	With 3-inch points, not adjustable. Set	1.50
No. 50 C	Extra long points, 5-inch. Set	.35

No. 50A sent unless otherwise ordered.

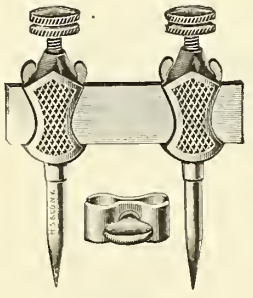


Stanley

These Trammel Points are so constructed that they can be attached to one side of any straight stick, without exact regard to its size, and are thus quickly adjusted for use.

The peculiar form of the socket makes it possible to use an ordinary-sized pencil, or a full-sized oval-shaped carpenters pencil.

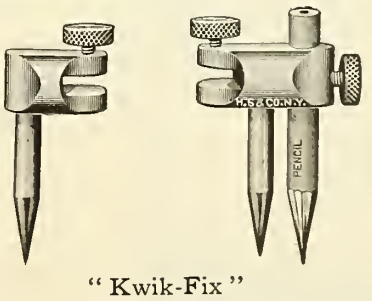
No. 4 Nickel-plated, with steel points. Pair ..... $ .75



Stanley

Bronze Metal, with Steel Points and Pencil Holder

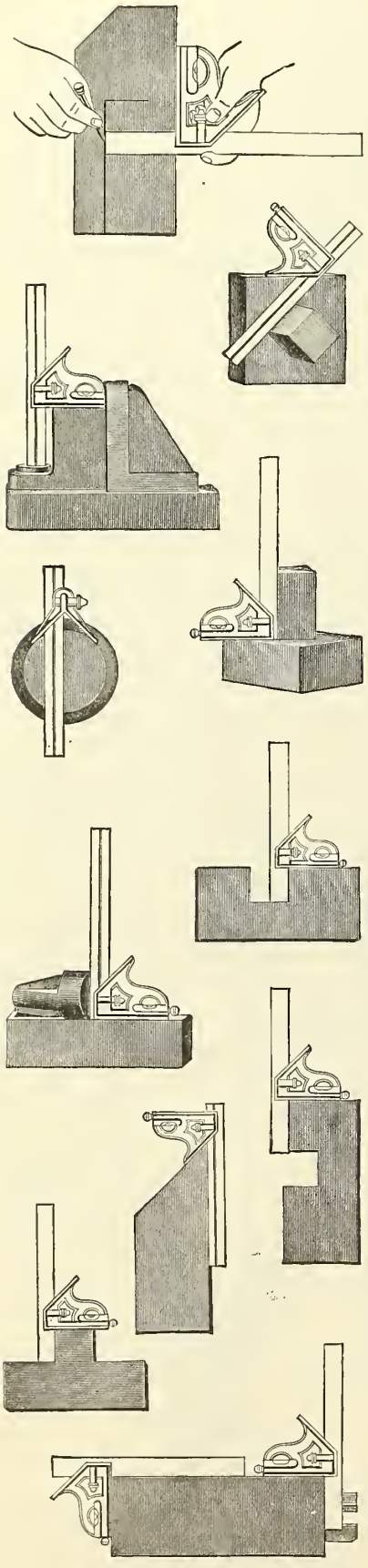
No. 1	For ¼x⅝-inch bars, pair	$1.00
No. 2	For ⅜x⅞-inch bars, pair	1.25



"Kwik-Fix"

Easily attached to a foot rule, square, saw, or anything $\frac{3}{16}$ of an inch or less in thickness. Affixed to the inside of a steel square an excellent stair gauge is obtained. Secure pencil clamp.

Pair ..... $ .50



A few of the Uses of Combination Square

Instructions for the Use of the Combination Square

The Combination Square

as its name indicates, is a tool that can be used for the same purposes as an ordinary try-square but it differs from the try-square in that the head can be made to slide along the blade and clamp at any desired place, and combined with the square is a level and a miter. The sliding of the head is accomplished by means of a central groove in which travels a guide in the head of the square. This permits the scale to be pulled out and used simply as a rule. It is frequently desired to vary the length of the blade of a try-square and this is readily accomplished with the combination square. It is also convenient to square a piece with a surface and at the same time tell whether one or the other is level or plumb. The spirit level in the head of the square permits this to be done without the use of a separate level. The head of the square may also be used as a simple level.

Because the scale may be moved in the head, the combination square makes a good marking gauge, by setting the scale at the proper position and clamping it there. The whole combination square may then be slid along as with an ordinary gauge. As a further convenience, a scriber is held frictionally in the head by a small brass bushing. The scriber head projects from the bottom of the square stock in a convenient place to take out quickly.

In laying out preliminary to machining, the combination square may be used to scribe lines at miter angles as well as at right angles, for one edge of the square head is at 45-degree. Where micrometer accuracy is not essential the blade of the combination square may be set at any desired position and the square used as a depth gauge to measure in mortises, or the end of the scale may be set flush with the edge of the square and used as a height gauge.

The head may be unclamped and entirely removed from the scale and a center head substituted so that the same tool can quickly be used to find the centers of shafting and other cylindrical pieces. An attachment described on a succeeding page and a second blade or rule can be clamped at any point so that lines may be drawn parallel to the head. When combined with the center head this attachment is convenient for scribing parallel chords on the ends of cylindrical work.

The hardened blade of this combination square prevents the corners from wearing round and destroying the graduations, thus keeping the scale at all times accurate.

This combination square combining as it does a rule, square, miter, depth gauge, height gauge, level and center head permits of more rapid work on the part of the mechanic, saves littering the bench with a number of tools each of which is necessary, but which may be used only rarely, and tends toward the goal for which all mechanics are striving—greater efficiency.

SEE DISCOUNT SHEET

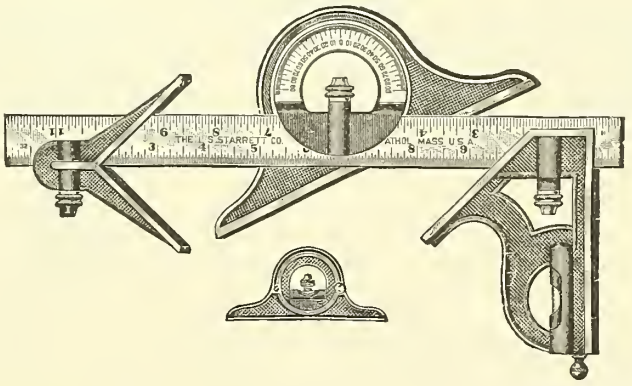
Combination Sets

Starrett

The combination square met with such universal approval from machinists that it was but a step to add to it the protractor head and have a combination set, made up of the rule on which slide the square-, center-, and protractor-heads. This makes possible more varieties of uses in laying out and testing work than are possible with any other instrument used by mechanics.

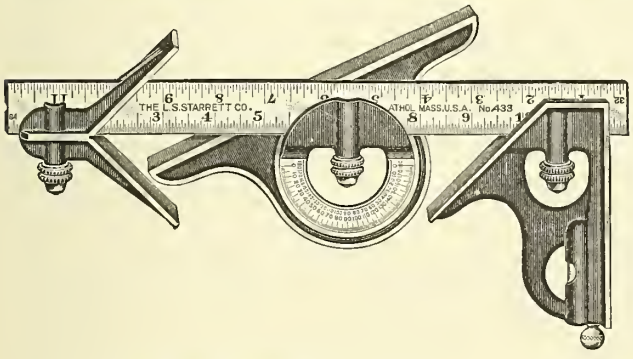
Nos. 9 and 9 M

With Hardened Blade



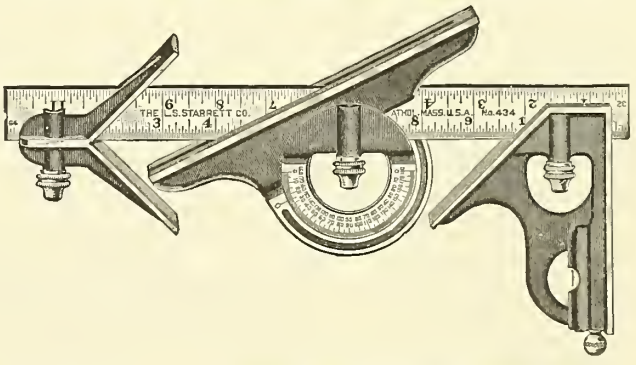
Nos. 433, 433 M and 433 ME

With Hardened Blade, Drop-Forged Stock and Center Head



Nos. 434, 434 M and 434 ME

With Hardened Blade, Drop-Forged Stock and Center Head and Reversible Protractor Head



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

Size Inches	Number 9	Number 433	Number 434
9	$3.75	$4.75	$5.25
12	4.00	5.00	5.50
18	4.75	5.75	6.25
24	5.25	6.25	6.75

Metric Measure

Graduated in millimeters and ½ millimeters.

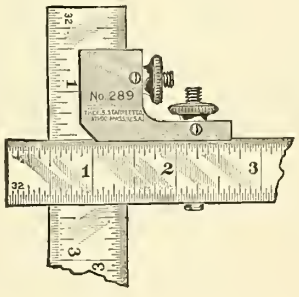
Size CM	Number 9 M	Number 433 M	Number 434 M
20	$3.75	$4.75	$5.25
30	4.00	5.00	5.50
50	4.75	5.75	6.25
60	5.25	6.25	6.75

Metric and English Measure

Graduated in ½ millimeters and 32nds of an inch; millimeters and 64ths of an inch.

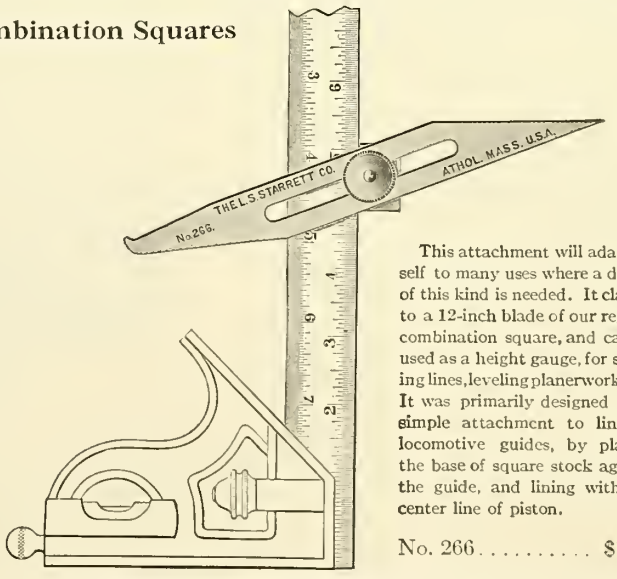
Size CM	Number 433 ME	Number 434 ME
20	$4.75	$5.25
30	5.00	5.50
50	5 75	6.25
60	6.25	6.75

Attachments for Starrett Combination Squares



The use of this small and inexpensive attachment greatly adds to the effectiveness of the Combination Square. It is made to fit the blades of the 12, 18 and 24-inch Starrett Combination Squares, and can be used in connection with any regular rule or square not wider than one inch. It should be included in every mechanic's outfit.

No. 289 ..... $ .85

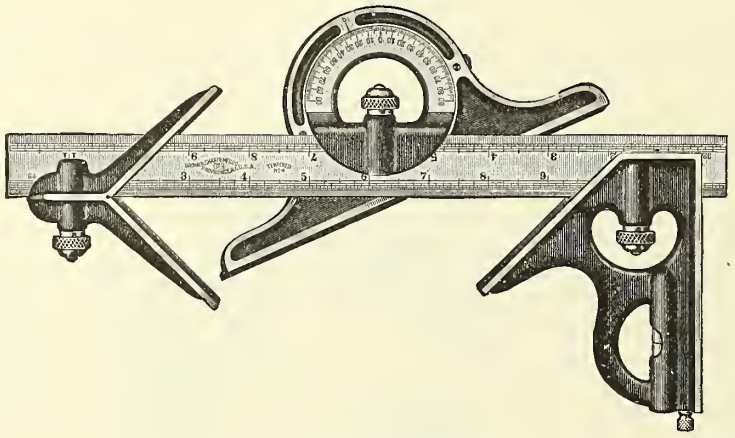


This attachment will adapt itself to many uses where a device of this kind is needed. It clamps to a 12-inch blade of our regular combination square, and can be used as a height gauge, for scribing lines, leveling planerwork, etc. It was primarily designed as a simple attachment to line up locomotive guides, by placing the base of square stock against the guide, and lining with the center line of piston.

No. 266 ..... $1.00

Combination Sets

Brown & Sharpe



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

With Plain Protractor Heads

425 With Square Heads Hardened and Tempered Blades.
426 With Soft Heads and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
425	9	$4.75	426	9	$4.25
425	12	5.00	426	12	4.50
425	18	5.75	426	18	5.25
425	24	6.25	426	24	5.75

With Extra Heavy Blades

427 With Square Heads Hardened and Tempered Blades.
428 With Soft Heads and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
427	18	$8.25	428	18	$7.75
427	24	9.00	428	24	8.25

With Reversible Protractor Heads

438 With Square Heads Hardened and Tempered Blades.
439 With Soft Blades and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
438	9	$5.25	439	9	$4.75
438	12	5.50	439	12	5.00
438	18	6.25	439	18	5.75
438	24	6.75	439	24	6.25

With Extra Heavy Blades

440 With Square Heads Hardened and Tempered Blades.
441 With Soft Heads and Tempered Blades.

Number	Size Inches	Each	Number	Size Inches	Each
440	18	$8.75	441	18	$8.25
440	24	9.75	441	24	9.00

Metric Measure

Graduated in millimeters and ½ millimeters.

With Plain Protractor Heads

429 With Square Heads Hardened and Tempered Blades.
430 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
429	20	$4.75	430	20	$4.25
429	30	5.00	430	30	4.50
429	50	5.75	430	50	5.25
429	60	6.25	430	60	5.75

With Extra Heavy Blades

431 With Square Heads Hardened and Tempered Blades.
432 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
431	50	$8.25	432	50	$7.75
431	60	9.00	432	60	8.25

With Reversible Protractor Heads

442 With Square Heads Hardened and Tempered Blades.
443 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
442	20	$5.25	443	20	$4.75
442	30	5.50	443	30	5.00
442	50	6.25	443	50	5.75
442	60	6.75	443	60	6.25

With Extra Heavy Blades

444 With Square Heads Hardened and Tempered Blades.
445 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
444	50	$8.75	445	50	$8.25
444	60	9.75	445	60	9.00

Metric and English Measure

Graduated in millimeters and 32nds of an inch; ½ millimeters and 64ths of an inch.

With Plain Protractor Heads

433 With Square Heads Hardened and Tempered Blades.
434 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
433	20	$4.75	434	20	$4.25
433	30	5.00	434	30	4.50
433	50	5.75	434	50	5.25
433	60	6.25	434	60	5.75

With Extra Heavy Blades

435 With Square Heads Hardened and Tempered Blades.
436 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
435	50	$8.25	436	50	$7.75
435	60	9.00	436	60	8.25

With Reversible Protractor Heads

446 With Square Heads Hardened and Tempered Blades.
447 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
446	20	$5.25	447	20	$4.75
446	30	5.50	447	30	5.00
446	50	6.25	447	50	5.75
446	60	6.75	447	60	6.25

With Extra Heavy Blades

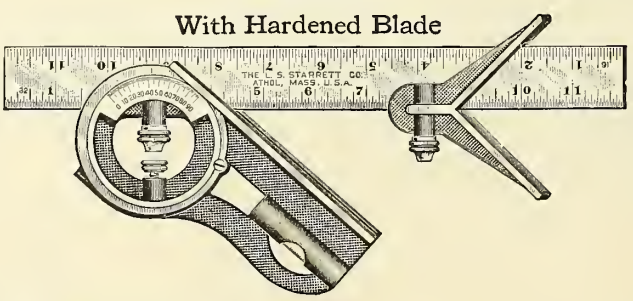
448 With Square Heads Hardened and Tempered Blades.
449 With Soft Heads and Tempered Blades.

Number	Size CM.	Each	Number	Size CM.	Each
448	50	$8.75	449	50	$8.25
448	60	9.75	449	60	9.00

Patent Inclinometer

Starrett

With Hardened Blade



English Measure

Graduated in 8ths, 16ths, 32nds, and 64ths of an inch.

No. 10

Without Center Head

12-inch	$4.00
18-inch	5.00
24-inch	6.00
Center Head to fit all sizes	.75

Sent without Center Head unless otherwise ordered.

Metric Measure

Graduated in millimeters and ½ millimeters.

No. 10 M

Without Center Head

30 cm	$4.00
50 cm	5.00
60 cm	6.00
Center Head to fit all sizes	.75

Sent without Center Head unless otherwise ordered.

The cut represents an inclinometer, try-square, and bevel protractor combined.

It is compact, convenient, and a complete and perfect substitute for several costly tools.

It consists of a stock and disc, both slotted to receive the blade, which folds in the stock. The blade attached to the graduated rotary disc may be secured at any angle from 0 to 90 degrees, and by loosening the clamp screw it may be shortened or extended full length, or removed for a straight edge.

The working face of the stock, extending both sides of the blade, admits of its being reversed, so that the same angle may be laid off in opposite directions without changing the angle in the tool, thus requiring but ¼ of a graduated circle to obtain all angles both ways.

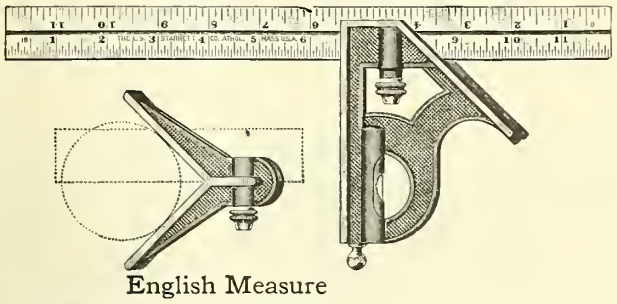
At 90 degrees, the blade brings up against a case-hardened screw, accurately adjusted, thus forming a try square; by holding the blade perpendicular (the level in the stock being at right angles), a plumb, by folding the tool a level length of blade.

The parts of these Tools are all made interchangeable and repairs can be made by ordering the part needed. It is not necessary to return the tool.

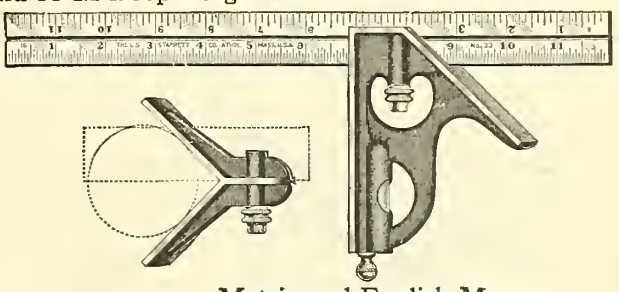
Combination Squares

Starrett

Nos. 11, 11 M and 11 ME Hardened Blades.



Nos. 33 and 33 M Drop-Forged Heads and Hardened Blades



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

Size Inches	Number 11 With Center Head	Number 11 Without Center Head	Number 33 With Center Head	Number 33 Without Center Head
4		*$ .75		
6	$1.50	1.00	$2.50	$2.00
9	1.75	1.25	2.75	2.25
12	2.00	1.50	3.00	2.50
18	2.75	2.25	3.75	3.25
24	3.25	2.75	4.25	3.75

*Without center head or level.
Sent with center head unless otherwise ordered.

Metric Measure

Graduated in millimeters and ½ millimeters.

Size CM.	Number 11 M With Center Head	Number 11 M Without Center Head	Number 33 M With Center Head	Number 33 M Without Center Head
10		*$ .75		
15	$1.50	1.00	$2.50	$2.00
20	1.75	1.25	2.75	2.25
30	2.00	1.50	3.00	2.50
50	2.75	2.25	3.75	3.25
60	3.25	2.75	4.25	3.75

*Without center head or level.
Sent with center head unless otherwise ordered.

Metric and English Measure

Graduated ½ millimeters and 32nds of an inch; millimeters and 64ths of an inch.

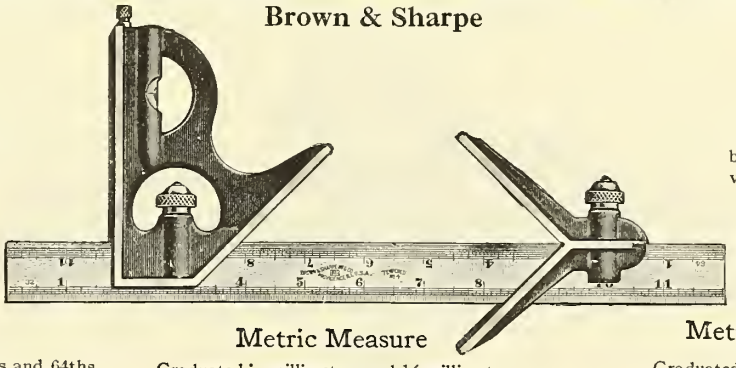
Size CM.	Number 11ME With Center Head	Number 11ME Without Center Head
10		*$ .75
15	$1.50	1.00
20	1.75	1.25
30	2.00	1.50
50	2.75	2.25
60	3.25	2.75

*Without center head or level.
Sent with center head unless otherwise ordered.

12-Inch size only furnished with Shrink Graduations for Pattern Makers if so desired at $ .50 each extra.

Brown & Sharpe

Heads are drop-forged, contributing much to the lightness, durability and convenience of the tool.



Parallel lines running lengthwise of the blade are provided to aid in reading the various parts of an inch.

English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

With hardened heads and tempered blades.

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
				4	$1.50
400	6	$2.50	401	6	2.00
400	9	2.75	401	9	2.25
400	12	3.00	401	12	2.50
400	18	3.75	401	18	3.25
400	24	4.25	401	24	3.75

With soft heads and tempered blades.

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
402				4	$1.25
402	6	$2.00	403	6	1.50
402	9	2.25	403	9	1.75
402	12	2.50	403	12	2.00
402	18	3.25	403	18	2.75
402	24	3.75	403	24	3.25

With Extra Heavy Blades and Heads

With hardened heads and tempered blades.

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
412	18	$5.75	413	18	$4.25
412	24	6.75	413	24	5.25

With soft heads and tempered blades.

Number	Size Inches	With Center Head	Number	Size Inches	Without Center Head
414	18	$5.25	415	18	$3.75
414	24	6.25	415	24	4.75

Metric Measure

Graduated in millimeters and ½ millimeters.

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
			405	10	$1.50
404	15	$2.50	405	15	2.00
404	20	2.75	405	20	2.25
404	30	3.00	405	30	2.50
404	50	3.75	405	50	3.25
404	60	4.25	405	60	3.75

With soft heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
			407	10	$1.25
406	15	$2.00	407	15	1.50
406	20	2.25	407	20	1.75
406	30	2.50	407	30	2.00
406	50	3.25	407	50	2.75
406	60	3.75	407	60	3.25

With Extra Heavy Blades and Heads

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
416	50	$5.75	417	50	$4.25
416	60	6.75	417	60	5.25

With soft heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
418	50	$5.25	419	50	$3.75
418	60	6.25	419	60	4.75

Metric and English Measure

Graduated in millimeters and 32nds of an inch; ½ millimeters and 64ths of an inch.

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
			409	10	$1.50
408	15	$2.50	409	15	2.00
408	20	2.75	409	20	2.25
408	30	3.00	409	30	2.50
408	50	3.75	409	50	3.25
408	60	4.25	409	60	3.75

With soft heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
			411	10	$1.25
410	15	$2.00	411	15	1.50
410	20	2.25	411	20	1.75
410	30	2.50	411	30	2.00
410	50	3.25	411	50	2.75
410	60	3.75	411	60	3.25

With Extra Heavy Blades and Heads

With hardened heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
420	50	$5.75	421	50	$4.25
420	60	6.75	421	60	5.25

With soft heads and tempered blades.

Number	Size CM.	With Center Head	Number	Size CM.	Without Center Head
422	50	$5.25	423	50	$3.75
422	60	6.25	423	60	4.75

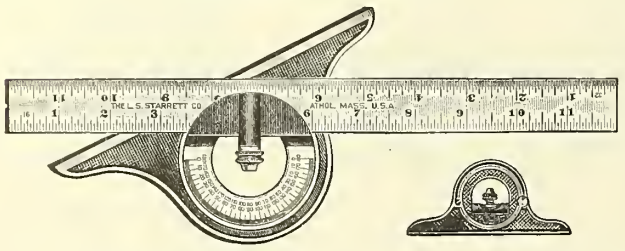
The parts of these Squares are all made interchangeable and repairs can be made by ordering the part needed. It is not necessary to return the square.

SEE DISCOUNT SHEET PAGE 293

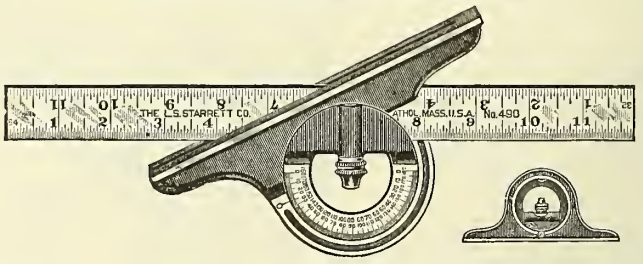
Protractors

Starrett

Nos. 12 and 12 M
With Hardened Blade



Nos. 490, 490 M and 490 ME
With Hardened Blade and Reversible Head



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

Size Inches	Number 12	Number 490
9	$2.75	$3.50
12	3.00	3.75
18	3.50	4.50
24	4.00	5.00

Metric Measure

Graduated in millimeters and ½ millimeters.

Size CM.	Number 12 M	Number 490 M
20	$2.75	$3.50
30	3.00	3.75
50	3.50	4.50
60	4.00	5.00

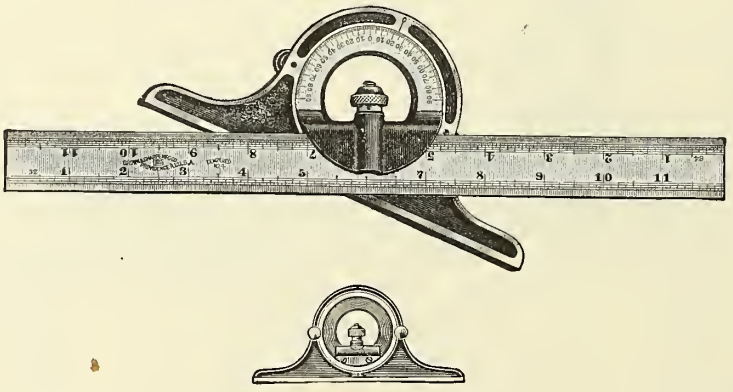
Metric and English Measure

Graduated in ½ millimeters and 32nds of an inch, millimeters and 64ths of an inch.

Size CM.	Number 490 ME
20	$3.50
30	3.75
50	4.50
60	5.00

Protractor Heads with Level, Plain $2.00; Reversible $2.50

Brown & Sharpe



English Measure

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

Size Inches	Number 450 Plain Head	Number 456 Reversible Head
9	$3.00	$3.50
12	3.25	3.75
18	4.00	4.50
24	4.50	5.00

Protractor Head with Level

Plain, all sizes	$2.00
Reversible, all sizes	2.50

With Extra Heavy Blades and Heads

Size Inches	Number 451 Plain Head	Number 457 Reversible Head
18	$5.00	$5.50
24	5.75	6.25

Protractor Head with Level

Plain, all sizes	$2.50
Reversible, all sizes	3.00

Metric Measure

Graduated in millimeters and ½ millimeters.

Size CM.	Number 452 Plain Head	Number 458 Reversible Head
20	$3.00	$3.50
30	3.25	3.75
50	4.00	4.50
60	4.50	5.00

Protractor Head with Level

Plain, all sizes	$2.00
Reversible, all sizes	2.50

With Extra Heavy Blades and Heads

Size CM.	Number 453 Plain Head	Number 459 Reversible Head
50	$5.00	$5.50
60	5.75	6.25

Protractor Head with Level

Plain, all sizes	$2.50
Reversible, all sizes	3.00

Metric and English Measure

Graduated in millimeters and 32nds of an inch, ½ millimeters and 64ths of an inch.

Size CM.	Number 454 Plain Head	Number 460 Reversible Head
20	$3.00	$3.50
30	3.25	3.75
50	4.00	4.50
60	4.50	5.00

Protractor Head with Level

Plain, all sizes	$2.50
Reversible, all sizes	3.00

With Extra Heavy Blades and Heads

Size CM.	Number 455 Plain Head	Number 461 Reversible Head
50	$5.00	$5.50
60	5.75	6.25

Protractor Head with Level

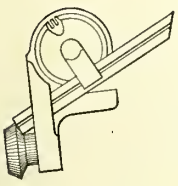
Plain, all sizes	$2.50
Reversible, all sizes	3.00

The parts of these Protractors are all made interchangeable and repairs can be made by ordering the part needed. It is not necessary to return the tool

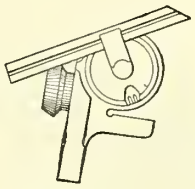
SEE DISCOUNT SHEET

Bevel Protractors

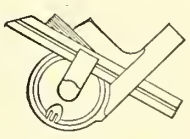
Suggestions for Use



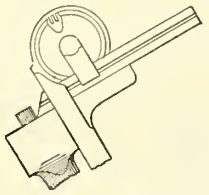
Measuring Angle of Edge on Small Bevel Gear Blanks



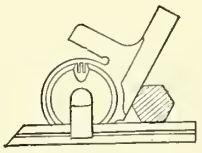
Measuring Angle of Face on Bevel Gear Blanks



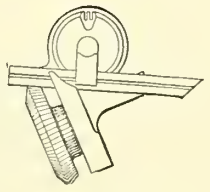
Testing Angle Blocks



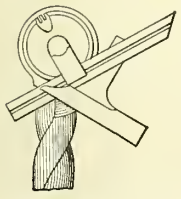
Testing for Squareness of End of Turned Work



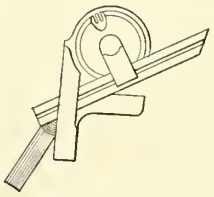
Testing Hexagonal Stock



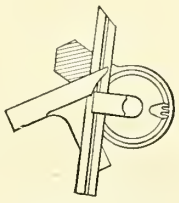
Measuring Angle of Edge on Large Bevel Gears



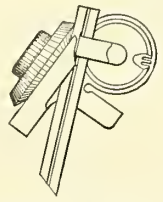
Testing Angle of Cutting Edges on Twist Drill



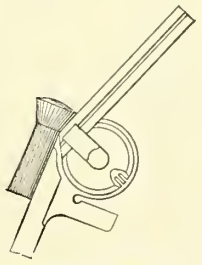
Measuring Angle on Thread Tool



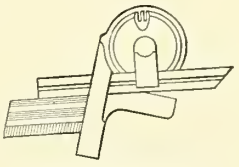
Another Method of Testing Hexagonal Stock



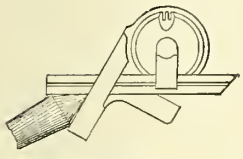
Measuring Angle of Face of Large Bevel Gear Blank



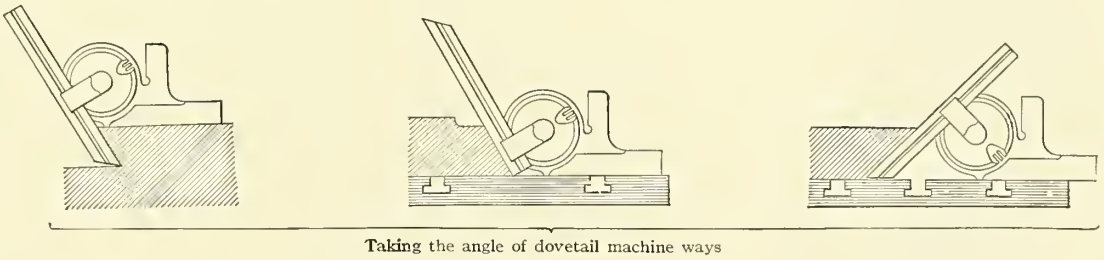
Measuring Angle on Spring Collet Blank



Testing an Angular Block

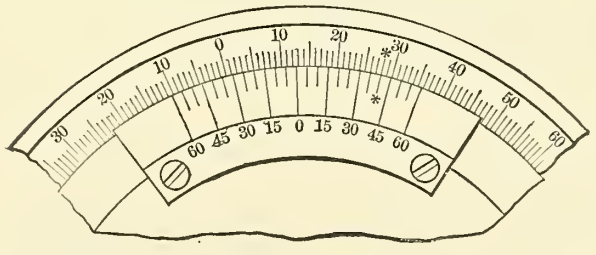


Testing Angle of Lathe or Grinder Center



Taking the angle of dovetail machine ways

Method of Reading Vernier



The Vernier indicates every five minutes (5′) or one-twelfth of a degree.

The disc of the protractor is graduated in degrees from 0 to 90 degrees each way. The Vernier plate is graduated so that 12 divisions on the Vernier occupy the same space as 23 divisions on the disc.

Each space upon the Vernier is 5′ shorter than two spaces on the true scale or disc.

When the line marked O on the Vernier coincides with the line marked O on the true scale, the edges of the base and blade are parallel. When the swivel head is moved so the line on the Vernier next to O coincides with the line next but one to O on the true scale, the included angle of the base and blade has been changed $\frac{1}{12}$ of a degree or 5′.

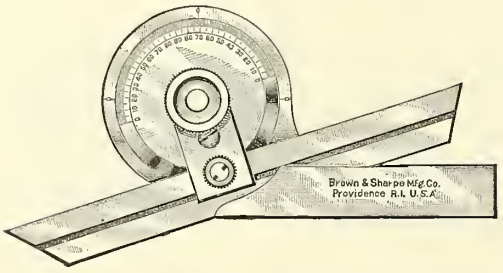
To read the Protractor setting: Read off directly from the true scale the number of whole degrees between O and the O of the Vernier scale. Then count, in the same direction, the number of spaces from the zero of the Vernier scale to a line that coincides with a line on the true scale; multiplying this number by 5 the product will be the number of minutes to be added to the number of whole degrees.

For example: As the Vernier is shown in the cut it has moved 12 whole degrees to the right of the O upon the true scale and the 8th line on the Vernier coincides with a line upon the true scale as indicated by *. Multiplying 8 by 5 the product, 40, is the number of minutes to be added to the whole number of degrees, thus indicating a setting of 12 degrees and 40 minutes (12° 40′).

Bevel Protractors

Brown & Sharpe

Improved No. 493



Well adapted for all classes of work where angles are to be laid out or established, which do not require such a fine degree of accuracy as is possible with a Protractor having a Vernier.

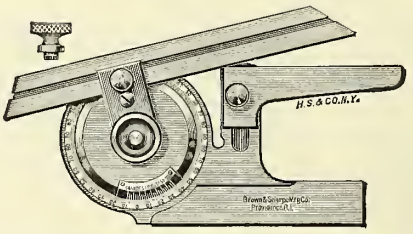
One side of the stock is flat, thus permitting its being laid flat upon the paper or work.

The dial is accurately graduated to degrees over an arc of 180 degrees, reading 0 to 90 degrees from each extremity of the arc. It turns on a large central stud, which is hardened and ground and can be rigidly clamped in any position after setting.

With 6-inch blade	$6.00
In leatherette case	6.75
With 12-inch blade	7.00
In leatherette case	8.00
Extra blades, 6-inch	.75
Extra blades, 12-inch	1.75

Improved Universal No. 496

With Vernier Acute Angle Attachment



Designed for all classes of work where angles are to be laid out, and with the attachment, which is a new feature, extremely small angles can be easily and quickly established. All measurements are accurate, for the dial is accurately graduated, alignments correct, and workmanship throughout of the best.

The Protractor can be laid flat on the work or paper, one side of the tool being flat. The dial is accurately graduated to degrees the entire circle, the graduated surface being depressed, thus protecting the graduations from wear.

A Vernier, which reads to 5 minutes or $\frac{1}{12}$ of a degree, adds materially to the fineness to which angles can be laid out. A fine adjustment is provided by means of a small thumb screw furnished as an attachment.

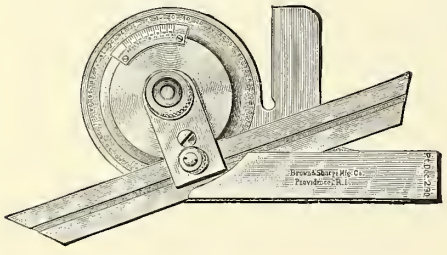
A thumb pinion attachment is furnished for fine adjustment.

With 6-inch blade	$10.50
In morocco case	11.50
With 12-inch blade	11.50
In morocco case	13.00
Extra blades, 6-inch	.75
Extra blades, 12-inch	1.75

See page 295 for suggestions for use and method of reading the Vernier

Improved Universal No. 495

With Vernier



This Protractor is well adapted for all classes of work where angles are to be laid out or established.

One side of the stock is flat, thus permitting its being laid flat upon the paper or work.

The dial is accurately graduated to degrees the entire circle. The swivel turns on a large central stud, which is hardened and ground and can be rigidly clamped by a thumb nut.

The line of graduations is below the surface, protecting them from wear.

The Vernier adds materially to the use of the Protractor in obtaining fine measurements. It reads to 5 minutes or $\frac{1}{12}$ of a degree.

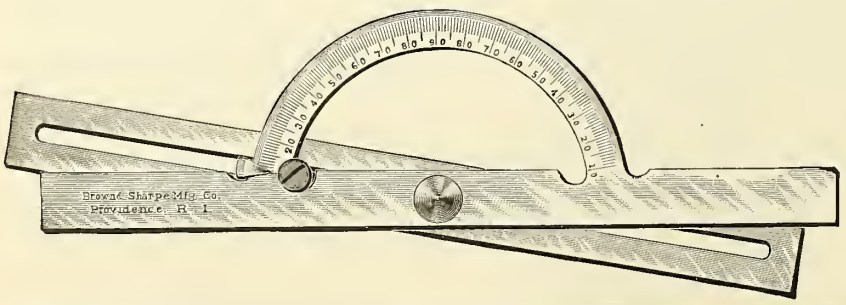
By means of a small thumb pinion furnished as an attachment, extremely fine adjustments can be secured.

With 6-inch blade	$8.00
In morocco case	9.00
With 12-inch blade	9.00
In morocco case	10.50
Extra blades, 6-inch	.75
Extra blades, 12-inch	1.75

The blades of above Protractors are about $\frac{1}{16}$ inch thick, can be moved back and forth their entire length and clamped independently of the dial, thus adapting them for work where others cannot be used.

See page 295 for suggestions for use and method of reading the Vernier

No. 492



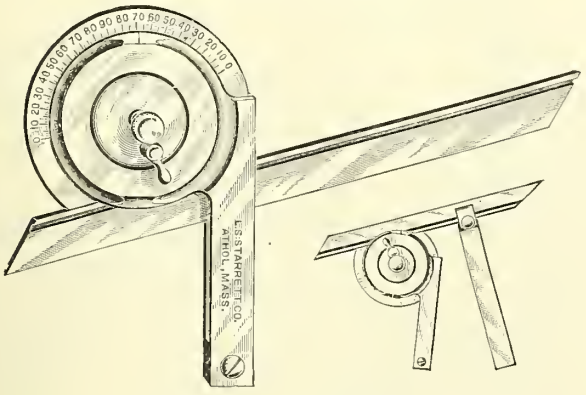
The half circle is divided into degrees.

	Each
Length of Sliding Arm, 6 inches	$4.50
Length of Sliding Arm, 10 inches	5.75

Universal Bevel Protractors

Starrett

No. 360 Line

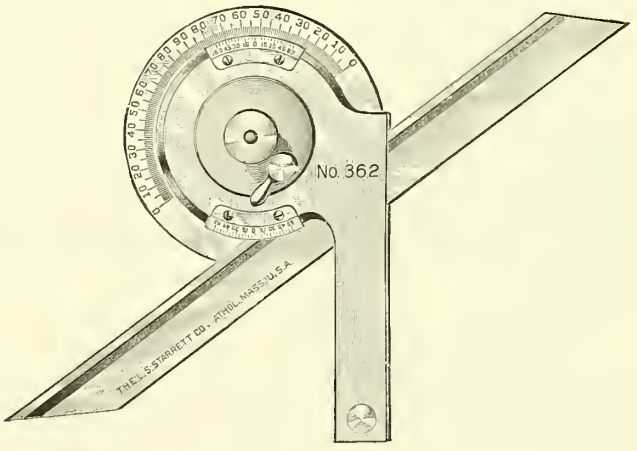


Weighs, 6 ounces. The blade is either 7 or 12 inches by ½ inch, the stock is 4 inches long, and both are made from sheet steel, nicely finished. The disk is graduated in degrees from 0 to 90 each way, and rotates the entire circle on a central stud inside the case. The blade (clamped by an eccentric stud against the edge of the disk) may be slipped back and forth its full length, or turned at any angle around the circle and firmly clamped at any point, adapting it for work in positions where others cannot be used, and rendering the common universal bevel (for transferring angles) unnecessary. One side of the stock being flat, makes it a convenient tool for laying on paper in drafting, etc. The attachment shown in the smaller engraving will be found very convenient for grinding tools, tapers on lathe centers, and all long tapers.

No. 360A	7-inch	$6.00
No. 360B	7-inch, in leatherette case	6.75
No. 360C	12-inch	7.00
No. 360D	12-inch, in leatherette case	8.00
No. 360E	With both 7 and 12-inch blades	7.50
No. 360F	Same in leatherette case	8.50
No. 360G	Attachment, extra	1.00

No. 360B (7-inch in case) sent unless otherwise ordered

No. 362 Line with Vernier



Same as No. 360, except that it is made with Verniers reading 5 minutes or $\frac{1}{12}$ of a degree.

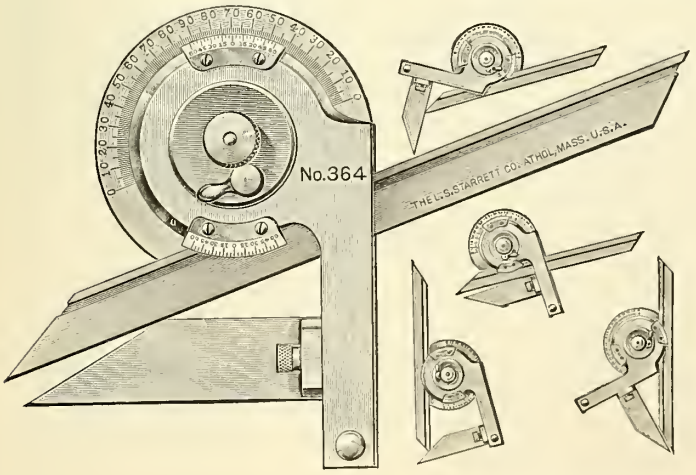
The Verniers are so placed with relation to the graduated half circle as to make the Protractor readable by Vernier in any position. The Protractor stock is 4 inches long and has either a 7 or 12-inch blade, ½ inch wide. With the 7-inch blade the tool weighs but six ounces. The disk is graduated in degrees from 0 to 90 each way and rotates the entire circle on a central stud inside the case. The blade, clamped by an eccentric stud against the edge of the disk, may be slipped back and forth its full length, or turned at any angle around the circle and firmly clamped at any point. Attention is called to the fact that the figures on the Vernier are placed close to the lines, thus making it easy to read the tool when taking measurements. Attention is also called to the central locking nut on this Protractor. By a slight turn of this nut the protractor is firmly held in position.

The attachment shown in the smaller engraving of No. 360 will be found very convenient for grinding short or long tapers to any degree or pitch.

No. 362A	7-inch	$8.00
No. 362B	7-inch, in leather case	9.00
No. 362C	12-inch	9.00
No. 362D	12-inch, in leather case	10.50
No. 362E	With both 7 and 12-inch blades	9.75
No. 362F	Same in leather case	11.75
No. 362G	Attachment, extra	1.00

No. 362B (7-inch, in leather case) sent unless otherwise ordered

With Vernier and Acute Angle Attachment



Same as No. 362 with the addition of the acute angle attachment which enables the user to obtain very small angles.

No. 364A	With 7-inch blade	$10.50
No. 364B	With 7-inch blade, in leather case	11.50
No. 364C	With 12-inch blade	11.50
No. 364D	With 12-inch blade, in leather case	13.00
No. 364E	With both 7 and 12-inch blades	12.25
No. 364F	Same as E, in leather case	14.25

No. 364B sent unless otherwise ordered

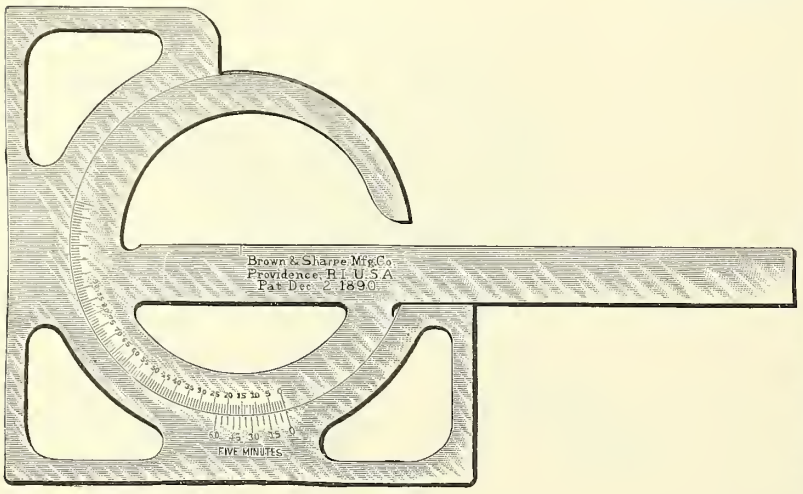
Note.—The acute angle attachment as used on the No. 364 can also be used on our No. 362 and No. 360 Protractors.

Acute angle attachment, only $2.50

See page 262 for suggestions for use and method of reading the Vernier

Protractors

Drafting



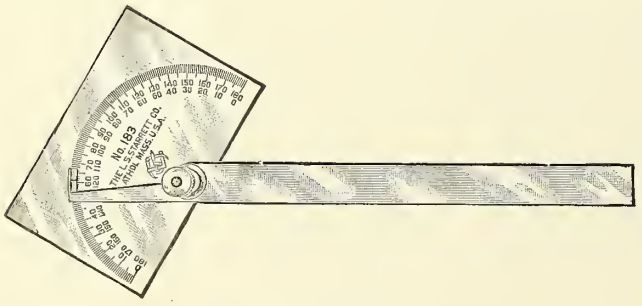
Brown & Sharpe No. 510

Can be quickly set to any angle. It can be used either side up and on either of the two outside edges of the frame. It can be used to advantage in dividing a circle, transferring angles or laying off a given angle, without resetting, on either side of a line.

The Vernier reads to 5 minutes.

It forms a convenient extension of a T-square and frequently takes the place of 45-degree and 60-degree angles. 8 inches long.

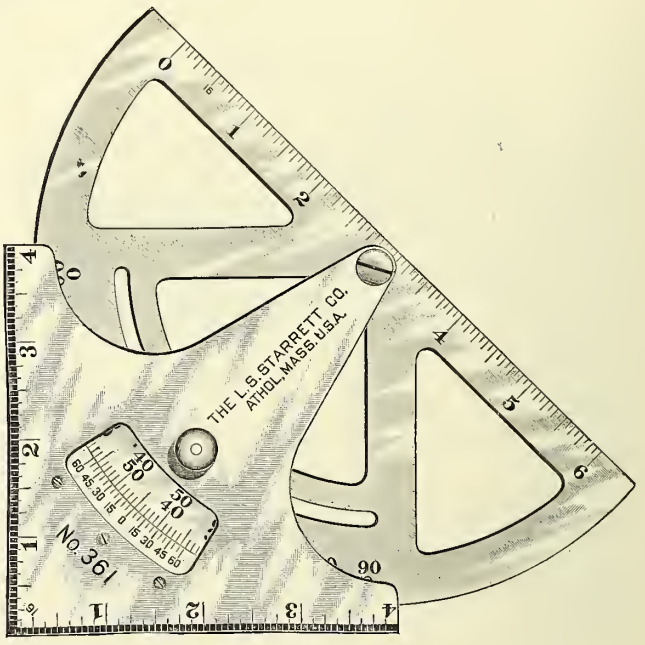
Each $6.50
In morocco case ..... Each 7.75



Starrett No. 183

With rectangular head, giving four working faces, also two rows of figures reading both ways to show the complementary degrees. The blade is 6 inches long and by means of patent lock joint is set firmly by a slight turn of the nut. The back of the tool is flat, the Protractor accurate, nicely finished, and convenient for a draftsman or machinist for setting bevels, transferring angles, or for use for a T-square, etc.

Each $2.00

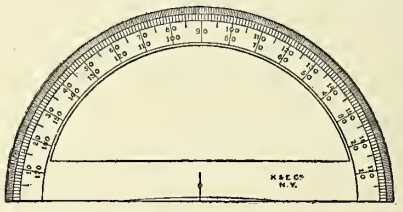


Starrett No. 361

Made of sheet steel, nickel-plated, graduated in degrees and figured to read from either right or left, with Vernier to read in 5 minutes. The three straight edges of the Protractor are graduated in inches and 16ths, the longer part 6 inches. The tool will lie flat on the paper. The knurled locking nut is convenient for picking up the instrument. To obtain the complement of an angle without resetting, place the opposite straight part of the stock against the T-square or straight edge of a drawing board, and the reverse angle can be obtained by placing the straight part of the arc against the T-square or straight edge. By loosening the binding nut, friction is taken off, making it easy to adjust to degrees, when the tool may be again firmly locked.

This is a high grade Protractor and one greatly appreciated by draftsmen.

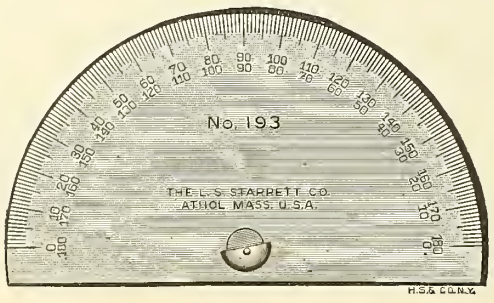
	Each
A	$6.50
B, in leather case	7.75



No. 1262

		Each
No. 1266	Brass, 4¼ inches, graduated 1 degree	$ .25
No. 1262	German silver, 6⅜ inches, graduated ½ degree	.70
No. 1868	Transparent amber, 5 inches, graduated ½ degree ...	.45
No. 1868	Transparent amber, 6 inches, graduated ½ degree ...	.60
No. 1868	Transparent amber, 7 inches, graduated ½ degree ...	.75
No. 1869	Transparent amber, 6 inches, graduated ½ degree bevelled	2.75

For Use with Bevels



Starrett No. 193

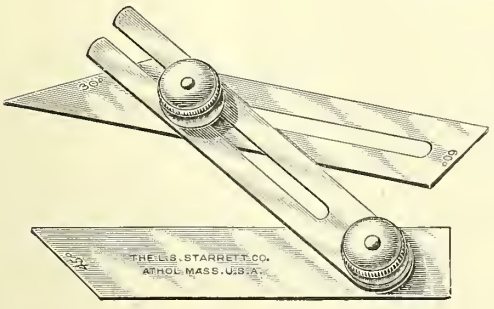
Used for setting bevels at any desired angle, thus converting them into Bevel Protractors at slight cost.

Each $1.00

Bevels

Starrett

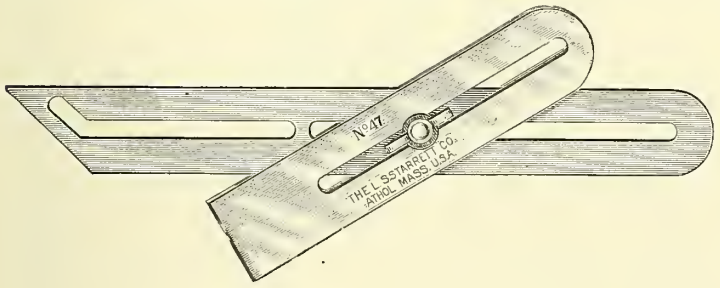
Combination



Has a stud riveted in the straight edge stock or head, on which its split blade is hinged, so as to swing over the stock and be clamped at any angle. The slotted auxiliary blade with clamp bolt may be slipped on to the split blade and be clamped at any desired angle and used, in combination with the stock of the other, for laying out work, measuring, or showing any angle desired, and when so combined will lie flat upon its work. The stock is about 4 inches long.

No. 49 ..... $2.00

Improved



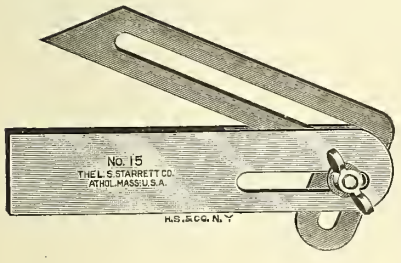
The advantages of this bevel consist in its having not only the blade slotted but the stock as well, through and through, thus admitting adjustments that cannot be obtained with a common bevel. The clamping screw head, which the cut does not show, is let into a rabbet, flush with the surface of the stock, which will lie flat on the work.

No. 47, 6-inch (length of stock 3½ inches) $1.25

No. 47, 9-inch (length of stock 4¾ inches) $1.50

No. 47, 12-inch (length of stock 6 inches) $1.75

Universal



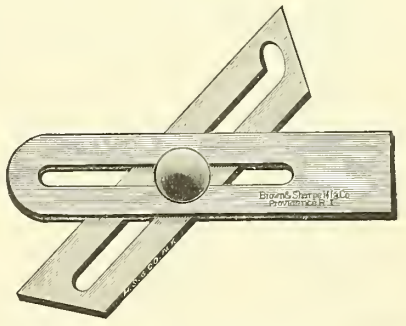
Improved features. The set-off in the blade increases its capacity and usefulness for bevel gear work, etc., so that any angle, however slight, may be obtained.

Another valuable feature is—one edge of the case being solid, a rest is formed directly under the blade, where thin templets may be placed and accurately fitted.

No. 15 3-inch $1.50

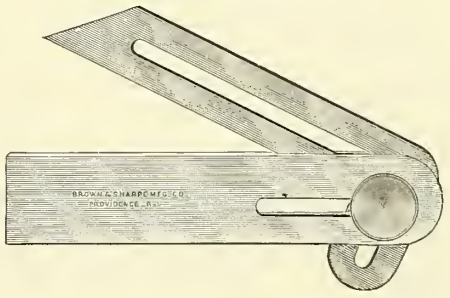
Brown & Sharpe

Universal



Number	Length of Head and Tongue Inches	Width of Head and Tongue Inch	Each
498	3	⅝	$1.25
498	1¼	¼	1.25

Improved Universal

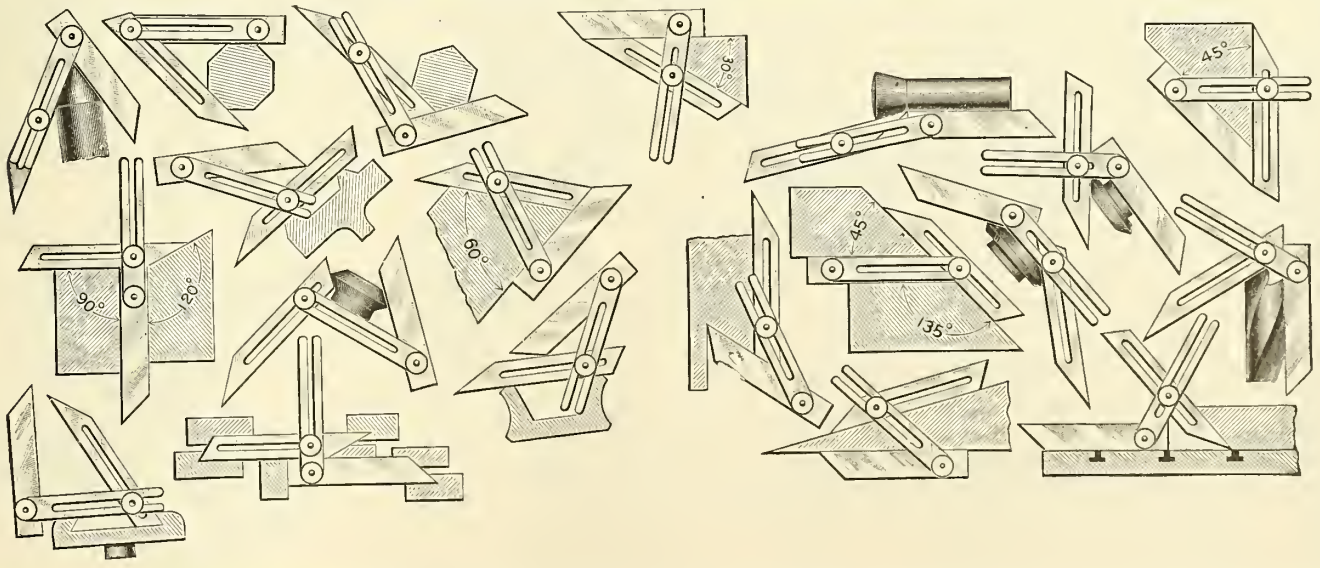


An Improved Universal Bevel, 3 inches long, with an offset blade that admits of the measurement of all angles.

The case is solid on the top for 1½ inches from the square end.

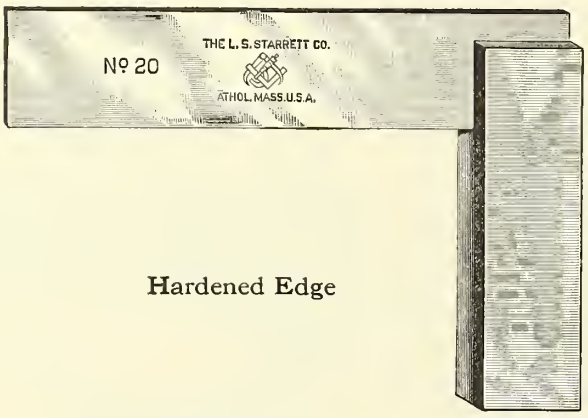
No. 499 ..... $1.50

Suggestions for Use of Combination Bevel



Steel Squares

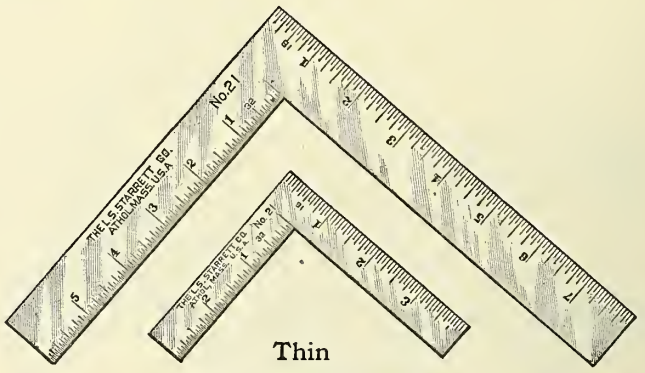
Starrett



Hardened Edge

No 20. Not Graduated

1-inch blade inside beam, full length of beam 1 inch	$1.50
1½-inch blade inside beam, full length of beam 1½ inches	1.75
2-inch blade inside beam, full length of beam 1⅞ inches	2.00
3-inch blade inside beam, full length of beam 2⅜ inches	2.50
4½-inch blade inside beam, full length of beam 3½ inches	3.50
6-inch blade inside beam, full length of beam 4 5/16 inches	4.50
9-inch blade inside beam, full length of beam 5 9/16 inches	6.50
12-inch blade inside beam, full length of beam 7 inches	9.00
15-inch blade inside beam, full length of beam 8⅝ inches	15.00
18-inch blade inside beam, full length of beam 10½ inches	18.00
24-inch blade inside beam, full length of beam 12 5/16 inches	25.00



Thin

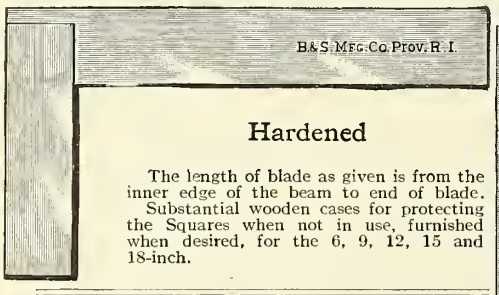
No. 21. English Measure

2 x 1 inch, 1/20 inch thick, graduated 16ths, 64ths, one side; 32ds, 64ths other	$1.00
3 x 2 inch, 1/20 inch thick, graduated 16ths, 64ths one side, 32ds, 64ths other	1.50
4 x 3 inch, 1/16 inch thick, graduated 16ths and 32ds both sides	2.00
6 x 4 inch, 1/16 inch thick, graduated 16ths and 32ds both sides	3.00
8 x 6 inch, 1/16 inch thick, graduated 16ths and 32ds both sides	4.00
10 x 8 inch, 1/16 inch thick, graduated 16ths and 32ds both sides	5.00
12 x 8 inch, 3/32 inch thick, graduated 16ths and 32ds both sides	6.00

No. 21 M. Graduated in millimeters and ½ millimeters

5 cm	$1.00
10 cm	2.00
15 cm	3.00
20 cm	4.00

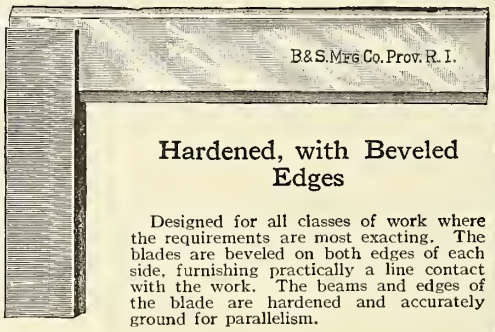
Brown & Sharpe



Hardened

The length of blade as given is from the inner edge of the beam to end of blade.
Substantial wooden cases for protecting the Squares when not in use, furnished when desired, for the 6, 9, 12, 15 and 18-inch.

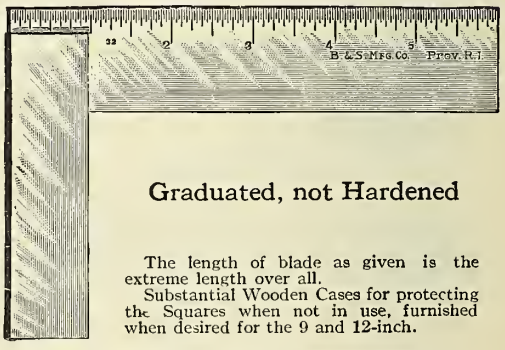
Number	Length of Blade Inches	Length of Beam Inches	Each	Wooden Case
540	1½	1 9/16	$1.75	
540	3	2 7/16	2.50	
540	4½	3 9/16	3.50	
540	6	4⅜	4.50	$ .50
540	9	5⅝	6.50	.50
540	12	7⅛	9.00	.75
540	15	8 3/16	15.00	1.00
540	18	10¼	18.00	1.50



Hardened, with Beveled Edges

Designed for all classes of work where the requirements are most exacting. The blades are beveled on both edges of each side, furnishing practically a line contact with the work. The beams and edges of the blade are hardened and accurately ground for parallelism.

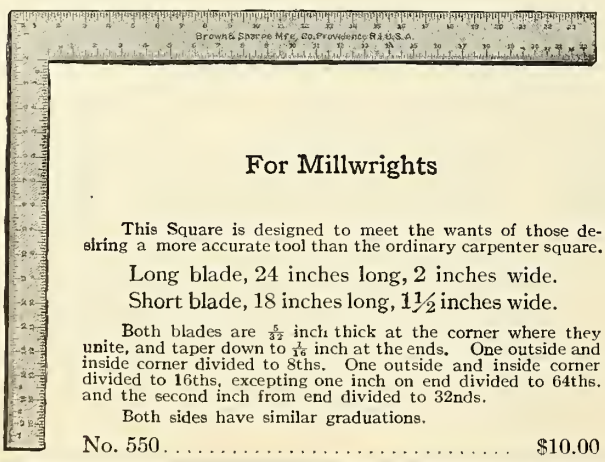
Number	Length of Blades Inches	Length of Beam Inches	Each
542	1½	1 9/16	$2.25
542	3	2 7/16	3.25
542	4½	3 9/16	4.50
542	6	4⅜	6.00



Graduated, not Hardened

The length of blade as given is the extreme length over all.
Substantial Wooden Cases for protecting the Squares when not in use, furnished when desired for the 9 and 12-inch.

Number	Length of Blade Inches	Length of Beam Inches	Each	Wooden Case
544	3	2	$2.00	
544	4	2 9/16	2.50	
544	6	3¾	3.50	
544	9	5	6.00	$ .50
544	12	6 1/16	7.00	.75



For Millwrights

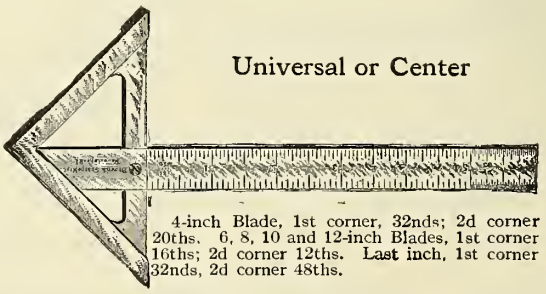
This Square is designed to meet the wants of those desiring a more accurate tool than the ordinary carpenter square.

Long blade, 24 inches long, 2 inches wide.
Short blade, 18 inches long, 1½ inches wide.

Both blades are 1/32 inch thick at the corner where they unite, and taper down to 1/16 inch at the ends. One outside and inside corner divided to 8ths. One outside and inside corner divided to 16ths, excepting one inch on end divided to 64ths. and the second inch from end divided to 32nds.

Both sides have similar graduations.

No. 550 ..... $10.00



Universal or Center

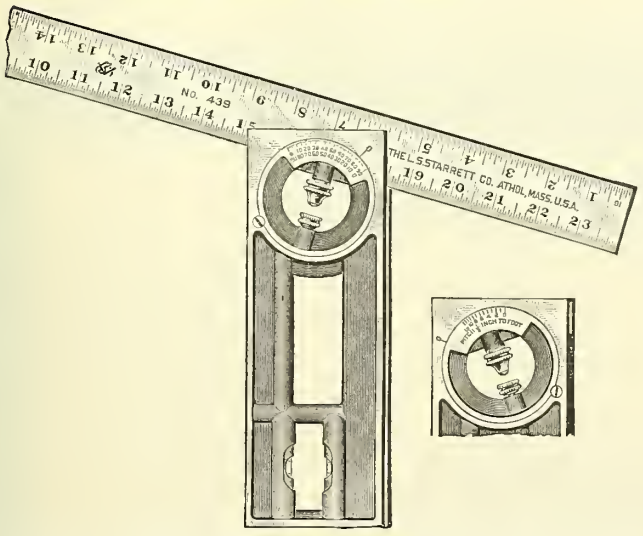
4-inch Blade, 1st corner, 32nds; 2d corner 20ths. 6, 8, 10 and 12-inch Blades, 1st corner 16ths; 2d corner 12ths. Last inch, 1st corner 32nds, 2d corner 48ths.

Number	Each	Length of Blade Inches	Length of Head Inches
556	$2.00	4	3
556	2.50	6	4
556	3.50	8	5½
556	5.00	10	7
556	6.00	12	8¾

Steel Squares

Starrett

Patent Builders Combination Tool



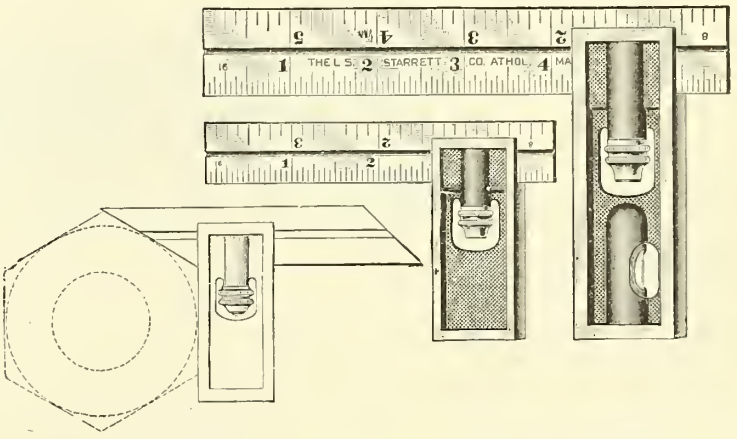
The stock is 9 inches long, with sliding blade either 18 or 24 inches long, 1½ inches wide, with No. 4 graduations. This blade is adjustable through the revolving turret, which is graduated on one side in degrees with two rows of figures reading either right or left, and on the other to show the pitch to foot, the graduations showing ½ inch pitch. With levels set in each side of the stock, any incline by degrees or pitch to foot can be leveled up, either on top or under the work. For laying out to cut for valleys or hips of whatever pitch, set the blade to show pitch desired, lay off the line, then place the square end of stock against the work and draw line against blade, which will give, without mental calculation, the complementary angle to that angle or pitch. This combination tool can be used as a try square, also as a mortise or depth gauge, and the blade may be slipped back when full length is not needed, thus affording great convenience in handling.

In short, it is a substitute for a full kit of try-squares, a bevel protractor, pitch to foot indicator, a 24-inch level or plumb using the blade, and a 9-inch using the stock, and a complementary angle indicator, all in one simple compact tool weighing with a 24-inch blade less than 3 pounds.

No. 439	18-inch	$6.00
No. 439	24-inch	7.00

Patent Double Square

With Hardened Blade



This Square is a most practical one for machinists and fine toolmakers use. The sliding scale, shortened or extended full length, makes it more valuable than a full set of the common kind, while with the extra bevel blade, which can be furnished only with 4 and 6-inch Squares, we have both the hexagon and octagon angles.

The seat against which the blade is clamped being convex, should corners of the blade get injured, the accuracy of the square is not affected.

English Measure No. 13

Graduated regularly in 8ths, 16ths, 32nds and 64ths of an inch, but other graduations can be furnished if desired.

4-inch	$1.25
With both blades	1.65
6-inch	2.00
With both blades	2.50
9-inch	3.00
12-inch	4.00

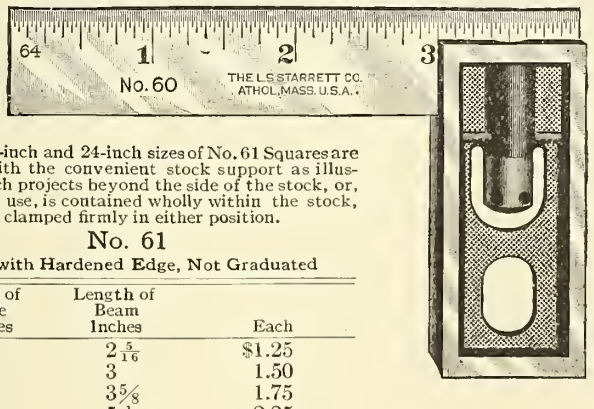
Both blades with 4 and 6-inch always sent unless otherwise ordered.
There is a level in the stocks of the 6-inch, 9-inch, and 12-inch Squares.

Metric Measure No. 13 M

Graduated in millimeters and ½ millimeters.

10 cm	$1.25
With both blades	1.65
15 cm	2.00
With both blades	2.50
20 cm	3.00
30 cm	4.00

"Reliable" Try-Squares



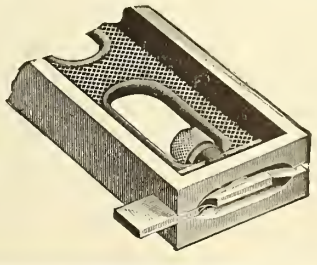
The 18-inch and 24-inch sizes of No. 61 Squares are equipped with the convenient stock support as illustrated, which projects beyond the side of the stock, or, when not in use, is contained wholly within the stock, and may be clamped firmly in either position.

The blade is not riveted or soldered to the stock, but is firmly held by patent bolt and nut, by means of which the tool can be readily taken apart, and when worn the blade and stock can be reground or lapped, and put together again as good as new.

No. 61

Blade with Hardened Edge, Not Graduated

Length of Blade Inches	Length of Beam Inches	Each
4	2 5/16	$1.25
5	3	1.50
6	3 5/8	1.75
9	5 1/16	2.25
12	6	3.00
18	9	12.00
24	12	18.00



No. 60 English Measure

Graduated Blade, Not Hardened

Length Blade Inches	Length Beam Inches	Each
4	2 5/16	$1.00
5	3	1.15
6	3 5/8	1.25
9	5 1/16	2.00
12	6	2.75

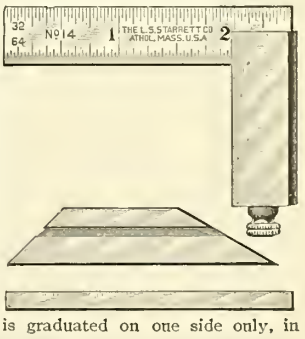
No. 60 M, Metric Measure

Graduated Blade, Not Hardened

Length of Blade CM.	Length of Beam Inches	Each
10	2 5/16	$1.00
15	3 5/8	1.25
20	5 1/16	2.00
30	6	2.75

Double Square

With Hardened Head and Blades



This cut represents a double solid steel Square, with patent 2½-inch sliding scale, and is especially designed for fine tool makers. The rule being narrow and instantly adjusted to any length, however short, allows it to be used where it would be impossible to use any square with a fixed blade. The scale is graduated on one side only, in 32ds and 64ths.

Fitted to go with this stock, we supply not only a bevel blade, but a very narrow straight one, about ⅛ inch wide, highly prized by die makers for squaring small holes. Both blades will be sent with the square unless otherwise ordered.

No. 14A	Square	$2.00
No. 14B	Square, with either bevel or narrow blade	2.30
No. 14C	Square, complete	2.60

Sent complete (No. 14C) unless otherwise ordered.

Metric Measure

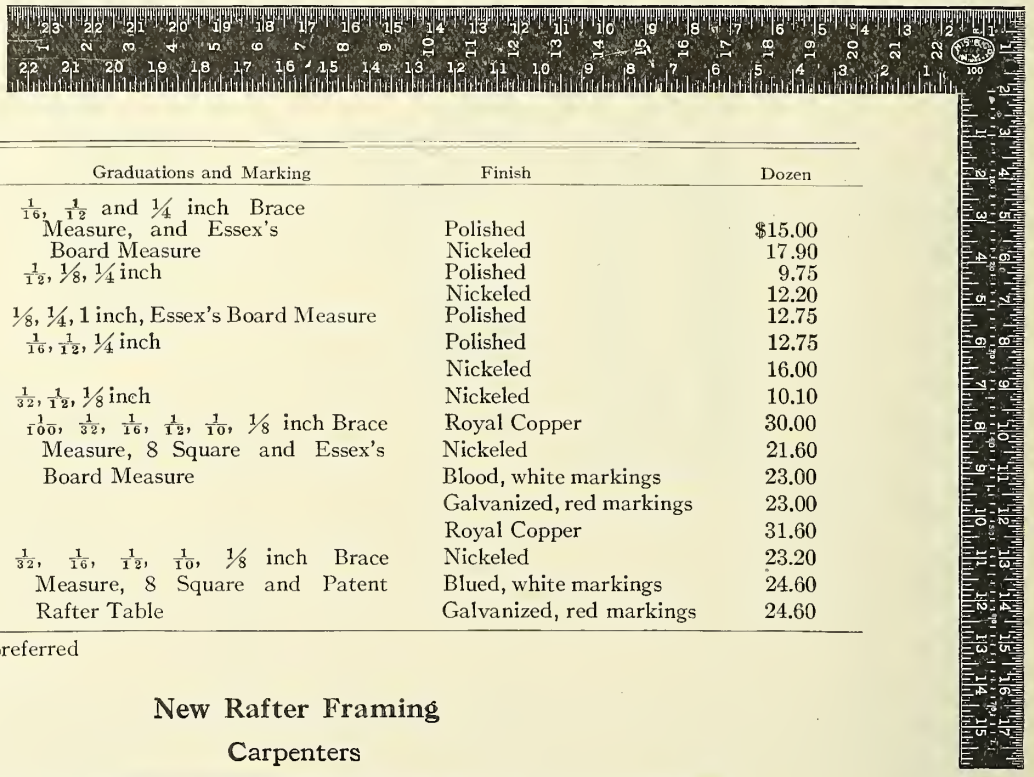
Same as above, with 5cm. blade, graduated in millimeters and ½ millimeters.

No. 14MA	Square	$2.00
No. 14MB	Square, with either bevel or narrow blade	2.30
No. 14MC	Square, complete	2.60

Steel Squares

Sargent

Carpenters

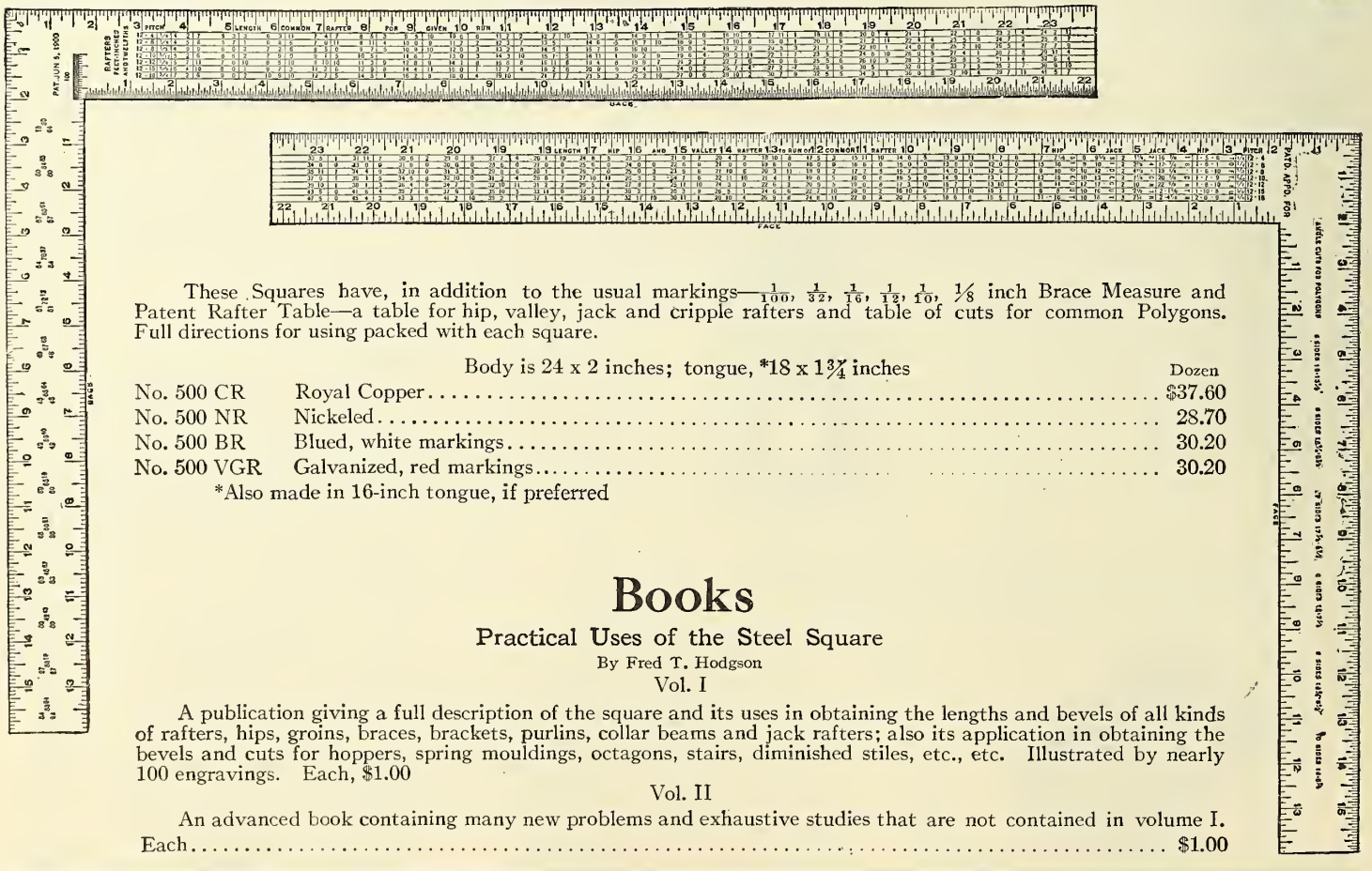


Number	Body Inches	Tongue Inches	Graduations and Marking	Finish	Dozen
3 } 3N }	24x2	16x1½	1/16, 1/12 and 1/4 inch Brace Measure, and Essex's Board Measure	Polished	$15.00
				Nickeled	17.90
10 } 10N }	12x1½	8x1	1/12, 1/8, 1/4 inch	Polished	9.75
				Nickeled	12.20
14	24x2	16x1½	1/8, 1/4, 1 inch, Essex's Board Measure	Polished	12.75
30 } 30N }	18x1½	12x1	1/16, 1/12, 1/4 inch	Polished	12.75
				Nickeled	16.00
40N	6x1	4x¾	1/32, 1/12, 1/8 inch	Nickeled	10.10
100C	24x2	16x1½	1/100, 1/32, 1/16, 1/12, 1/10, 1/8 inch Brace Measure, 8 Square and Essex's Board Measure	Royal Copper	30.00
100N				Nickeled	21.60
100B				Blood, white markings	23.00
100VG				Galvanized, red markings	23.00
100CR	24x2	18x1½	1/32, 1/16, 1/12, 1/10, 1/8 inch Brace Measure, 8 Square and Patent Rafter Table	Royal Copper	31.60
100NR *				Nickeled	23.20
100BR				Blued, white markings	24.60
100VGR				Galvanized, red markings	24.60

*Also made in 16-inch tongue, if preferred

New Rafter Framing

Carpenters



These Squares have, in addition to the usual markings—1/100, 1/32, 1/16, 1/12, 1/10, 1/8 inch Brace Measure and Patent Rafter Table—a table for hip, valley, jack and cripple rafters and table of cuts for common Polygons. Full directions for using packed with each square.

Body is 24 x 2 inches; tongue, *18 x 1¾ inches

		Dozen
No. 500 CR	Royal Copper	$37.60
No. 500 NR	Nickeled	28.70
No. 500 BR	Blued, white markings	30.20
No. 500 VGR	Galvanized, red markings	30.20

*Also made in 16-inch tongue, if preferred

Books

Practical Uses of the Steel Square

By Fred T. Hodgson

Vol. I

A publication giving a full description of the square and its uses in obtaining the lengths and bevels of all kinds of rafters, hips, groins, braces, brackets, purlins, collar beams and jack rafters; also its application in obtaining the bevels and cuts for hoppers, spring mouldings, octagons, stairs, diminished stiles, etc., etc. Illustrated by nearly 100 engravings. Each, $1.00

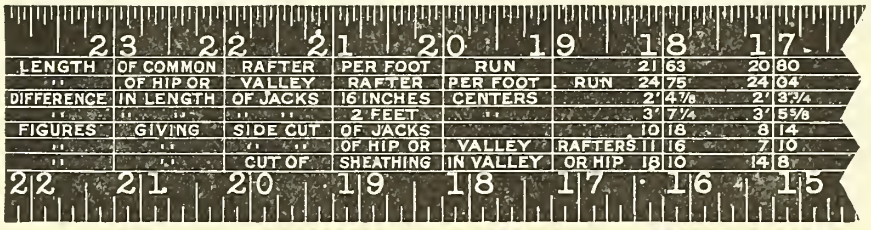
Vol. II

An advanced book containing many new problems and exhaustive studies that are not contained in volume I. Each..... $1.00

Steel Squares

Nicholls

Carpenters Rafter Framing

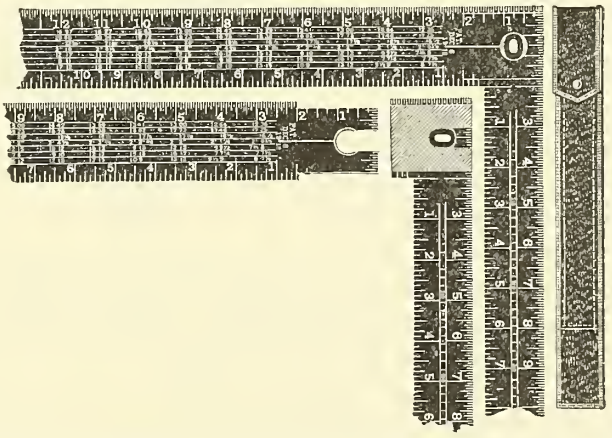


This Square is marked $\frac{1}{100}$, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{1}{12}$, $\frac{1}{10}$, $\frac{1}{8}$ inch, octagon scale, brace measure, and a table giving lengths and cuts of common, hip, valley and jack rafters for seventeen pitches of roof. Full directions for using the table are stamped on back of Square. No direction sheet is required.

Made of the best quality of steel, with hardened corners. Body 24x2 inches; tongue 16x1½ inches.

	Each
No. 100A Oxidized copper, black	$2.50
Nickel-plated on copper	3.00

Take-Down With Expansion Fit Joint

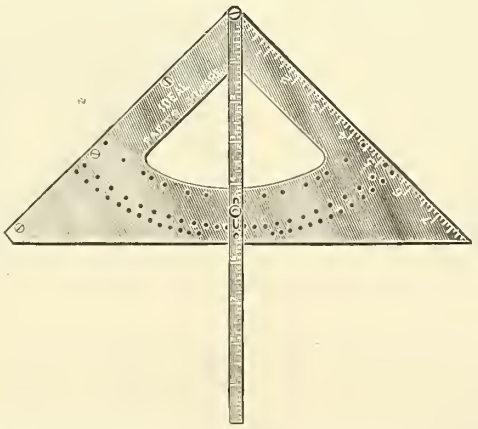


Guaranteed to remain true. These Squares are constructed so as to assure accuracy, and at the same time take up the wear which results from taking squares apart and putting them together. They are constructed with bearings accurately machined, so as to bring the Square absolutely true when the cam is turned to expand the end of body in milled portion of tongue. The markings are the same as on No. 100A listed above. A rust-proof canvas case with each square, and each one has complete rules giving lengths and cuts for all rafters.

No. 500A Oxidized copper, each	$3.50
Nickel-plated on copper, each	3.75

Ideal

Carpenters Combination

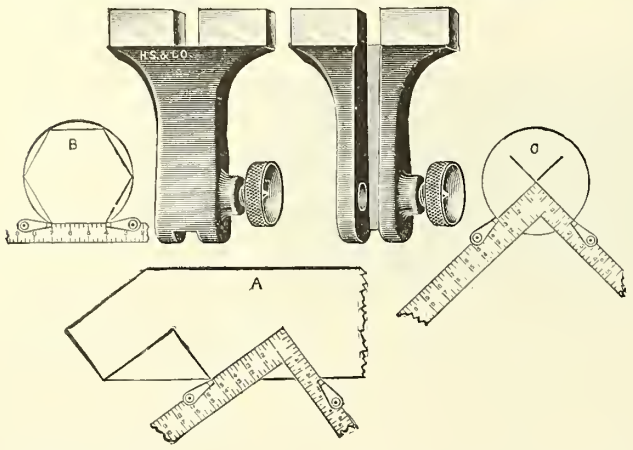


The Ideal Try, Rafter and Mitre Square consists of an elastic triangular steel plate and two try bars, one of which is riveted to one side or wing of the triangle, the other being pivoted at one angle of the plate.

It is intended for use as a general try-square and a regular square for all light work, and in addition to this will cut triangles, squares, pentagons, hexagons, or octagons or any figure of 3, 4, 5, 6, 8, 10, 12 or 24 equal sides, scales being provided that by swinging a locking pin into a certain hole of a series stamped on the plate any particular figure can be cut. It is also provided with two scales or series of holes from which may be cut all common, hip, valley, jack or cripple rafters. Plain numerals stamped in the plate indicating the number of mitred sides that hole will cut and in the rafter scales the figure indicates the number of inches rise per foot which may be cut from that particular hole. The square is operated by swinging the plate instead of adjusting the locking pin, which is only done when changing from mitre to rafter work.

Each, $3.00

Stair Gauge Fixtures



Readily clamped to a steel carpenter square to form a gauge for various uses. Sketch A shows the gauge as applied for laying out a stair stringer; Sketch B, laying off hexagon angles; Sketch C, when used as a center guage or in quartering a circle.

Starrett No. 111 Pair ..... $ .75

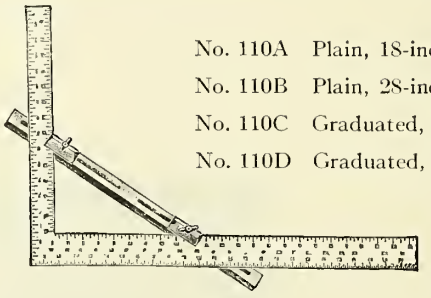
Stair Gauge



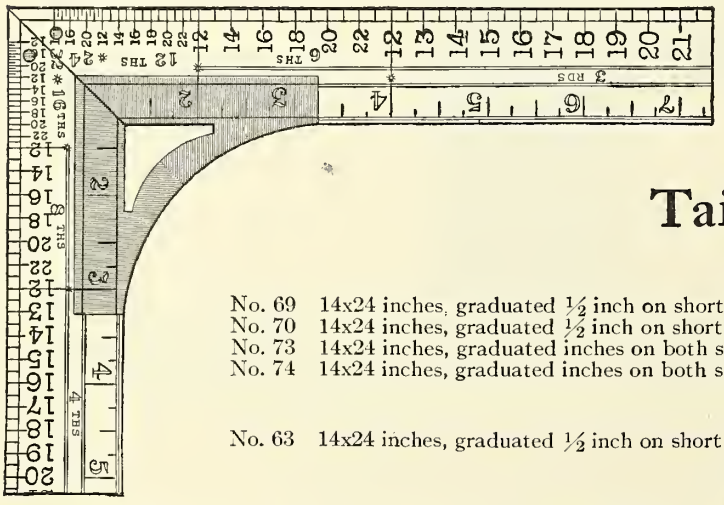
To be used in connection with any carpenter steel square, and can be adjusted to any pitch or angle desired. For cutting in rafters, braces, stairs, etc.

The attachment is furnished either plain or graduated in inches, 4ths, 12ths, and 24ths.

It is made in the shape of a steel angle, $\frac{7}{8}$x$\frac{5}{8}$, $\frac{1}{8}$ inch thick, ground straight and nickel-plated.



		Each
No. 110A	Plain, 18-inch, nickel-plated....	$1.00
No. 110B	Plain, 28-inch, nickel-plated....	1.50
No. 110C	Graduated, 18-inch, nickel-plated	1.50
No. 110D	Graduated, 28-inch, nickel-plated	2.25



Tailors Squares

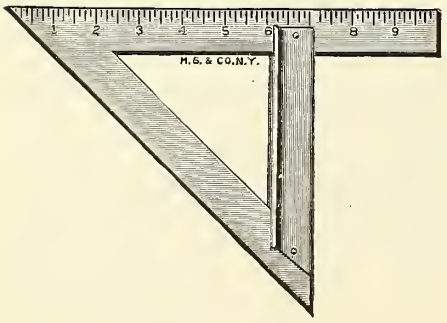
Maple

		Dozen
No. 69	14x24 inches, graduated $\frac{1}{2}$ inch on short arm, $\frac{1}{3}$ inch on long arm, caps.	$17.00
No. 70	14x24 inches, graduated $\frac{1}{2}$ inch on short arm, $\frac{1}{3}$ inch on long arm, no caps.	15.00
No. 73	14x24 inches, graduated inches on both sides, curved brace joint, no caps.	12.00
No. 74	14x24 inches, graduated inches on both sides, no curve brace joint, no caps.	10.00

Boxwood

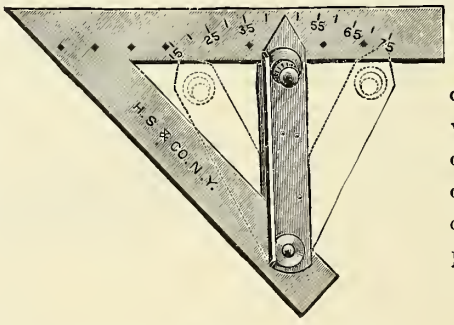
No. 63 14x24 inches, graduated $\frac{1}{2}$ inch on short arm, $\frac{1}{3}$ inch on long arm, caps 22.00

Combined Square and Mitre



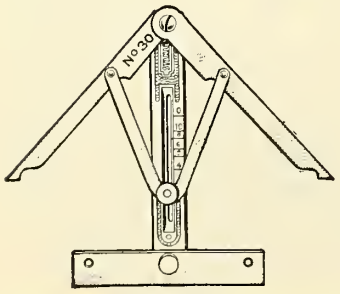
No. 3 10-inch blade, all steel, nickel-plated, dozen $12.00

Combined Square, Mitre and Bevel



Has the advantages of a combined square and mitre with the additional feature of a bevel. Angle graduations on one side, scale on the other.

No. 1, dozen..... $9.00



Angle Dividers

Stanley

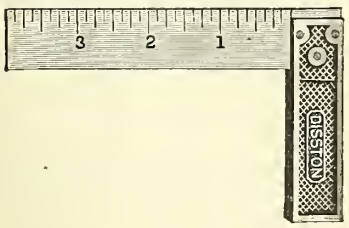
Is practically a double bevel. The two blades each fit one side of an angle and the handle gives the center line. The cut is marked from the center. Handle is graduated on the under side for laying out 4, 6 or 8 sided work, and by means of a removable T-head (see cut) it can also be used as a T-square.

No. 30 $7\frac{3}{8}$ inches long, nickel-plated $1.50

Packed one in a box.

Squares

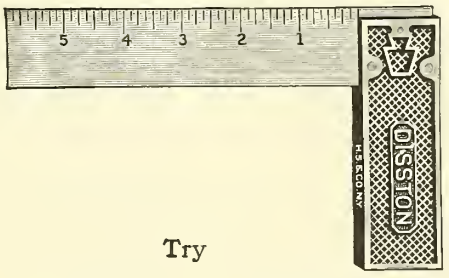
Disston



Try

No. 4½ 4-inch, iron stock. Square inside and out same as No. 5½ but narrower.

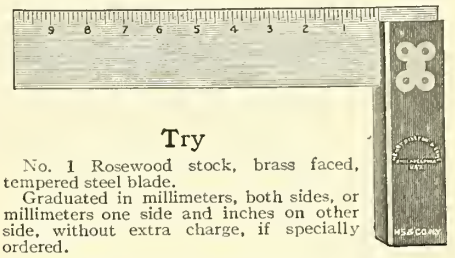
Dozen..... $3.25



Try

No. 5½ Iron stock, hardened and tempered steel blade, square inside and out.

Size, inches.	4	6	8	10	12
Dozen.....	$3.25	3.75	4.75	6.20	7.35

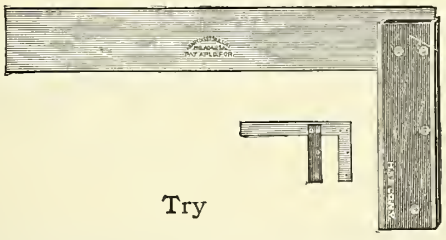


Try

No. 1 Rosewood stock, brass faced, tempered steel blade.
Graduated in millimeters, both sides, or millimeters one side and inches on other side, without extra charge, if specially ordered.

Size Inches	Dozen	Size Inches	Dozen
3	$4.10	10	$ 9.35
4½	4.65	12	11.50
6	6.20	14	13.50
7½	6.70	15	14.50
8	7.00	16	18.30
9	8.65	18	19.50

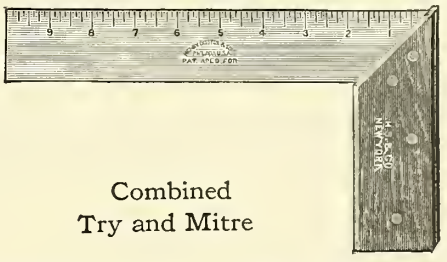
Nos. 15, 16 and 18-inch are supplied with rest



Try

No. 15 Rosewood stock, polished, with flush, heavy brass face plate. Square inside and out.

Size, inches.....	4	6	8	10
Dozen.....	$5.70	8.10	9.80	12.00



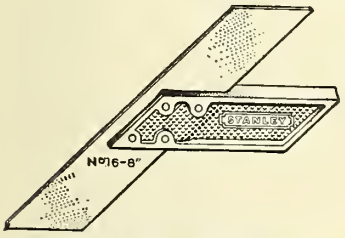
Combined Try and Mitre

No. 10 Rosewood stock. Heavy brass face plate, tempered steel blade.

Size, inches.....	4½	6	7½	9	12
Dozen.....	$7.25	9.50	10.65	12.85	16.00

Stanley

Improved Mitre

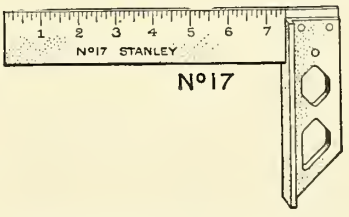


These have the blades permanently set at an angle of 45 degrees with the handle. Much in demand for picture framing, as well as for other classes of regular mitred work.

The blades are machined, insuring accuracy. Not graduated. Both handles and blades are nickel-plated.

No. 16 10-inch blade, 5⅝-inch handle, nickel-plated, dozen.... $8.80

Combined Try and Mitre

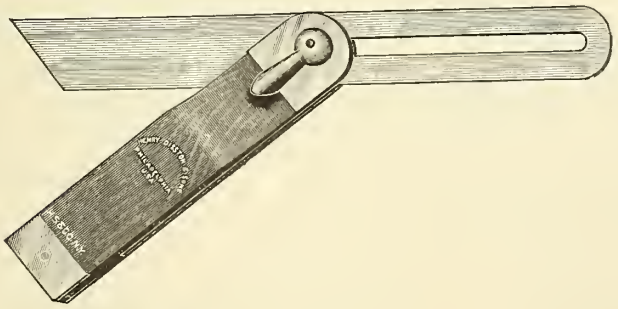


Can be used equally well as Mitre Squares or Try Squares. Square inside and out, and the edges of the blade are machined, insuring accuracy. Regularly graduated in 8ths of inches, but will be graduated in Metric if desired without additional charge. Designed especially for manual training schools. It is light, weighing only 8 ounces, and the form of the handle enables the student to hang up out of the way when not in use.

No. 17 7½-inch blade, 5-inch handle, nickel-plated $7.70

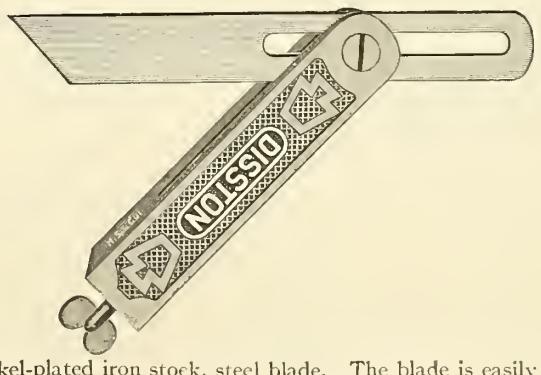
Sliding T Bevels

Disston



Rosewood stock, heavy brass-plated, hardened and tempered and blued steel blade.

Inches.....	6	8	10	12	14
No. 2 Dozen....	$5.75	6.50	6.75	7.50	8.10



Nickel-plated iron stock, steel blade. The blade is easily secured by turning the thumb-screw at the lower end of handle.

Inches.....	6	8	10
No. 3 Dozen.....	$4.85	6.20	6.75

Tempered Steel Rules

Brown & Sharpe

All Brown & Sharpe Steel Rules are divided in parts of inches as follows:

	No. 1 Graduation	No. 2 Graduation	No. 4 Graduation
1st cor.	10, 20, 50, 100	8	8
2d cor.	12, 24, 48	10, 20, 50, 100	16
3d cor.	14, 28	12, 24, 48	32
4th cor.	16, 32, 64	16, 32, 64	64

No, 5 Graduation

1st. cor.	11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25
2d cor.	16, 32, 64
3d cor.	26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38
4th cor.	39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100

	No. 6 Graduation	No. 7 Graduation	No. 9 Graduation
1st. cor.	32	16	10, 20
2d cor.	48	32	16
3d cor.	50	64	32, 64
4th cor.	64	100	50, 100

	No. 10 Graduation	No. 11 Graduation	No. 12 Graduation
1st. cor.	32	64	50
2d cor.	64	100	100

	No. 13 Graduation	No. 14 Graduation	No. 16 Graduation
1st cor.	8	8	32
2d cor.	16	32	64
3d cor.	..	..	50
4th cor.	..	..	100

No. 300—English Measure



About $\frac{1}{20}$ inch thick

Length Inches	Approximate Width Inches	Number of Graduations	Each
1	$\frac{29}{64}$	4 or 7	$ .15
2	$\frac{1}{2}$	4, 7 or 9	.25
3	$\frac{35}{64}$	1, 2, 4, 6 or 7	.35
4	$\frac{19}{32}$	1, 2, 4, 6 or 7	.45
6	$\frac{11}{16}$	1, 2, 4, 6 or 7	.65
9	$\frac{53}{64}$	1, 2, 4, 6 or 7	1.00
12	$\frac{31}{32}$	1, 2, 4, 6 or 7	1.25
18	1	1, 2, 4, 6 or 7	2.00
24	1	1, 2, 4, 6 or 7	2.50
36	1	1, 2, 4, 6 or 7	5.00

No. 301—Metric Measure

First corner graduated to ½ mm., remaining 3 corners to 1 mm.

	Each
Length, 10 Centimetres	$ .45
Length, 15 Centimetres	.65
Length, 20 Centimetres	.85
Length, 30 Centimetres	1.25
Length, 50 Centimetres	2.00

No. 302—Metric and English Measure

The 10 and 15 cm. sizes have first corner graduated to $\frac{1}{64}$ of an inch, second corner to 1 mm., third corner to $\frac{1}{100}$ of an inch, fourth corner to ½ mm.; the 20, 30 and 50 cm. have first corner graduated, 2 to $\frac{1}{64}$ of an inch, the remainder to $\frac{1}{16}$ of an inch; second corner to 1 mm., third corner, 2 inches to $\frac{1}{100}$ of an inch, the remainder to $\frac{1}{50}$ of an inch fourth corner to ½ mm.

	Each
Length, 10 Centimetres	$ .45
Length, 15 Centimetres	.65
Length, 20 Centimetres	.85
Length, 30 Centimetres	1.25
Length, 50 Centimetres	2.00

Patent End Graduations



All Tempered and Standard Steel Rules, 2 to 12 inches in length, with No. 4 Graduations are furnished with Patent End Graduations, reading to 32nds of an inch on two ends of one side. This feature will be found advantageous in measuring the depth and width of grooves, countersinks and recesses of various kinds.

Flexible



No. 306—English Measure

Graduated on one side only

Length Inches	Approximate Width Inch	Number of Graduations	Each
4	$\frac{1}{2}$	10, 11, 12, 13 or 14	$ .45
6	$\frac{1}{2}$	10, 11, 12, 13 or 14	.65
9	$\frac{1}{2}$	10, 11, 12, 13 or 14	1.00
12	$\frac{1}{2}$	10, 11, 12, 13 or 14	1.25
18	$\frac{3}{4}$	10, 11, 12, 13 or 14	2.00
24	$\frac{3}{4}$	10, 11, 12, 13 or 14	2.50
36	$\frac{3}{4}$	10, 11, 12, 13 or 14	5.00

No. 307—Metric Measure

Graduated on one side only. First corner graduated to ½ mm., second corner to 1 mm

	Each
Length, 10 Centimetres	$ .45
Length, 15 Centimetres	.65
Length, 20 Centimetres	.85
Length, 30 Centimetres	1.25
Length, 50 Centimetres	2.00

No. 308—Metric and English Measure

Graduation on one side only, First corner graduated to ½ mm., second corner to 64ths.

	Each
Length, 10 Centimetres	$ .45
Length, 15 Centimetres	.65
Length, 20 Centimetres	.85
Length, 30 Centimetres	1.25
Length, 50 Centimetres	2.00

Narrow



These Rules are about $\frac{1}{20}$ inch thick and about $\frac{7}{32}$ inch wide. They are graduated on one corner of each side only.

No. 303—English Measure

Length, Inches	Number of Graduations	Each
4	10, 11 or 12	$ .45
6	10, 11 or 12	.65
9	10, 11 or 12	1.00
12	10, 11 or 12	1.25

No. 304—Metric Measure

Graduated on one corner of each side only. First corner graduated to ½ mm., second corner to 1 mm.

	Each
Length, 10 centimetres	$ .45
Length, 15 centimetres	.65
Length, 20 centimetres	.85
Length, 30 centimetres	1.25

No. 305—Metric and English Measure

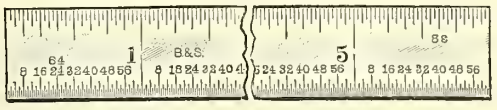
Graduated on one corner of each side only. First corner graduated to ½ mm., second corner to 64ths of an inch.

	Each
Length, 10 centimetres	$ .45
Length, 15 centimetres	.65
Length, 20 centimetres	.85
Length, 30 centimetres	1.20

Steel Rules

Brown & Sharpe

Tempered

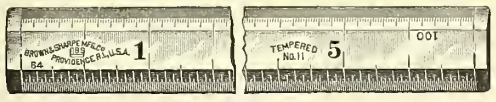


No. 315, with Figured Graduations

These Rules are furnished with the 64th graduations numbered every eighth graduation line, as 8, 16, 24, etc. This assists the user in quickly ascertaining the number of 64ths in ⅛, ¼, ½, ¾ inch, etc.

These Rules are furnished with No. 4 Graduation only.

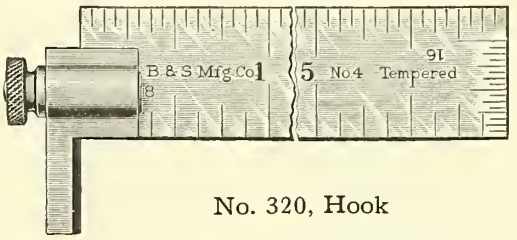
Length Inches	Approximate Width Inch	Approximate Thickness Inch	Each
1	29/64	1/20	$ .15
2	1/2	1/20	.25
3	35/64	1/20	.35
4	19/32	1/20	.45
6	11/16	1/20	.65
9	53/64	1/20	1.00
12	31/32	1/20	1.25
18	1	1/20	2.00
24	1	1/20	2.50



No. 318, with Beveled Edges

These Rules are beveled on both edges of one side, and are graduated on the beveled edges only.

Length Inches	Approximate Width Inch	Number of Graduations Inches	Each
1	3/8	10 and 11	$ .15
2	3/8	10 and 11	.25
3	3/8	10 and 11	.35
4	3/8	10 and 11	.45
6	11/16	10 and 11	.65
9	53/64	10 and 11	1.00
12	1	10 and 11	1.25
18	1	10 and 11	2.00
24	1	10 and 11	2.50



No. 320, Hook

These Rules are found convenient for measuring diameters of flanges or circular pieces, through the hubs of pulleys, setting calipers and dividers and work of a similar character.

The hook is held rigidly in position by the simple tightening of the knurled nut shown at the left. The hook is carefully hardened.

Length Inches	Approximate Width Inches	Number of Graduations	Each
4	19/32	1, 2, 4, 6 or 7	$ .75
6	11/16	1, 2, 4, 6 or 7	1.00
9	53/64	1, 2, 4, 6 or 7	1.40
12	31/32	1, 2, 4, 6 or 7	1.75
18	1	1, 2, 4, 6 or 7	2.50
24	1	1, 2, 4, 6 or 7	3.00
36	1	1, 2, 4, 6 or 7	5.75



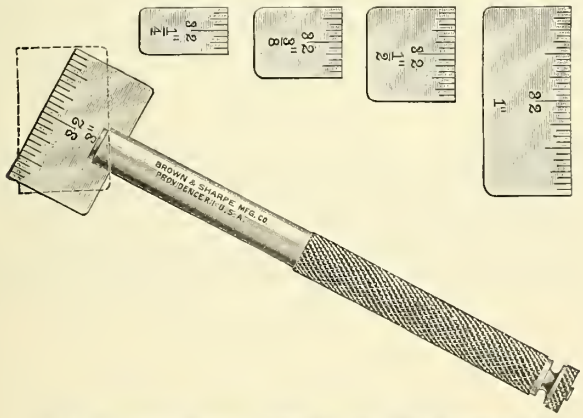
No. 325, Narrow Hook

These Rules are the same in construction as described above. They differ only in that this rule is narrow and allows measurements to be taken through a hole ⅜ inch in diameter.

Length Inches	Number of Graduations	Each
4	10, 11 or 12	$ .70
6	10, 11 or 12	.90
9	10, 11 or 12	1.25
12	10, 11 or 12	1.50

Hook Rules furnished with metric graduations when ordered.

No. 335, with Holder



English or Metric Measure

Convenient in measuring a recess or keyway as well as the general class of tool and die work.

The holder takes either of the five sizes of rules. The barrel is knurled for finger grip. The rules are held in a split chuck, adjusted by a knurled nut at the top of the barrel and can be set at various angles according to the work.

The Rules are of tempered steel, graduated on both sides, 32ds on one side and 64ths on the other. The 1 inch and ½ inch are also furnished graduated to 50ths on one side and 100ths on the other.

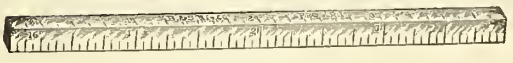
These Rules are also furnished graduated on one side to millimeters and on the other side to half-millimeters.

Five Rules interchangeable in one Holder $1.50

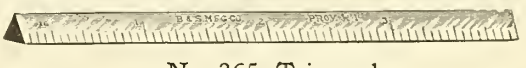
Extra Parts

Length, Inch	Length, mm.	Without Holder	With Holder
¼	5	$ .20	$ .70
⅜	10	.20	.70
½	15	.20	.70
¾	20	.20	.70
1	25	.20	.70

Holder only ..... $ .50



Standard



No. 360 Square

Length Inches	Number of Graduations	Each
3	4, 7 or 17	$ .45
4	4, 7 or 17	.60
6	4, 7 or 17	.90

These Rules are divided into parts of an inch as follows:

No. 4 Graduation	No. 7 Graduation	No. 17 Graduation
1st cor. 8	16	16
2d cor. 16	32	50
3d cor. 32	64	64
4th cor. 64	100	100

No. 365, Triangular

Length Inches	Number of Graduations	Each
3	20, 21 or 22	$ .50
4	20, 21 or 22	.70
6	20, 21 or 22	1.00
12	20, 21 or 22	2.00

These Rules are divided into parts of an inch as follows:

No. 20 Graduation	No. 21 Graduation	No. 22 Graduation
1st cor. 16	16	12, 24, 48
2d cor. 64	32	20, 50, 100
3d cor. 100	64	16, 32, 64

For list of graduations, see page 306

Steel Rules

Starrett

Spring Tempered



These Rules are about $\frac{3}{64}$ inch thick.

English Measure

No. 300 Graduated 8ths, 16ths, 32nds and 64ths.
No. 302 Graduated 8ths, 10ths, 12ths, 16ths, 20ths, 24ths, 32nds, 48ths, 50ths, 64ths and 100ths.
No. 307 Graduated 16ths, 32nds, 64ths and 100ths.

Length, Inches	Width, Inches	Each
1	$\frac{1}{2}$	$ .15
2	$\frac{1}{2}$	.25
3	$\frac{9}{16}$	.35
4	$\frac{5}{8}$	.45
6	$\frac{3}{4}$	.65
9	$\frac{7}{8}$	1.00
12	1	1.25
18	$1\frac{1}{8}$	2.00
24	$1\frac{1}{4}$	2.50
36	$1\frac{1}{4}$	5.00
48	$1\frac{1}{4}$	7.00

Metric Measure

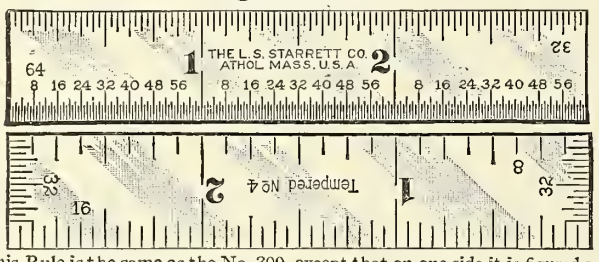
No. 340 Graduated three corners in millimeters, one corner in ½ millimeters.

Length Cm.	Each	Length Cm.	Each
5	$ .25	40	$1.65
10	.45	50	2.00
15	.65	60	2.50
20	.85	80	5.00
25	1.05	1Mm.	7.00
30	1.25		

Metric and English Measure

No. 350 Graduated in millimeters, ½ millimeters, 32nds and 64ths of an inch. Prices same as No. 340 above.

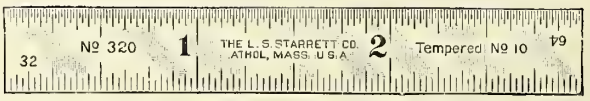
English Measure



This Rule is the same as the No. 300, except that on one side it is figured as shown to assist the user in reading the 64ths.
No. 603 Graduated 8ths, 16ths, 32nds and 64ths, with 32nds on ends of one side.

Length Inches	Width Inch	Each	Length Inches	Width Inches	Each
2	$\frac{1}{2}$	$ .25	9	$\frac{7}{8}$	$1.00
3	$\frac{9}{16}$	.35	12	1	1.25
4	$\frac{5}{8}$	.45	18	$1\frac{1}{8}$	2.00
6	$\frac{3}{4}$	.65	24	$1\frac{1}{4}$	2.50

Flexible



These are very thin spring-tempered rules, nicely graduated on one side only. Those from 1 inch to 12 inches are ½ inch wide, and will easily conform to a 2-inch circle. Those from 18 inches to 48 inches are ¾ inch wide, and are made from a trifle heavier stock.

English Measure

No. 320 Graduated 32nds and 64ths.
No. 321 Graduated 64ths and 100ths.

Length Inches	Each	Length Inches	Each
1	$ .15	12	$1.25
2	.25	18	2.00
3	.35	24	2.50
4	.45	36	5.00
6	.65	48	7.00
9	1.00		

Metric Measure

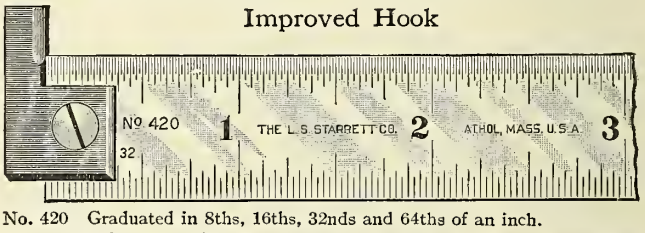
No. 345 Graduated in millimeters and ½ millimeters.

Length Cm.	Each	Length Cm.	Each
5	$ .25	40	$1.65
10	.45	50	2.00
15	.65	60	2.50
20	.85	80	5.00
25	1.05	1Mm.	7.00
30	1.25		

Metric and English Measure

No. 355 Graduated in millimeters and 64ths of an inch. Prices same as No. 345 above.

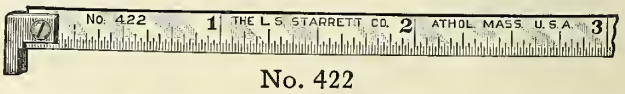
Improved Hook



No. 420 Graduated in 8ths, 16ths, 32nds and 64ths of an inch.
Very convenient in taking measurements from round corners, through hubs of pulleys, setting inside calipers, etc. The 6-inch may be carried in the pocket.
The hook can be quickly removed by turning eccentric stud one half round.

Inches	6	9	12	18	24	36
Each	$1.00	1.40	1.75	2.50	3.00	5.75

Narrow Hook

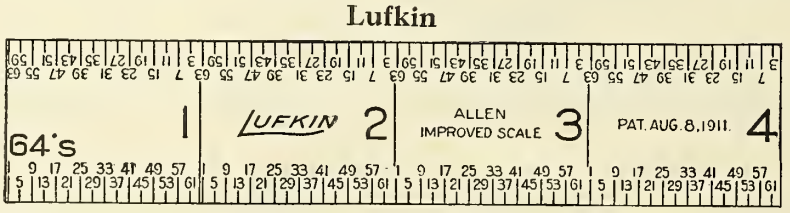


No. 422

Designed for use in taking measurements through small holes where regular hook rules cannot be used. They can also be used for setting inside calipers, etc. Measurements through holes as small as ⅜ inch can be obtained.
The rules are graduated one side in 32ds and the other in 64ths of an inch.

Inches	4	6	9	12
Each	$ .70	.90	1.25	1.50

Lufkin

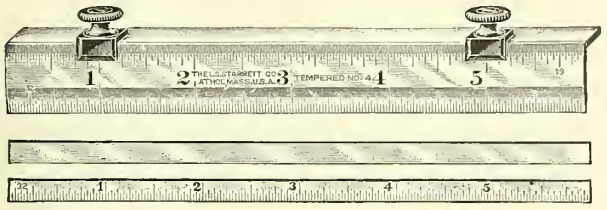


Machinists and others who have had occasion to use a scale graduated to 64ths of an inch know the difficulty of obtaining accurate measurements, the eye-strain, and loss of time, due to the fineness and closeness of the lines.
On account of the closeness of the lines it is impossible to number each one, so after arriving at the measurement, it is necessary to refer back to the last figure and count up the 64ths.
The Allen Improved Scale overcomes these difficulties. Any even number of 64ths has an equivalent in 32nds or 16ths, so one side is designed to take care of all even 64ths, upper edge being graduated to 16ths, lower edge to 32nds.
Other side takes care of all odd 64ths, and embodies an entirely new idea in marking of a machinist scale. Every odd 64th of an inch is given, and is found on either upper or lower edge. On lower edge the first graduation mark is $\frac{1}{64}$th of an inch from end of rule, and is numbered "1"; the next mark on that edge is $\frac{5}{64}$ths of an inch from end of rule, and is numbered "5"; the next "9," etc., up to first inch mark. On upper edge of same side are given intervening odd 64ths, i. e., $\frac{3}{64}$ inch mark would be $\frac{3}{64}$ths of an inch from end of rule, and would be numbered 3; $\frac{7}{64}$ths 7; $\frac{11}{64}$th 11, etc., up to first inch mark. This system of graduation is then repeated each inch.
A distance of $\frac{4}{64}$ths of an inch between graduations makes it possible to number each graduation mark with a figure large enough to be easily read.

Number	Length Inches	Each	Per Dozen
2208, Tempered	6	$ .65	$7.80
2608, Half-flexible	6	.65	7.80

Steel Key Seat Rules

Starrett



It is impossible to hold an ordinary rule on the cylindrical surface of a shaft and keep it parallel with the axis while laying off measurements or drawing lines. The round surface of the work makes it difficult to hold the rule in place and it is liable to form a slight angle with the axis, causing a measurement to be shorter than the true length, which should be made as it will be cut on the milling machine. This is an important matter when measuring lengths for splining keyways on shafting. To overcome this difficulty there have been designed rules with flanges, called key-seat rules.

This Rule is an improvement over the ordinary type in that the machinist scale is used as part of the key-seat rule. This is made possible by a device which holds two straight edges together in the form of a box square. One of these rules is a plain straight edge and the other the rule with which the machinist ordinarily works. The two edges forming the box square when applied to the surface of the cylindrical piece keep the graduated edge of the rule in a line parallel with the axis.

The steel auxiliary straight edge is either plain or graduated in 32ds and 64ths as desired, and sent when ordered. Unless otherwise ordered the key-seat rule is sent without auxiliary straight edges.

English

		Each
No. 105A	6 inches	$2.25
No. 105B	With auxiliary straight edge, plain, 6 inches	2.75
No. 105C	With auxiliary straight edge, graduated, 6 inches	3.00
No. 105D	9 inches	3.00
No. 105E	9 inches	3.75
No. 105F	9 inches	4.25

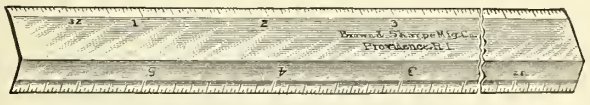
Where the style is not designated in an order, No. 105A will be sent.

Metric

One side of scale graduated both edges in mm., the other side graduated one edge in mm., and the other in ½ mm. The auxiliary straight edge graduated in mm., and ½ mm.

		Each
No. 105MA	15 cm.	$2.25
No. 105MB	With auxiliary straight edge, plain, 15 cm.	2.75
No. 105MC	With auxiliary straight edge, graduated, 15 cm.	3.00
No. 105MD	20 cm.	3.00
No. 105ME	20 cm.	3.75
No. 105MF	20 cm.	4.25

Brown & Sharpe



No. 374 English

Parallel lines for key seats, mortises, etc., can be readily and accurately drawn with these rules on shafts not less than ⅞ inch in diameter.

The edges are beveled, and graduated to 32nds of an inch.

	Each
Length, 4 inches	$2.50
Length, 6 inches	3.00
Length, 8 inches	3.75

No. 375 Metric

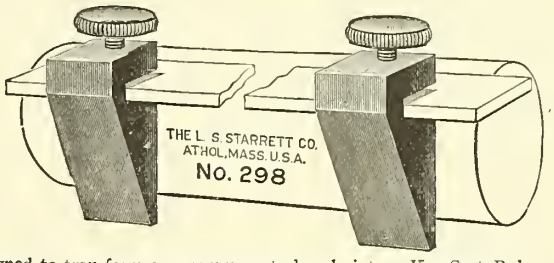
These Rules differ from those above only in reading to metric measure and being graduated to half-millimeters.

	Each
Length, 10 cm.	$2.50
Length, 15 cm.	3.00
Length, 20 cm.	3.75

Clamps

Starrett

Key-Seat



Designed to transform any common steel scale into a Key-Seat Rule.

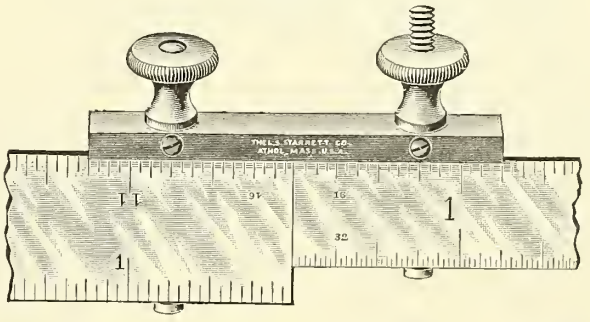
They are made from steel, case hardened, and ground accurate.

A pair weighs but one ounce. They can be put on or off almost instantly, and are a complete substitute for a more costly tool.

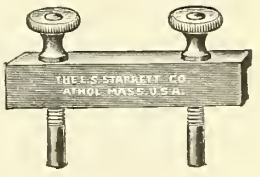
They may be used with Combination Square Blades, or with any straight rule, with accurate results.

No. 298 Pair ..... $ .60

Rule



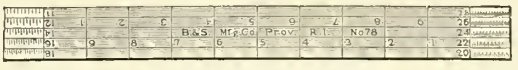
This little tool is used to clamp two steel rules together, end to end, making one long rule. The rules may be of the same or different widths up to 1¼ inches. This clamp will be of special value to mechanics, whose tool chests will usually not hold rules longer than 12 inches.



No. 299 Each ..... $ .50

Steel Gear Rules

Brown & Sharpe



No. 377 English

These rules greatly facilitate the measurement of wheels to be sized according to diametral pitch.

Style 1

This Rule is 12 inches long and contains four lines of graduations upon each side, one each as follows: 18, 20, 22, 24, 26, 28, 30, 32 parts of an inch, whole length.

The following example will explain the use of this Rule:

Required the outside diameter of a wheel to have 60 teeth of 20 pitch. Find 60 on the line graduated to 20ths, this is the pitch diameter of the required wheel; add to this two of the divisions. The result, 62-20, is the outside diameter.

Style 2

This Rule is 12 inches long and is graduated 1 inch only on each end, as follows: 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36 and 38 parts of an inch. The intermediate 10 inches are blank except that the inch lines are made clear across the Rule.

The following example will explain the use of this Rule:

Required the outside diameter of a wheel to have 83 teeth of 10 pitch. Take 8 of the blank inches and 3 of the 10ths graduations, which gives the pitch diameter; add two to the 10ths graduations and the result, 8.5 inches, is the outside diameter.

Each $3.00

Straight Edges

No. 380 Plain Starrett No. 385 Beveled



Length, Inches	Width, Inches	Thickness, Inch	Each
12	1	3/16	$ 1.20
18	1 1/4	3/16	1.80
24	1 1/2	3/16	2.40
36	2	1/4	5.00
48	2 1/2	1/4	8.00
60	3	1/4	12.00
72	3	1/4	16.00



Length, Inches	Width, Inches	Thickness, Inch	Each
12	1	3/16	$1.50
18	1 1/4	3/16	2.50
24	1 1/2	3/16	3.50
36	2	1/4	6.00
48	2 1/2	1/4	10.00
60	3	1/4	15.00
72	3	1/4	20.00

No. 528 Standard Brown & Sharpe



These straight edges are made from the best quality of steel and every care is taken to insure their being straight

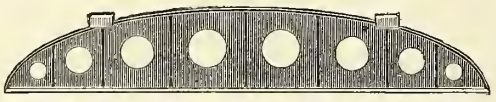
Length, Inches	Width, Inches	Thickness, Inch	Each
6	1	5/64	$ .60
9	1 1/8	5/64	.90
12	1 1/4	5/64	1.25
18	1 1/2	3/32	2.00
24	2	3/32	2.75
36	2 1/2	7/64	5.00
48	3	7/64	8.00
60	3	1/8	12.00
72	3	1/8	16.00

No. 525 Draughtsman



Length, Inches	Width, Inches	Thickness, Inch	Each
15	1 1/4	3/64	$ .90
18	1 1/2	3/64	1.00
24	1 1/2	3/64	1.50
30	1 3/4	3/64	2.25
36	2	1/16	3.00
42	2 1/4	1/16	4.00
48	2 1/2	1/16	6.00
60	2 3/4	5/64	8.00
72	2 3/4	5/64	10.00

Cast Iron

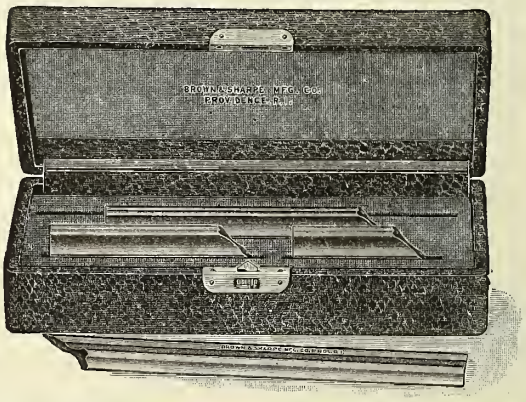


These straight edges are of a form best adapted to retain a straight line. The edge of each is scraped to form a true surface, and the straight edges when thus made are indispensable in the proper scraping of the ways of planer and lathe beds, etc.

Size, Inches	Weight, Pounds	Each with Cover
18x1 1/2	5	$7.00
24x1 5/8	10	9.50
30x1 3/4	15	12.00
36x1 7/8	15	15.00
48x2	35	20.50
60x2 1/8	50	26.50
72x2 1/4	75	33.00
84x2 5/16	120	36.00
96x2 3/8	145	39.00
120x2 3/4	300	50.00
*144x3	420	
*180x3 1/2	835	

*Made to order only. Price upon application.

No. 530 Toolmakers Knife Edge

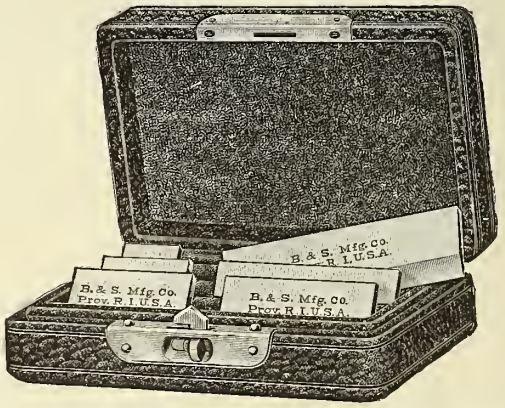


For work that requires extreme accuracy. Made from the best quality of steel and every care is taken to insure their being straight and true. In cloth-covered cases

Length, Inches	Width, Inch	Each
2 1/4	13/16	$2.75
3 1/4	13/16	3.75
4 1/2	13/16	4.75
6 1/4	13/16	7.00

Test bar, in cloth-covered case	$6.00
Leather case for complete set	1.00
Cloth-covered case for test bar	.20
Cloth-covered cases for straight edges, each	.15
No. 531 Glass test bar and 4 straight edges, 1 each, 2 1/4, 3 1/4, 4 1/2 and 6 1/4 inches long, in leather case	24.00

No. 536 Narrow Edge



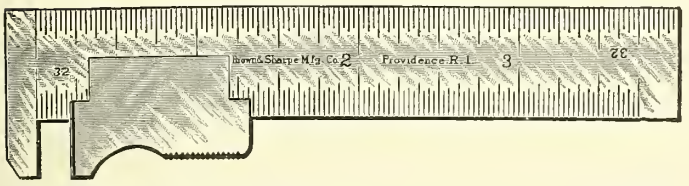
Similar in design to beveled edge straight edges, but are made of tempered steel, being 5/64ths of an inch thick and 19/32nds of an inch wide. The set comprises six lengths, 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches. Useful in testing flanged and ball-bearing washers and are particularly adapted for toolmakers use for testing surfaces where it would be impossible to use a regular straight edge.

Set complete in morocco case $2.00

Steel Caliper Rules

Brown & Sharpe

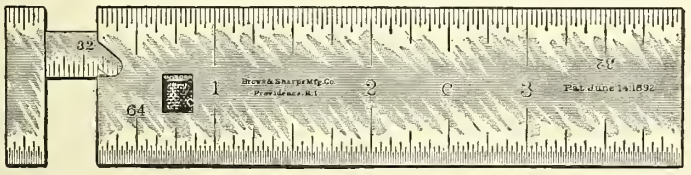
No. 385 English or Metric Measure



Made of steel, $4\frac{3}{16}$ inches long and $\frac{1}{16}$ inch thick. Graduated on corners to 32nds of an inch. The jaws are $\frac{3}{8}$ inch deep.

The Metric Rules are graduated to half millimeters.

No. 385 English or Metric Measure, each $1.25



No. 391 English Measure

	Each
Length, 3 inches	$2.00
Length, 4 inches	2.50

Convenient for use in the stock room or store, in selecting sheet or bar stock, wire, tubing, etc. The slide of the 3-inch can be drawn out to measure $2\frac{1}{4}$ inches and the 4-inch to measure $3\frac{1}{4}$ inches.

The 3-inch rule can be furnished nickel-plated for 15 cents extra. They are divided into parts of an inch as follows:

	A	B	C	D
1st cor.	8, 14, 28	8, 14, 28	8	8
2d cor.	12, 24, 48	12, 24, 48	16	16
3d cor.	16, 32, 64	16, 32, 64	32	32
4th cor.	20, 50, 100	20, 50, 100	64	64
Slide	32 and 64	64 and 100	32 and 64	64 and 100

No. 392 Metric Measure

	Each
Length, 75 mm	$2.00
Length, 100 mm	2.50

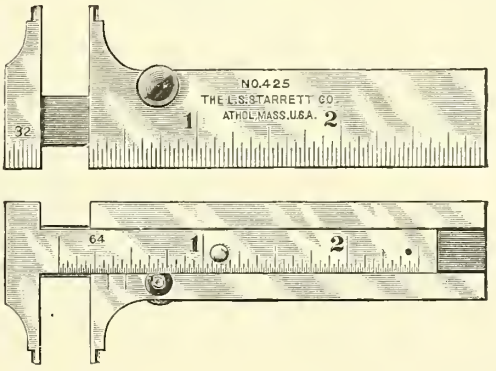
The slide of the 75 mm. can be drawn out to measure 50 mm., and of the 100 mm. to measure 75 mm. They are graduated to millimeters and half millimeters.

No. 397, with Button Gauge

This differs from the No. 391 Steel Caliper Rule only in that the outside is graduated to 16ths, 20ths, 32nds and 40ths of inch and the slide to 40ths and 80ths of an inch.

No. 397 Each $2.00

Starrett



No. 425 Graduated in 32nds and 64ths.

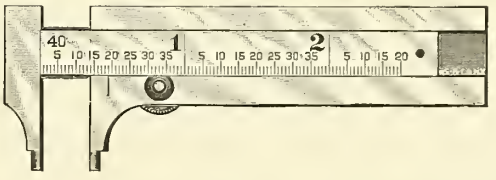
No. 425A Graduated in 32nds on the stock and 100ths on the slide.

No. 425M The 7 cm. is graduated in half millimeters on slide and millimeters on stock. The 13 cm. is graduated millimeters and half millimeters on slide, and millimeters on stock.

No. 425ME Graduated in half millimeters and 64ths inch on slide, and 32nds inch on stock.

	Each
3-inch or 7 cm	$2.00
5-inch or 13 cm	3.00

No. 431, with Button Gauge



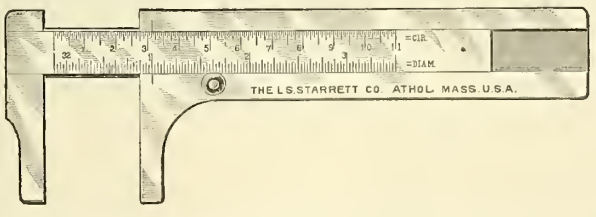
Same size and similar to No. 425. The difference is that it is graduated on the slide only to 40ths of an inch.

Special attention is called to the fact that every fifth line is figured, so as to assist the user to more quickly read the 40ths, as shown in the cut.

No. 431 3-inch, each $2.00

Starrett

No. 424, with Circumference Gauge

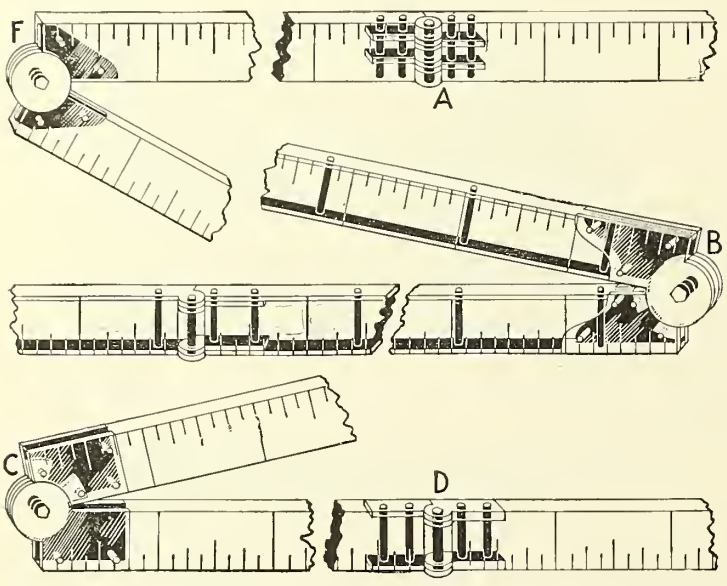


This Gauge has a double function—being graduated to read the circumference as well as the diameter of the thing measured, the relation of circumference to diameter being shown by the graduations on upper corners of the rule (capacity $3\frac{1}{2}$ inches, about 11 inches circumference). It was originally designed for rope or cordage manufacturers. It makes a first-class slide rule caliper of large scope, opening $3\frac{1}{2}$ inches. The jaws, being $1\frac{5}{16}$ inches deep, will caliper a cylinder up to $2\frac{1}{2}$ inches in diameter. The rule is graduated in 32nds of an inch standard and 16ths of an inch circumference measure. All corners of the tool are rounded smooth to make it fit to carry in the pocket and agreeable to handle. The circumference measure will assist in calculating how many feet a minute the cutting tool in a lathe is doing on any diameter within the scope of the gauge and so help determine whether the tools should have a faster or slower speed.

Rule—The circumference being shown by the Gauge, multiply the same by the speed the lathe runs per minute and the result will show the number or inches of feet the circumference is running and the tool cutting.

No. 424 Each $3.50

Boxwood Rules



We show in the accompanying illustrations, the various styles of joints and plates used in the manufacture of these rules.

Round joint "F" is the one used in the cheapest grade of rules. In this form there is one flange or wing imbedded in each leg of the rule, the leg and wing being pinned together as shown.

Square joint "C" has two wings to each leg, one on each outside face of the wood. This is a much stronger construction than the round joint type as the two wings are securely held together by rivets which go clear through all three. The additional quantity of brass used in this form of joint also adds to the strength of the rule.

Arch joint "B" follows practically the same form of construction as the square joint. However, the wings are larger, more graceful in form and, covering as they do more of the surface of the wood, add to the life of the rule.

Middle plates "A" have the plates let into the wood and pinned.

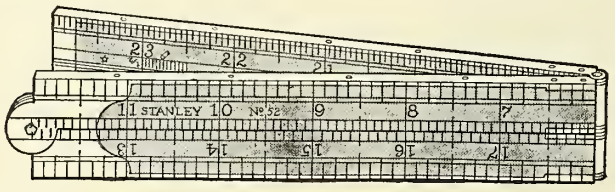
Edge plates "D" have the plates fastened on the outer edges of the wood by means of rivets which go through both wood and plates, holding all three firmly together. This form insures a much stronger joint.

A full bound rule is one having a brass binding extending along both inside and outside edges of each leg.

A half-bound rule is one having the brass binding extending only along the outside edges of the legs.

Bitted rules have a brass plate inserted on the edge of the rule to protect wood from closing pins. All rules listed have heavy brass tips.

Note—Rules with metric graduations on both sides or with metric on one side and inches on the other, also with "English marking"—that is with numbers reading from left to right—can be furnished, if so ordered.



Two-Foot, Four-Fold

¾ inch wide when closed

		Dozen
No. 61½	Square joint, middle plates, 8ths and 16ths	$3.25
No. 62½	Square joint, bound, 8ths, 10ths, 12ths and 16ths	8.00

1 inch wide when closed

No. 68	Round joint, middle plates, 8ths and 16ths	2.50
No. 61	Square joints, middle plates, 8ths and 16ths	3.00
No. 53	Arch joints, edge plates, 8ths, 10ths, 12ths, 16ths and drafting scales	4.50
No. 52	Arch joint, half bound, 8ths, 10ths, 12ths, 16ths and drafting scales	7.25
No. 54	Arch joint, full bound, 8ths, 10ths, 12ths, 16ths and drafting scales	8.75
No. 59M	Double arch joint, bitted, 8ths, 16ths and drafting scales and millimeters	5.25
No. 60	Double arch joint, full bound, 8ths, 10ths, 12ths, 16ths and drafting scales	10.75
No. 62	Square joint, full bound, 8ths, 10ths, 12ths, 16ths, and drafting scales	8.00
No. 84	Square joint, half-bound, 8ths, 10ths, 12ths, 16ths and drafting scales	6.50

1⅜ inches wide when closed

No. 70	Square joint, middle plates, 8ths, 16ths and drafting scales	4.00
No. 78½	Double arch joint, full bound, 8ths, 10ths, 16ths and drafting scales	12.00
No. 75	Arch joint, edge plates, 8ths, 10ths, 16ths and drafting scales	6.00

One-Foot, Four-Fold

⅝ inch wide when closed

		Dozen
No. 57	Arch joint, full bound, 8ths and 16ths	$6.25

Two-Foot, Two-Fold

1⅜ inches wide when closed

No. 29	Round joint, 8ths and 16ths	2.75

1½ inches wide when closed

No. 18	Square joint, 8ths and 16ths	4.00

Three-Foot, Four-Fold

1 inch wide when closed

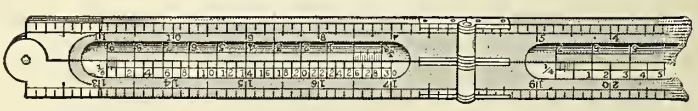
No. 66½	Arch joint, middle plates, 8ths and 16ths	6.00
No. 66¾	Arch joint, full bound, 8ths and 16ths	15.00
No. 66¼	Arch joint, edge plates, 8ths and 16ths	7.00

Four-Foot, Four-Fold

1½ inches wide when closed

No. 94	Arch joint, full bound, 8ths and 16ths	26.00

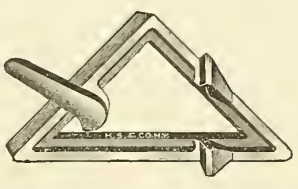
Architect



Arch joint, edge plates, 8ths, 10ths, 12ths, 16ths, with inside beveled edges and architects drafting scales. 1-inch wide. Two-foot four-fold.

No. 53½	Boxwood, dozen	$8.00

Rule Tool



This handy little tool, which can be carried in the pocket, may be easily and quickly adjusted to an ordinary two-foot rule and can then be used as a square, depth gauge, mitre, or in many other ways. It has no loose parts to get lost.

Dozen $3.00

We want *you* to know

that one of the largest departments of our business is devoted to the making of all manner of special parts for manufacturers.

Screw machine and lathe work; die and sand castings; drawn or stamped parts; forgings, spun brass flanges, ferrules, etc.

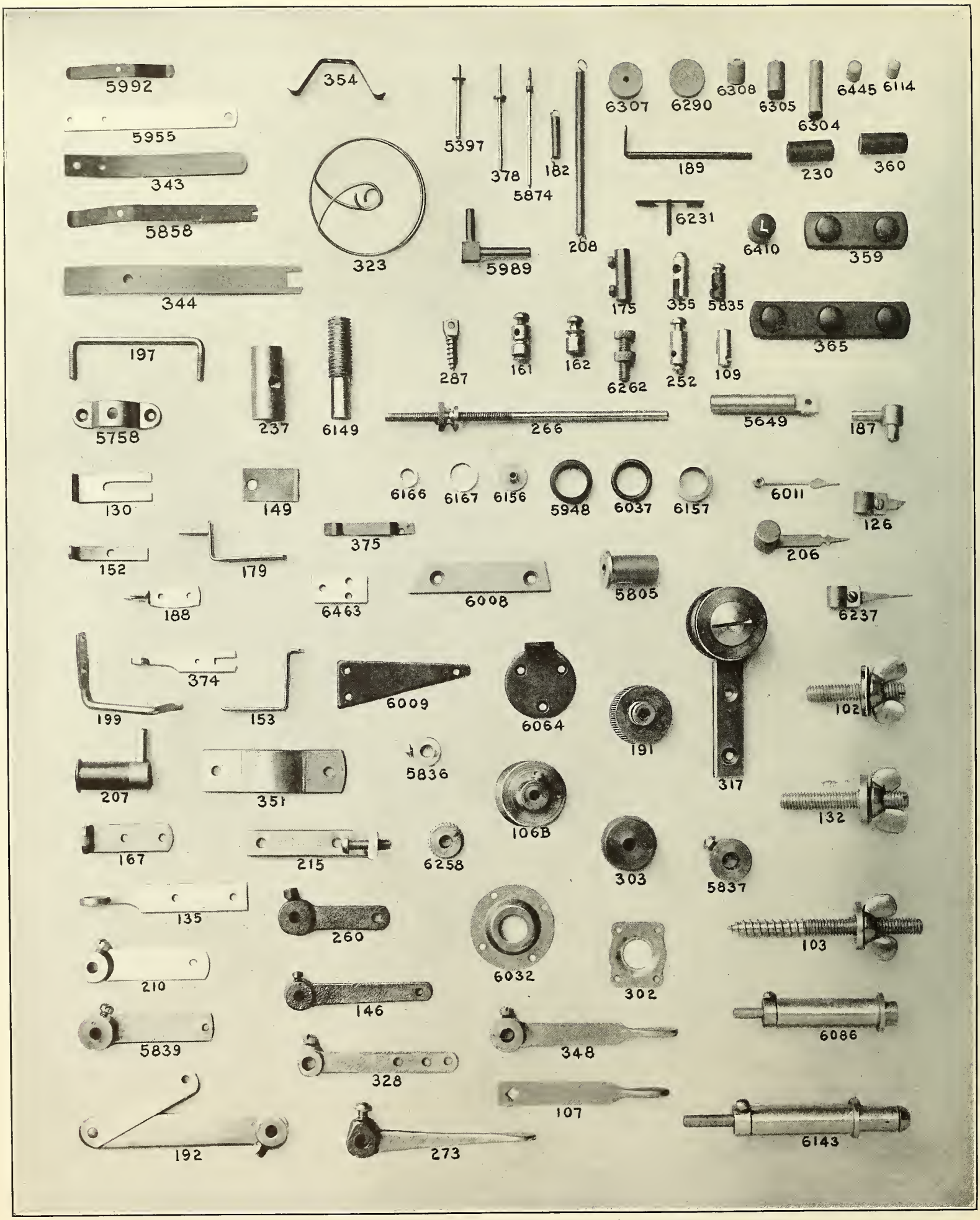
Illustrations herewith (numbered merely for general convenience) are taken at random from work we have produced.

It is necessary to send us samples of your wants, properly marked for correct identification, along with specifications as to quantities and deliveries, and with such detail in hand we are in excellent position to quote the lowest possible prices, consistent with strictly high grade material and workmanship.

Hammacher, Schlemmer & Company

See next page.

Also pages facing 344, 857 and 888



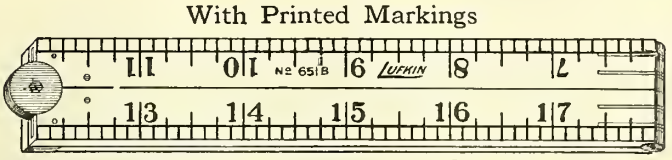
See preceding page.

Also pages facing 344, 857 and 888

Rules

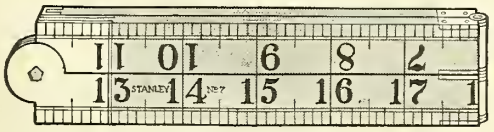
Boxwood

With Printed Markings



No. 651B Round joint, middle plates, marked 8ths and 16ths, with heavy, clear and distinct figures, dozen $2.50

Blind Man



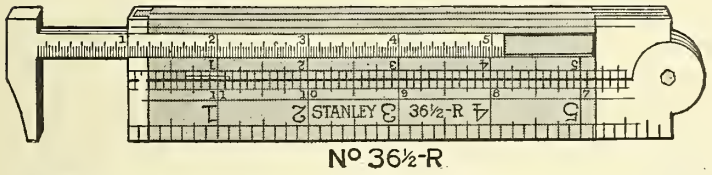
Two-Foot, Four-Fold

No. 7 Square Joint, 8ths and 16ths, 1⅜ inches wide, dozen... $11.00

Three-Foot, Four-Fold

No. 8 Square Joint, 8ths and 16ths, 1 inch wide..... 12.00

With Caliper Slide



No 36½-R

All right hand as shown in illustration; the slide is graduated in 32nds.

Six-Inch, Two-Fold

No. 36 Square Joint, 8ths, 10ths, 12ths and 16ths. ⅞ inch wide when closed, dozen..... $4.50

No. 14 Square Joint, full bound, 8ths, 10ths, 12ths and 16ths. ⅞ inch wide when closed..... 8.00

One-Foot, Four-Fold

No. 32 Arch Joint, edge plates, 8ths, 10ths, 12ths and 16ths. 1 inch wide when closed, dozen..... 7.00

No. 32½ Arch Joint, full-bound, 8ths, 10ths, 12ths and 16ths. 1 inch wide when closed, dozen..... 10.00

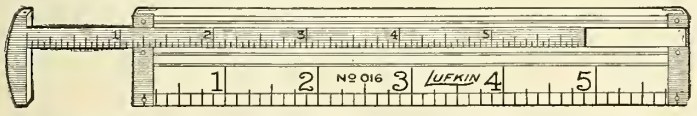
One-Foot, Two-Fold

No. 36½ Square Joint, 8ths, 10ths, 12ths and 16ths. 1⅜ inches wide when closed, dozen..... 6.50

No. 35 Square Joint, 8ths, 10ths, 12ths and 16ths. 1 inch wide when closed, dozen..... 6.20

Two-Foot, Four-Fold

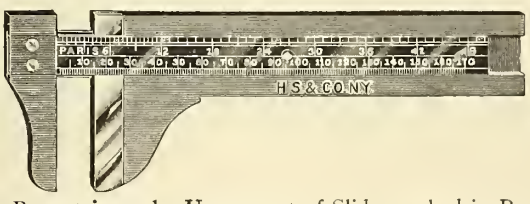
No. 62C Square Joint, full-bound, 8ths, 10ths, 12ths and 16ths, 1 inch wide when closed, dozen..... 13.50



All right hand, as shown in illustration. The slide is graduated in 32nds.

		Dozen
No. 013	1inch wide, 3 inches long, marked 8ths and 16ths	$3.50
No. 014	1inch wide, 4 inches long, marked 8ths and 16ths	4.00
No. 016	1inch wide, 6 inches long, marked 8ths and 16ths	4.50
No. 024	1⅜ inches wide, 4 inches long, marked 8ths and 16ths	4.50
No. 026	1⅜ inches wide, 6 inches long, marked 8ths and 16ths	5.00

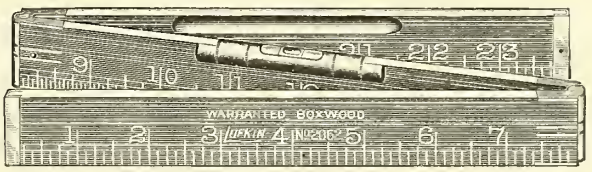
With Button Gauge



No. 100 Brass trimmed. Upper part of Slide marked in Paris button lines; lower part in 40ths of an inch (U. S. Standard). Back of Rule inches and 8ths, dozen..... $18.00

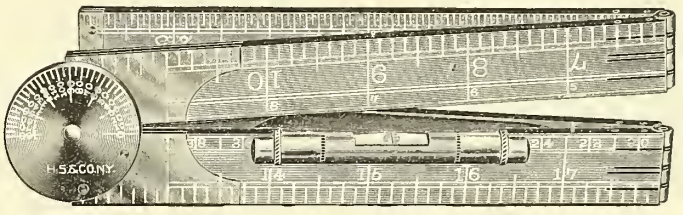
No. 024B Same as No. 024, shown on this page, except marked in 40ths of an inch, dozen 4.50

Combination



No. 2062 Made of highly finished boxwood, 2-foot, 3-fold, 1 inch wide, edge plates; graduated one side 8ths, other side 16ths. An entirely new and very useful tool for carpenters, plumbers, etc., each $1.00

Combination



With Bevel and Level

Two-Foot, Four-Fold

Bevel is graduated to 5 degrees, but closer readings can be taken with the eye. 1½ inches wide when closed. Arch joints, extra heavy middle plates, bitted.

Graduated 8ths, 16ths, and drafting scales.

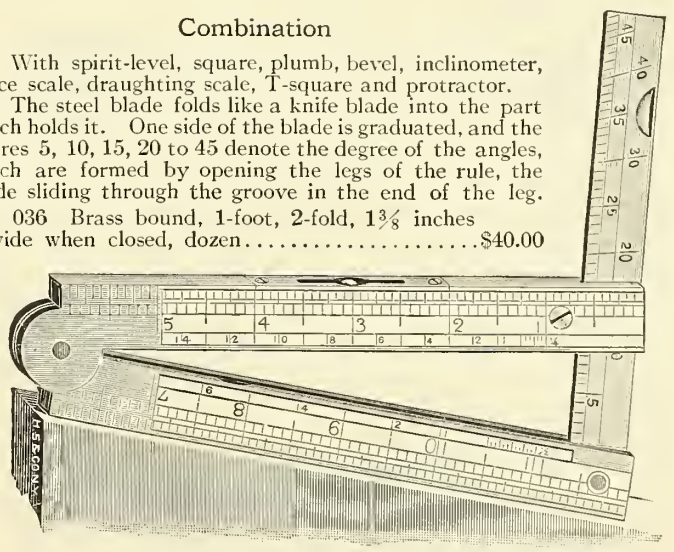
No. 863L Unbound, each $1.25
No. 873L Half-bound, each 1.50

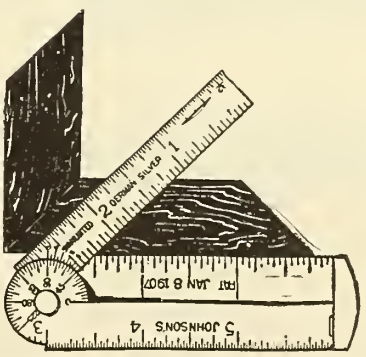
Combination

With spirit-level, square, plumb, bevel, inclinometer, brace scale, draughting scale, T-square and protractor.

The steel blade folds like a knife blade into the part which holds it. One side of the blade is graduated, and the figures 5, 10, 15, 20 to 45 denote the degree of the angles, which are formed by opening the legs of the rule, the blade sliding through the groove in the end of the leg.

No. 036 Brass bound, 1-foot, 2-fold, 1⅜ inches wide when closed, dozen.....$40.00





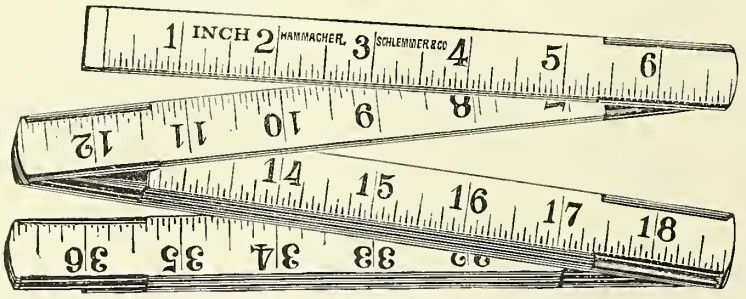
German Silver

Johnson Combination

Can be used in many ways—as an ordinary rule, square, caliper, bevel, etc. The bevel reads directly to 5 degrees, and to half a degree by means of the Vernier. Graduated in 16ths and 32nds. Made of German silver and finely finished. Each rule in a neat leather case.

		Each
No. 46	6-inch, 4-fold...	$2.50
No. 45	12-inch, 4-fold..	4.20

Pocket Folding Rules



H. S. & Co.

6-Inch Folds. 5/8 Inch Wide, Metal Tips

*Regular figuring, concealed spring lock-joints, as illustrated, yellow finish.

Number	1512	1513	1514	1514½	1515	1516	1518
Feet	2	3	4	4	5	6	8
Number of folds	4	6	8	8	10	12	16
Graduations, inches	1/16	1/16	1/16	1/16	1/16	1/16	1/16
Dozen	$2.55	3.75	5.00	5.00	6.30	7.50	10.00

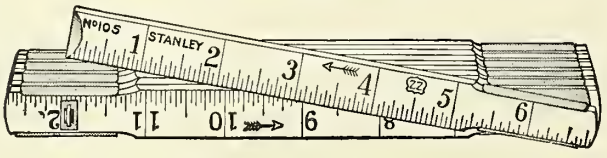
and MM.

4-Inch Folds. 7/16 Inch Wide

*Regular figuring, concealed spring-lock joints, yellow finish.

Number	942	943	944
Feet	2	3	4
Number of folds	6	9	12
Graduated, inches	1/16	1/16	1/16
Dozen	$4.00	6.00	8.00

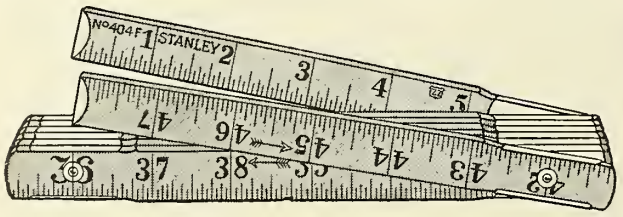
Stanley Zigzag



6-Inch Joint. 5/8 Inch Wide, Metal Tips

*Regular figuring, concealed spring lock-joint, white enamel finish.

Number	104	104 M	105	106	108
Feet	4	4	5	6	8
Number of folds	8	8	10	12	16
Graduations, inches	1/16	1/16 and MM.	1/16	1/16	1/16
Dozen	$4.80	4.80	6.00	7.20	9.60



6-Inch Folds. 5/8 Inch Wide, Metal Tips

*Style "F" figuring, riveted spring-joints, yellow finish.

Number	404 F	405 F	406 F	408 F
Feet	4	5	6	8
Number of folds	8	10	12	16
Graduations, inches	1/16	1/16	1/16	1/16
Dozen	$4.00	5.00	6.00	8.00

K and E

6-Inch Folds. 5/8 Inch Wide, Metal Tips

*Regular figuring, white ivorine finish, riveted spring-joints. Have a patented white coating on which the black graduations show up very distinctly. This coating is very durable; resists heat and moisture and can be cleaned with water, alcohol or oil. Graduated in 16ths.

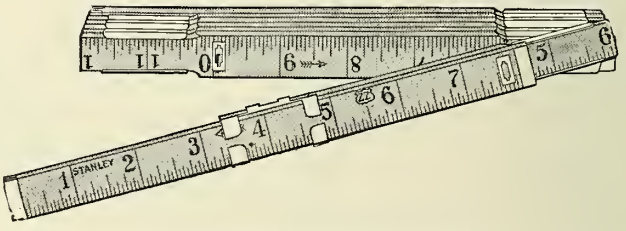
Feet	3	4	5	6	8
Number of folds	6	8	10	12	16
No. 1730 IV ..... dozen	$3.30	4.40	5.60	7.00	9.00

6-Inch Folds. 5/8 Inch Wide

*Style "T" figuring, metal tips, riveted spring-joints, yellow finish. Graduated in 16ths.

Feet	4	5	6	8
Number of folds	8	10	12	16
No. 1730 F ..... dozen	$2.80	3.60	4.40	5.80

Stanley Zigzag Extension

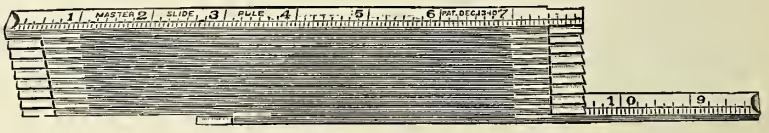


6-Inch Folds. 5/8 Inch Wide

*Regular figuring. Have an extension slide by means of which the rule may be used to obtain inside dimensions. Concealed spring lock joint. Yellow finish. Graduated in 16ths.

No. 206. 6 feet long, 12 folds ..... dozen $9.90

Master Slide Rule



8-Inch Folds. 1/2 Inch Wide

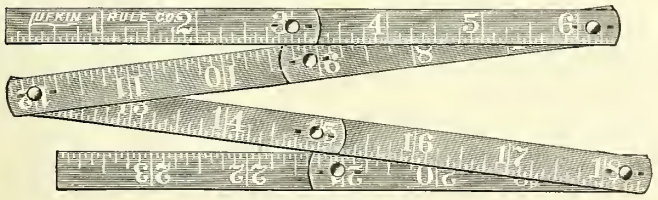
Designed for taking inside measurements of doors, windows, boilers, etc. One side of the rule reads inside measurements directly while the other is intended for ordinary measurements. The rule is more quickly opened and closed than an ordinary folding rule. Made of select boxwood and trimmed with brass-plated steel. When extended it is kept in place rigidly by strong steel springs that cannot get out of order. Graduated in 16ths.

Feet	4	5	6
Number of folds	8	10	12
Dozen	$12.00	15.00	18.00

*Styles of figuring are as follows:
Regular number of inches commence on outside of Rule and run consecutively entire length.
Style "T" numbers commence on outside of rule and run from 1 to 11 inches. Each foot is marked with large figures, such as 1F, 2F, 3F, etc. After each foot the inches repeat 1 to 11.
Style "F." The number of inches commence on the inside of the rule, allowing the rule to lie flat when open. The figures 12, 24, 36, etc., are made extra large.

Steel Folding Rules

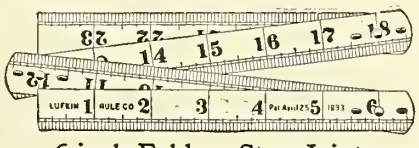
Lufkin



4-inch Folds

Flexible spring-steel, ⅜ inch wide, with stop-joints. Graduated in 16ths, both sides, raised figures.

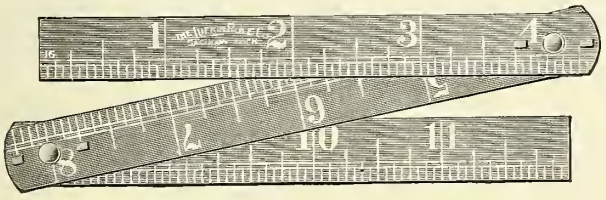
	Dozen
No. 1141 1-foot, 4-inch stops, 3-fold	$ 4.00
Leather cases, extra	1.50
No. 1142 2-foot, 6-fold	7.50
Leather cases, extra	2.00
No. 1143 3-foot, 9-fold	11.00
Leather cases, extra	2.50



6-inch Folds. Stop-Joints

Tempered steel, ¾ inch wide. Surface of rule is bright, with sunken figures. Graduated in 16ths.

	Dozen
No. 1172 2-foot, 4-fold	$16.80
No. 1173 3-foot, 6-fold	25.20
No. 1174 4-foot, 8-fold	33.60
No. 1175 5-foot, 10-fold	42.00
No. 1176 6-foot, 12-fold	50.40



4-inch Folds. Machine Divided

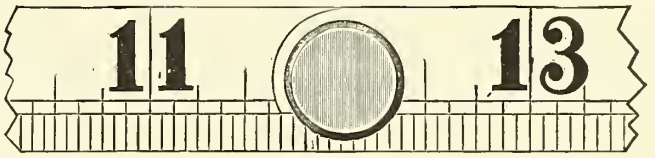
Flexible steel, ½ inch wide. Graduated one side in 8ths, other side in 16ths. With stop-joints.

	Dozen
No. 4141 1-foot, 3-fold	$9.00
No. 4142 2-foot, 6-fold	15.00
No. 4143 3-foot, 9-fold	22.50
No. 4144 4-foot, 12-fold	30.00
Leather cases for Nos. 4141 and 4142	2.50
Leather cases for Nos. 4143 and 4144	3.00



No. 041. 1-foot Folding Steel Pocket Rule, made of finest quality spring-steel, ⅜ inch wide, No. 28 gauge. Will bend around a 3-inch circle. In leather case, dozen $2.00

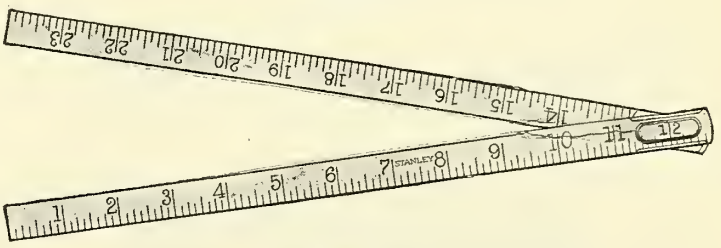
Lufkin



Blacksmith

No. 85T Stop-joint, 2-foot 2-fold, ¾ inch wide, steel, brass tipped. Graduated in 8ths and 16ths, dozen $13.00

Stanley



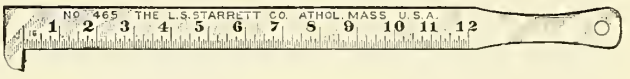
Blacksmith

Consists of two legs made from spring-brass, joined by a brass joint containing a stiff spring which holds the rule rigid when open. Particularly adapted for measuring hot metal, as it can be cooled without rusting by plunging in water.

No. 17 2-foot, 2-fold, ¾ inch wide. Graduated in 8ths and 16ths, dozen ..... $ 6.00

Hook and Handle Rule

Starrett



Blacksmith

To enable blacksmiths to measure hot pieces more conveniently, and for convenience in measuring through holes, or from the inside when held against a corner, etc., the blacksmiths hook and handle rule has been devised. This is an ordinary rule with a hook at zero, so that by placing the hook against the work the reading may be made readily from the scale at the edge. A handle on the opposite end from the hook permits using the rule without getting the hand near the work. Can be cooled without rusting by plunging in water.

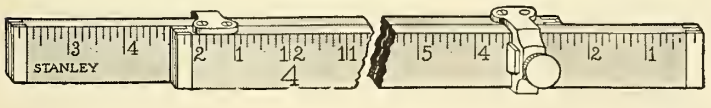
These rules are made from hard rolled sheet brass $\frac{1}{10}$ of an inch thick, $1\frac{1}{16}$ inches wide, with heavy graduations and figures, graduated from the end in $\frac{1}{16}$-inch on one side, and from the inside of the hook in 16ths of an inch on the other adapting them for taking measurements either from the hook or from the outside edge. They are graduated 12 inches, have flat handles and measure over all, 16¾ inches.

No. 65, each $1.15

Extension Rules

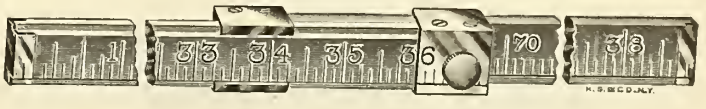
Very useful for accurately measuring the distance between two fixed points. When extended to required length, the sections may be secured by the set screw. About 1 inch wide. Maple, with brass trim, graduated in 8ths.

Stanley



	Dozen
No. 240 2 to 4 feet long	$ 8.00
No. 360 3 to 6 feet long	9.00
No. 480 4 to 8 feet long	10.00
No. 510 5 to 10 feet long	12.00
No. 612 6 to 12 feet long	15.00

H. S. & Co.



	Each
No. 3½ Extends from 3 to 6 feet, with set screw	$2.10
No. 4 Extends from 4 to 8 feet, with set screw	5.30
No. 5 Extends from 5 to 10 feet, with set screw	6.50
No. 6 Extends from 6 to 12 feet, with set screw	7.50

Shrinkage Rules

Stanley

Boxwood—Pattern Makers



No. 30½

All castings shrink in cooling, depending on the kind of metal, the thickness, and the condition under which cast. For instance: The shrinkage per foot of castings where the thickness runs about 1 inch, cast under ordinary conditions, would average, in cast iron $\frac{1}{8}$ inch, in brass $\frac{1}{16}$ inch, in steel, $\frac{1}{4}$ inch, in tin, $\frac{1}{32}$ inch, etc. Thicker castings under the same conditions will shrink less, and thinner ones more than this average.

To allow for shrinkage, patterns must be made larger than castings are wanted. Shrinkage rules are graduated to allow for shrinkage in different metals. The spacing of graduations are based for work on patterns, the figuring of graduations refer to castings.

1½ Inches Wide

Number	30½A	30½B	30½C	30½D	30½E	30½F	30½G
Length, inches	24⅛	24 2/12	24 2/10	24 3/16	24¼	24⅜	24½
Shrinkage, per foot, inch	1/16	1/12	1/10	3/32	⅛	3/16	¼

Graduated in 8ths, 10ths, 12ths and 16ths. Graduated 8ths and 16ths only, if so ordered. Each $1.50

Lufkin

Steel-Pattern Makers

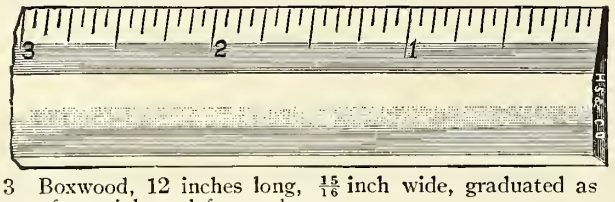


Tempered and polished steel, 1⅛x$\frac{5}{64}$-inch. Bright surface with sunken figures and graduations, black and distinct. A first-class flexible and practically indestructible rule, guaranteed accurate at all times.

Number	90A	90B	90C	90D	90E	90F	90G	90H
Extreme length, in.	24⅛	24 2/12	24 2/10	24 3/16	24¼	24⅜	24½	24⅝
Shrinkage, per foot, inch	1/16	1/12	1/10	3/32	⅛	3/16	¼	5/16

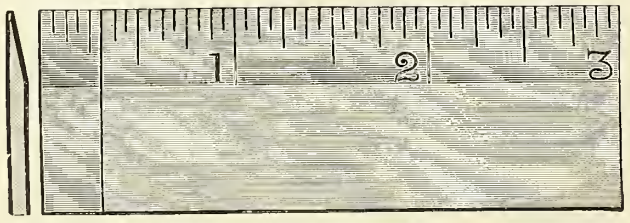
Graduated 8ths and 16ths both sides, each $2.00

Manual Training Rules



No. 3 Boxwood, 12 inches long, $\frac{15}{16}$ inch wide, graduated as shown, from right to left, per dozen $1.80

No. 150 Maple, 12 inches long, ⅞ inch wide, graduated from left to right in 16ths, per dozen 1.00



No. 1 Boxwood, 12 inches long, 1 1/16 inches wide, graduated in 16ths from left to right, brass bound ends, dozen $6.70

Wooden Desk Rules

Lufkin



No. 7204. Boxwood. Two inlaid brass edges.

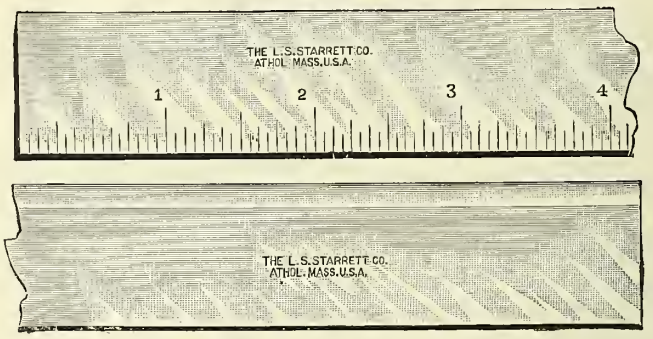
Length, inches	12	15	18	24
Per dozen	$6.00	7.80	9.60	13.20

No. 7103. Maple. One inlaid brass edge.

Length, inches	12	15	18	24
Per dozen	$1.75	1.90	2.60	4.00

Steel Desk Rules

Starrett



For Draftsmen, Bookkeepers, Etc.

These Rules are thin, light and handsome, of spring-tempered steel, about 1-inch wide and $\frac{3}{64}$ths inch thick, nicely finished and nickel-plated.

One edge is sharply beveled, so that ink will not stick to it. This prevents blotting the paper and smearing the fingers.

The thinness of the Rule brings the working edge close to the paper, which is an advantage anyone will appreciate who has done hit-or-miss ruling with a common ruler, the edge of which stands up a quarter of an inch from the work.

No. 365	12-inch, not graduated	$ .50
No. 365	15-inch, not graduated	.75
No. 365	18-inch, not graduated	1.00
No. 366	12-inch, graduated one edge, 16ths	1.00
No. 366	15-inch, graduated one edge, 16ths	1.25
No. 366	18-inch, graduated one edge, 16ths	1.50



Heavily nickel-plated, beveled and graduated in 16ths of an inch. For convenience in picking up a knob is secured to its side. This Rule makes an excellent paper weight and its beveled edge a fine paper cutter.

No. 367	8 inches long, 1 inch wide, $\frac{3}{16}$ inch thick	$1.00
No. 367	12 inches long, 1 inch wide, $\frac{3}{16}$ inch thick	1.50

Steel Rules

Lufkin



English Pattern, Tempered, Machine Divided

One rounded end with hole. Numbers with the suffix N are ½ inch wide, 25 gauge. Numbers without the suffix N are ¾ inch wide, 21 gauge in 4 and 6-inch lengths 1⅛ inches wide, 19 gauge, in 12-inch lengths.

No. 2700 and No. 2700N Graduated one side only, first two inches in 32nds, third-inch, first ¾-inch in 32nds, next quarter in 64ths, remainder 16ths, bottom edge only.

Inches	4	6	12
Dozen	$2.40	3.00	4.80

No. 2701 and No. 2701N Graduated one side only; bottom edge 16ths, top edge 8ths. Lengths and prices as above.

No. 2703 and No. 2703N Graduated both sides; one side bottom edge 16ths, top edge 8ths, other side, bottom edge, first 3 inches 32nds, first half, 4th inch 64ths; remainder of bottom edge graduated in ⅛ths, top edge graduated entire length in $\frac{1}{16}$ths.

Inches	4	6	12
Dozen	$4.20	5.40	7.80

No. 2705 and No. 2705N Graduated one side only; bottom edge first inch in 20ths, second inch in 50ths, third inch in 100ths, remainder in 10ths. Top edge first two inches in 32nds, third inch in 64ths, remainder in 16ths.

Inches	4	6	12
Dozen	$3.60	4.20	6.60

SEE DISCOUNT SHEET

Wood Bench Rules



Nos. 40, 45, 50 and 60 graduated in 8ths on both sides; Nos. 34½, 34¾, 200, 300, 400, 500 and 600 graduated in 8ths on one side and 16ths on other.

Maple, Brass Tipped

		Each
No. 34½	2-feet long, 1¼ inches wide, $\frac{5}{32}$-inch thick	$ .60
No. 34¾	2-feet long, 1⅜ inches wide, $\frac{7}{64}$-inch thick	.60
No. 40	4-feet long, 1¾ inches wide, $\frac{3}{16}$-inch thick	1.30
No. 45	3¾-feet long, 1⅝ inches wide, ¼-inch thick	1.20
No. 50	5-feet long, 1⅝ inches wide, ¼-inch thick	1.70
No. 60	6-feet long, 2 inches wide, ¼-inch thick	3.00

Maple, Brass Bound

		Each
No. 200	2-feet long, 1⅝ inches wide, ¼-inch thick	$1.60
No. 300	3-feet long, 1⅝ inches wide, ¼-inch thick	3.20
No. 400	4-feet long, 1⅝ inches wide, ¼-inch thick	4.20
No. 500	5-feet long, 1⅝ inches wide, ¼-inch thick	5.30
No. 600	6-feet long, 1⅝ inches wide, ¼-inch thick	7.30

Yard Sticks

Nos. 1, 2 and 11, graduated in 8ths on both sides. Nos. 7121, 7122 and 7422, graduated in 8ths on one side; other side fractions of yards.

		Dozen
No. 1	Maple, 1¼ inches wide, 8-inch thick. Brass tipped	$5.00
No. 2	Maple, 1-inch wide, ⅜-inch thick. Brass capped	4.00
No. 11	Maple, 1¾ inches wide, ¼-inch thick. Brass tipped	7.00
No. 7121	Maple, 1-inch wide, ¼-inch thick. Plain	1.90
No. 7122	Maple, 1-inch wide, ¼-inch thick. Brass tipped	3.10
No. 7422	Hickory, ⅞-inch wide, $\frac{3}{16}$-inch thick, Brass capped, round edges, flexible	4.00

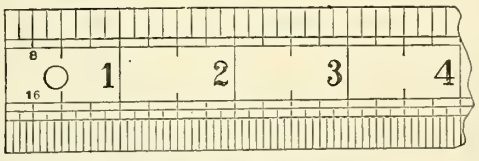
Scarf Cutter



45 inches long, 3 inches wide, ⅜-inch thick. Graduated in 8ths of an inch and 8ths of a yard. One edge and both ends brass bound

Each $3.00

Steel Bench Rules



Bright surface, black sunken markings.

No. 62 1¼ inches wide, No. 16 gauge, graduated both sides, upper edge in 8ths, lower edge in 16ths.

Length, feet	1	2	3	4	5	6
Dozen	$8.00	15.00	22.00	28.00	48.00	60.00

No. 60 ¾-inch wide, No. 20 gauge. Graduated on lower edge only, 8ths on one side, 16ths on other.

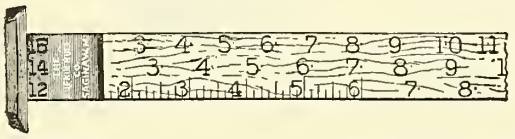
	Dozen
1 foot	$4.00
2 feet	8.00

Steel Straight Edges



		Each
No. 74	4-feet, 2 inches wide, beveled edge, ¼-inch thick	$5.75
No. 76	6-feet, 2 inches wide, beveled edge, ¼-inch thick	9.90
No. 74A	4-feet, 2 inches wide, beveled edge, ⅛-inch thick	5.00
No. 76A	6-feet, 2 inches wide, beveled edge, ⅛-inch thick	7.50

Hickory Board Rules



No. 1 Right hand, 3-Tier, 3½-foot Inspector, 1⅛ inches wide. Brazed head.

Dozen $27.00

No. 3 Right hand, 3-Tier, 3-foot, 1⅛ inches wide, Brazed head.

Dozen $23.00

Above rules are all marked on one side to measure 12, 14 and 16 feet. Opposite side 8, 10 and 18 feet.

No. 8 Right hand, 4-Tier, 3-foot, 1¼ inches wide, Brazed head.

Dozen $25.00

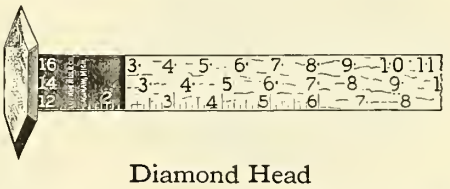
No. 8 L Same as No. 8, except left hand.

Dozen $25.00

Above rules are all marked on one side to measure 12, 10, 14, 16 feet, opposite side 9, 11, 13 and 15 feet.

No. 8 X Right hand, same as No. 8, except marked to measure on one side 12, 14, 16, 18 feet; other side 8, 10, 20, 22 feet.

Dozen $25.00



Diamond Head

No. 8 D. H. Same as No. 8, but with diamond head, as illustrated.

Dozen $25.00

Books

The Timbers of Commerce and Their Identification

By H. Stone

Each, $3.50

Illustrated with 186 photomicrographs of sections prepared by Arthur Deane; 5 x 9 inches.

Contents: Introduction; Practical Hints; Description of Species; Magnoliaceæ; Anonaceæ; Bixineaæ; Dipterocarpeæ; Malvaceæ; Tiliaceæ; Zygophyllaceæ; Rutaceæ; Simarubeæ; Olacineæ; Ilicineæ; Platanaceæ; Unknown Species of Dicotyledons; Comferæ; Scales of Measurement; Bibliography.

Timber

By J. R. Baterden

Each, $2.00

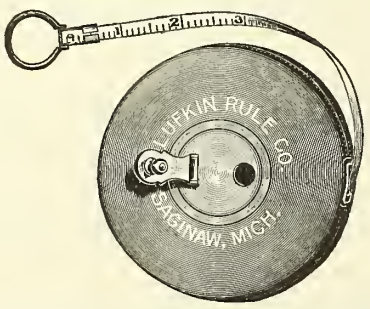
Fifty-four illustrations; 360 pages; 6 x 8½ inches.

Contents: Timber; The World's Forest Supply; Quantities of Timber Used; Timber Imports into Great Britain; European, United States and Canadian Timber; Timbers of South America, Central America, West India Islands, India, Burma, Andaman Islands, Straits Settlements, Malay Peninsula, Japan and South and West Africa, Australian Timbers; Timbers of New Zealand and Tasmania; Causes of Decay and Destruction of Timber; Seasoning and Impregnation of Timber; Defects in Timber and General Notes; Strength and Testing of Timber; "Figure" in Timber.

Steel Tape Measures

Lufkin

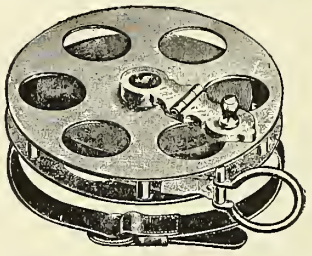
Engineers Pattern



Hard leather, steel-lined cases, ¼-inch heavy tapes. Nickel-plated trimmings. The tape can be readily detached from the case, and an extra ring is furnished for the other end. The steel is heavier and stronger than is furnished with regular steel tapes, and the cases are thinner.

Marked feet and 12ths; inches and Eighths Number	Marked feet 10ths and 100ths Number	Length feet	Diameter of Case Inches	Each
233	233D	50	4¼	$6.00
235	235D	75	4¾	9.50
236	236D	100	5¼	12.00

Wolverine Engineers Pattern

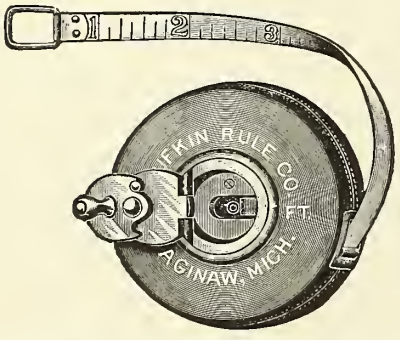


With one-quarter-inch tapes, which can be readily detached from the reel. Two detachable rings furnished.

In open metal reel, with nickel-plated brass-folding handle. Leather strap on the reverse side, by which the tape can be firmly held while winding. Extremely light and convenient, yet sufficiently strong and durable to withstand the most severe usage. The metal is given a satin finish, which presents a beautiful appearance.

Marked feet and 12ths; inches and Eighths Number	Marked feet 10ths and 100ths Number	Length feet	Diameter of Reel Inches	Each
1373	1373D	50	4⅛	$7.00
1375	1375D	75	4⅝	9.50
1376	1376D	100	5¼	12.00

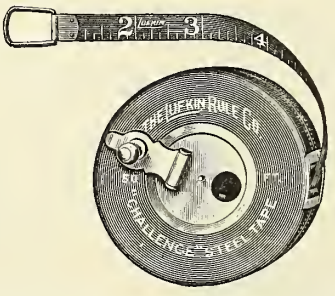
Reliable



Hard-leather case, steel-lined, with ⅜-inch tape. Double folding flush handle, opened by pressing on opposite side. Nickel-plated trimmings. Measurements guaranteed perfectly accurate. Marked on front in feet and 12ths, inches and 8ths; on back in links and poles.

Numbers	200	203	205	206
Feet	25	50	75	100
Diameter, case	2¾	3¼	4¼	4½
Each	$4.50	7.20	10.40	12.80

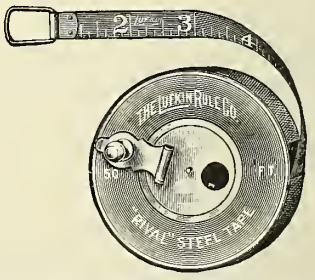
Challenge



Hard-leather case, steel-lined, with ⅜-inch tape. Flush handle, opened by pressing on opposite side nickel-plated trimmings. Measurements guaranteed perfectly accurate. Marked one side only in feet and 12ths, inches and 8ths.

Numbers	260	263	265	266
Feet	25	50	75	100
Diameter case	2¾	3¼	4¼	4½
Each	$3.25	4.00	5.25	6.75

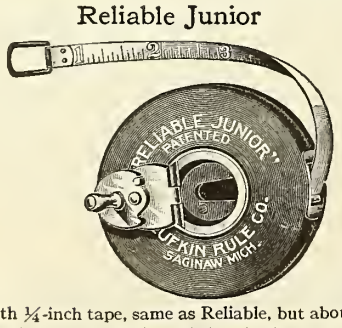
Rival



Nickel-plated steel-case. With ⅜-inch tape. Flush handle, opened by pressing on opposite side. Marked one side only in feet and 12ths, inches and 8ths.

Numbers	240	243	245	246
Feet	25	50	75	100
Diameter, case	2¾	3¼	3¾	4¼
Each	$2.75	3.40	4.50	5.75

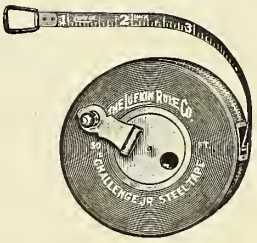
Reliable Junior



With ¼-inch tape, same as Reliable, but about one-half the size and weight intended to fit the vest pocket. Marked in feet and 12ths, inches and 16ths.

Number	Length Feet	Diameter Inches	Weight Ounces	Each
100	25	2¼	4	$3.75
103	50	2¾	6	4.60

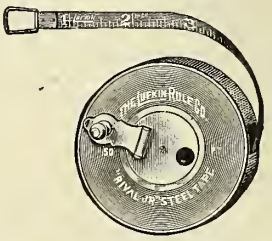
Challenge Junior



With ¼-inch tape. Same as Challenge, but about one-half the size and weight. Marked in feet and 12ths, inches and 16ths.

Number	Length Feet	Diameter Inches	Weight Ounces	Each
1260	25	2¼	4	$3.00
1263	50	2⅞	6	3.50

Rival Junior



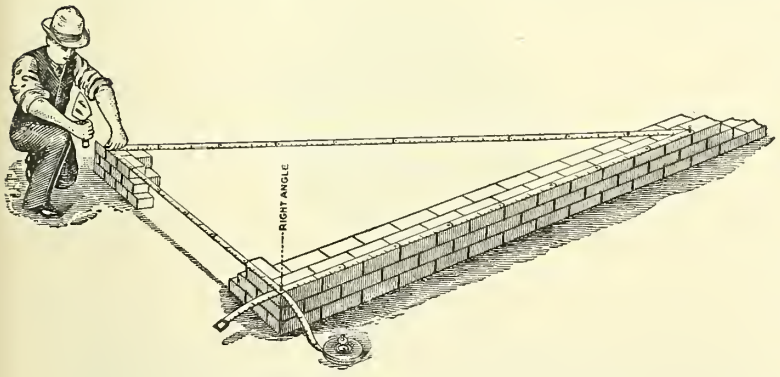
With ¼-inch tape. The same as the Rival but smaller and lighter. Marked in feet and 12ths, inches and 16ths.

Number	Length Feet	Diameter Inches	Weight Ounces	Each
1240	25	2¼	4	$2.50
1243	50	2¾	6	3.00

Steel Tape Measures

Roe

With Right-Angle Attachment and Automatic Handle Opener



Mason squaring foundation with Roe Angle Steel Tape

Indispensable to every progressive engineer, surveyor, contractor, mason, builder, etc. Consists of a strong steel tape, ⅜-inch wide, graduated on one side only, into feet, inches and eighths, and if enclosed in leather case. Its accuracy is guaranteed. This tape can be used for all kinds of measurements and also for laying out right angles much quicker than by any other method and equally accurate. Its principle is the old trigonometrical formula that 6, 8 and 10 feet, sides of a triangle secure a right angle. This formula is embodied in this tape, by providing it at the 1, 9, 19 and 25-foot marks with eyelets, the 9 and 19-foot marks being joints. To use the tape, fasten it at the starting point with a small marking pin or nail through the eyelet at figure 1 on the tape; then fasten it at figure 9 as shown in illustration; place the 25-foot mark over the starting point and taking hold of the tape at the 19-foot mark, pull it straight as shown in cut. You will then have a perfect right angle at the starting point. The advantages of this tape are obvious. A perfect right angle is obtained in a few minutes by one person, while the operator is not encumbered with a surveying instrument or other tools. The tape is also equal to any other for straight work and all kinds of measurements.

		Each
No. 242	50 feet	$4.00
No. 244	75 feet	5.25
No. 246	100 feet	6.75

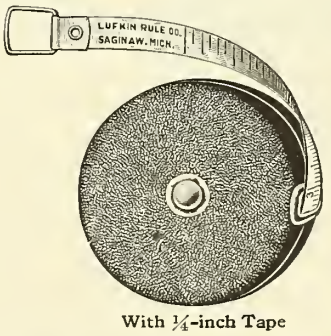
Pocket Steel Tape Measures



With ¼-inch Tape

Nickel-plated brass-case, spring-wind, with centre-stop. Numbers with "M" are graduated in inches and 16ths on one side, millimeters on on the other. Other numbers are graduated in inches and 16ths on one side only.

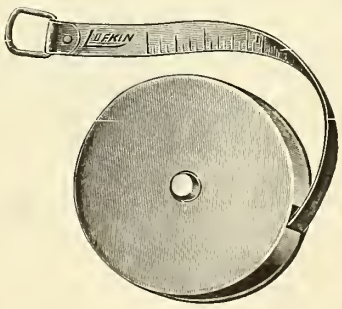
Number	143	143 M	145	145 M	146	146 M	148	148 M
Length, feet	3	3	5	5	6	6	8	8
Dozen	$7.00	8.00	9.00	10.00	10.00	12.00	14.00	16.00



With ¼-inch Tape

Leather-case, metal-lined. Spring-wind, centre-stop. Silver-plated trimmings. Numbers with "M" are graduated in inches and 16ths on one side, millimeters on the other. Other numbers are graduated on one side only in inches and 16ths.

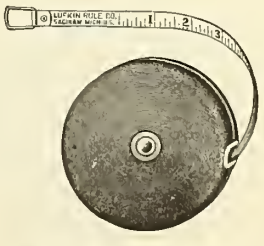
Number	123	123 M	125	125 M
Length, feet	3	3	5	5
Dozen	$15.00	17.00	18.00	20.00



Marvel With ¼-Inch Tape

Nickel-plated case, spring-wind, centre-stop. 36 inches long, marked in inches and 16ths.

No. 3143 Dozen $5.00



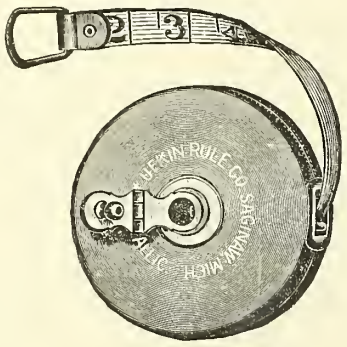
Midget With $\frac{5}{32}$-inch Tape

The smallest tape made. Leather-case, metal-lined, 36 inches long. Spring-wind, centre-stop. Silver-plated trimmings. Diameter of case, 1-inch.

		Dozen
No. 123½	Marked inches and 16ths	$18.00
No. 123½ M	Marked inches and 16ths on one side, millimeters on the other	20.00

Tape Measures

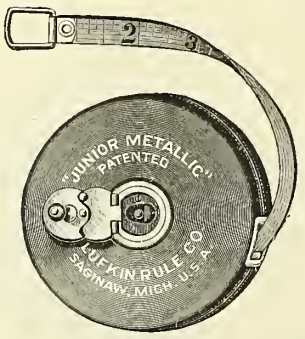
Lufkin



Metallic

With 5/8-inch tape, made of best woven linen with metallic warp. Hard leather cases, brass nickel-plated folding handles and brass nickel-plated trimmings. Graduated in 1/2ths.

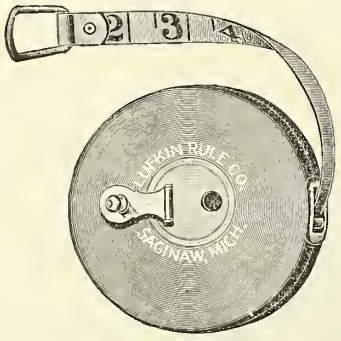
Numbers	500	503	505	506
Length, feet	25	50	75	100
Dozen	$20.40	30.00	37.20	46.80
Tapes only, dozen	9.60	16.80	21.60	31.20



Junior Metallic

Hard leather cases, double-folding flush handle, nickel-plated trimmings. With 3/8-inch tape, made of best woven linen, with metallic warp. Graduated in 8ths. Vest pocket size.

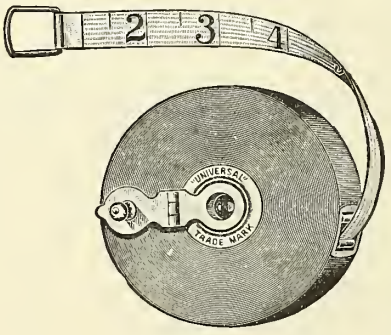
Number	660	663
Length, feet	25	50
Each	$1.80	2.25



Sterling

With 5/8-inch tape, made of pure linen, reinforced with leather the first four inches and heavily coated. Hard leather case, flush handle, nickel-plated trimmings. Graduated in 1/2ths.

Numbers	400	403	405	406
Length, feet	25	50	75	100
Dozen	$15.00	20.00	25.00	30.00

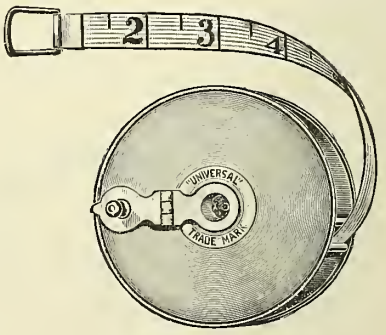


Universal

With One-Half Inch Linen Corded Tape. Waterproof Coated

Cases of pressed leather, nicely enameled. Brass folding handles and trimmings. Graduated in 4ths.

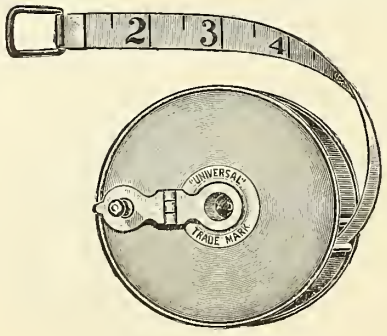
Number	1030	1033	1035	1036
Length, feet	25	50	75	100
Dozen	$6.50	10.00	13.00	15.00



Universal

With 1/2-inch extra grade corded linen tape, brass-bound case, enameled sides. Brass folding handles and trimmings. Graduated in 4ths.

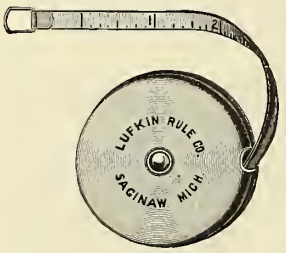
Numbers	730	733	735	736
Length, feet	25	50	75	100
Dozen	$5.00	5.50	10.00	12.50



Universal

With 1/2-inch cotton tape. Ass skin brass-bound cases, brass folding handles and trimmings. Graduated in 4ths.

Numbers	710	713	715	716
Length, feet	25	50	75	100
Dozen	$3.75	5.00	7.50	9.00



Pocket

With 1/4-inch enameled linen tape. Nickel-plated brass case, spring wind, with center stop. Graduated in 8ths.

Numbers	173	175	176
Length, feet	3	5	6
Dozen	$3.50	4.50	5.00

SEE DISCOUNT SHEET

Plumbs and Levels

Plain



Made from $1\frac{3}{8}$x$3\frac{1}{8}$-inch stock — Dozen

No. 00 Hardwood. Arch top plate, two side views, polished, 18, 20 and 22 inches $8.75

No. 0 Hardwood. Arch top plate, two side views, polished, 24 inches 9.90

Made from $1\frac{1}{4}$x$2\frac{5}{16}$-inch stock

No. $1\frac{3}{4}$ Mahogany. Arch top plate, two brass lipped side views, and brass tips, polished and tipped. 12, 16 and 18 inches 14.70

Made from $1\frac{1}{4}$x$2\frac{3}{8}$-inch stock

No. 104 Hardwood. Arch top plate, two side views, polished, 12, 14, 16 and 18 inches 7.60

Adjustable



Made from $1\frac{3}{8}$x$3\frac{1}{8}$-inch stock

No. 3 Hardwood. Arch top plate, two side views, polished. Brass tips. 18, 20, 22, 24, 26, 28 and 30 inches.
Dozen $16.50

Victor Adjustable



Three-ply hardwood. $1\frac{3}{8}$x$3\frac{1}{8}$-inches

A high grade level, only surpassed by the ground glass and brass-bound levels. They have heavy top-plates and two plumb-glasses so set that the user can plumb from either end of the level without reversing. Brass lips and brass tips. Each level is given an extra finish and packed in a pasteboard box.

Made from $1\frac{3}{8}$x$3\frac{1}{8}$-inch selected stock, in 24, 26, 28 and 30-inch lengths. In ordering give the number and length required.

No. 15 Dozen $24.00

Duplex Adjustable



Three-ply Hardwood. $1\frac{3}{8}$x$3\frac{1}{8}$-inches

Can be read conveniently, even if held at arm length above the head. Have three glasses: A level glass set in the top in the usual way, a plumb glass, and a second level glass set in the side. These latter two glasses are set close to one surface of the stock so that the angle of vision of the bubble is greatly increased. Brass lips and brass tips.

The second level glass can be readily reversed to form a second plumb if desired. All three glasses are adjustable.

The opening on the reverse side of the extra level and plumb glasses is brass trimmed.

They are made from $1\frac{3}{8}$x$3\frac{1}{8}$-inch selected stock, in 24, 26, 28 and 30-inch lengths.

No. 50 Dozen $24.00

Stanley — Brass Bound Adjustable



Mahogany

The life of a wooden level is greatly increased by having the edges brass bound which prevents the surface and edges from becoming damaged.

Brass Bound Levels have solid brass tips. The four edges are each protected by one piece of brass of special form, dovetailed the entire length into the wood and through the solid tips of solid brass or steel, heavily brass-plated to prevent rusting.

All brass lipped levels have brass plumb rings. Ground glasses, except No. 93 which has proved glasses. Made from especially selected, carefully polished and finished $1\frac{3}{8}$x$3\frac{1}{8}$-inch stock. No. 98 levels have proportionately smaller cross sections. The No. 96 has 5-piece stock. Each level is packed in a pasteboard box.

Made in 24, 26, 28 and 30-inch lengths. In ordering give the number and length required.

No. 93 Dozen $36.00

No. 96 Five-ply brass lips, dozen 66.00



Same as No. 92 except Rosewood, $1\frac{3}{8}$x$3\frac{1}{8}$ inches. Brass lips and brass tips and ground glasses. — Each

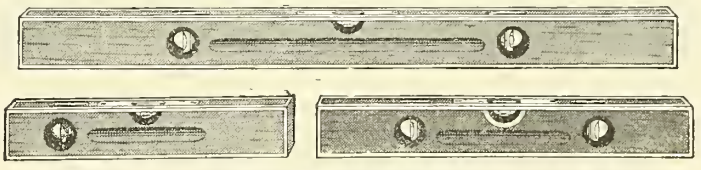
No. 98 6 inches long $2.00

No. 98 9 inches long 2.50

No. 98 12 inches long 2.75

No. 98 18 inches long 3.50

Brass Bound Small Stock



$1\frac{1}{16}$x$2\frac{1}{8}$-inch stock

Mahogany, with Proved Glasses

No. 1093	12 inches long, 1 Plumb	$2.00
No. 1093	16 inches long, 1 Plumb	2.40
No. 1093	18 inches long, 1 Plumb	2.60
No. 1093	20 inches long, 1 Plumb	2.80
No. 1093	22 inches long, 1 Plumb	3.00
No. 1093	24 inches long, 1 Plumb	3.20
No. 1093	26 inches long, 1 Plumb	3.40
No. 1093	28 inches long, 1 Plumb	3.60
No. 1093	30 inches long, 1 Plumb	3.80
No. 1193	12 inches long, 2 Plumbs	2.20
No. 1193	16 inches long, 2 Plumbs	2.60
No. 1193	18 inches long, 2 Plumbs	2.80
No. 1193	20 inches long, 2 Plumbs	3.00
No. 1193	22 inches long, 2 Plumbs	3.20
No. 1193	24 inches long, 2 Plumbs	3.40
No. 1193	26 inches long, 2 Plumbs	3.60
No. 1193	28 inches long, 2 Plumbs	3.80
No. 1193	30 inches long, 2 Plumbs	4.00

Rosewood, with Ground Glasses and Brass Lips

No. 1197	12 inches long, 2 Plumbs	3.20
No. 1197	16 inches long, 2 Plumbs	3.80
No. 1197	18 inches long, 2 Plumbs	4.10
No. 1197	20 inches long, 2 Plumbs	4.40
No. 1197	22 inches long, 2 Plumbs	4.70
No. 1197	24 inches long, 2 Plumbs	5.00
No. 1197	26 inches long, 2 Plumbs	5.30
No. 1197	28 inches long, 2 Plumbs	5.60
No. 1197	30 inches long, 2 Plumbs	5.90

With Ground Glasses

The ground level glass is accurately fitted in a brass case, and the only plaster used is that necessary to plug the ends of this case. This brass case is fastened by a screw at each end, directly to the stock of the level, and is entirely independent of the top plate. Can easily be adjusted when a change is necessary.

Disston

Brass Bound, Small Stock



Made of solid natural wood, with no stain, thoroughly polished; full brass bound, with an arch top-plate; solid brass ends. The stocks are 2 inches wide and 1 inch thick.

Length, inches	12	18	24
No. 60, mahogany, dozen	$21.00	$25.00	$30.00
No. 65, cherry, dozen	17.00	20.00	23.50

For information concerning Stanley Plumbs and Levels, see page 325

Plumbs and Levels

Masons Wood with Double Plumb

Stanley



No. 80 Mahogany. Adjustable square top-plate, two brass-lipped side views, two plumbs with ground glasses, 42 inches, each $3.85

No. 8 Hardwood. Non-adjustable arch top-plate, two plumbs, two side views, polished. Proved glasses. 42 inches, each 1.80

Combined Plumb Rule and Level



No. 35 Soft wood. Adjustable level, non-adjustable plumb, has one opening for plumb bob and line. 42 inches, each $1.75



No. 45½ Soft wood. Adjustable, with two openings for use of plumb bob and line, each $3.00

Masons Plumb Rule



White pine. 4½x54 inches, each ..... $ .80

Iron

Stanley



Iron

No. 36G Japanned, nickel-plated trimmings, with proved glasses. Two plumbs. Grooved bottom for working on shafting, piping, etc. Equally serviceable for ordinary use.

Inches	6	9	12	18	24
Each	$1.25	1.50	1.75	2.00	2.25



Iron

No. 37G 12, 18 and 24-inch, nickel-plated, ground glasses, two plumbs. Grooved bottom for working on shafting, piping, etc. Equally serviceable for ordinary use. Glass can be covered when not in use by simply turning outer shell of level case, each $4.00

Davis

Adjustable, and Inclinometer



Iron

No. 2 Japanned, 12 inches long, with proved glasses, each.... $2.50



Iron

No. 49 Japanned, 24 inches long, with proved glasses, each.... $5 00

Aluminum

Sand



No. 24



No. 30

Made of best aluminum. Are very light weight and durable. Will not rust or warp under any conditions. The Level Glasses are protected by heavy plate-glass for keeping out the dust, dirt and water.

Nos. 42 and 45 are same style as No. 30, illustrated above.

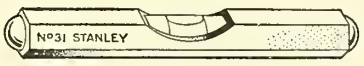
		Each
No. 24	24 inches long, 2¾ inches wide	$2.75
No. 30	30 inches long, 3 inches wide	3.25
No. 42	42 inches long, 3¼ inches wide	4.50
No. 45	45 inches long, 3 inches wide	5.50

For information concerning Stanley Plumbs and Levels, see page 325

Pocket Levels

Stanley

Hexagon



Length, inches	2½	3	3½
No. 31 Nickel-plated proved glass, dozen	$4.20	5.10	6.00



No. 130 Japanned iron, 3½ inches long, each ..... $ .40



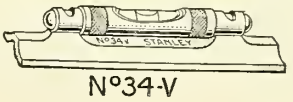
No. 41 Japanned-iron body, brass top-plate, 3¼ inches long. Can easily be attached to any straight-edge, dozen $1.68



No. 46 Japanned-iron body, brass top-plate, 3 inches long, dozen $2.28
Proved Glasses. Can easily be attached to any straight edge or square.



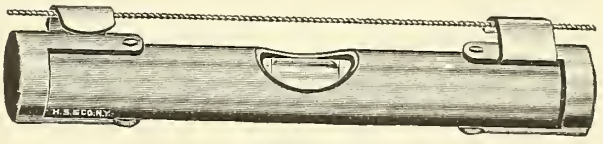
		Dozen
No. 38½	Iron, nickel-plated, proved glasses, 4 inches long	$5.00
No. 39½	Iron, nickel-plated, proved glasses, 6 inches long	6.00



No34-V

Eclipse

No. 34V Nickel-plated, ground-glass. When not in use the glass can be covered by simply turning the outer shell of the case.
6 inches, each $1.50
8 inches, each 2.00
Has V-grooved bottom for leveling shafting, piping, etc. Equally serviceable for ordinary use

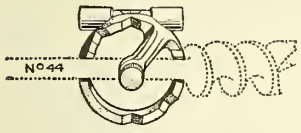


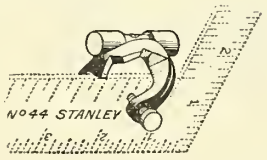
Stevens Line

Consists of an accurate proved level glass placed in a 3-inch aluminum tube with spring German silver end pieces and hooks formed from one piece of metal. The end pieces are attached to the tube by German silver rivets that pass through the tube and through lugs at top and bottom, between the hooks and the center of the level, thus preventing the hooks from pulling out of allignment in case of severe strain or rough usage.

Each $1.00

Bit and Square Level





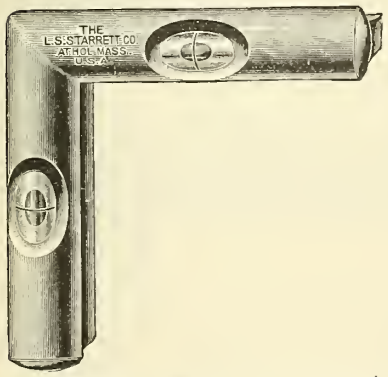
The frame has three pairs of V-slots on its back edges. A thumb-screw secures the Level to the bit, and boring can be done with perfect accuracy as to perpendicular, horizontal or angle of forty-five degrees, by observing the bubble-glass while turning the bit.

The frame can also be attached to a carpenter square. Two shoulders rest on the top of the horizontal leg of the Square, thus making it an accurate spirit level and the upright leg of the Square will then indicate an exact Plumb-line.

No. 44 Bit and Square Level, brass frame, dozen $3.60

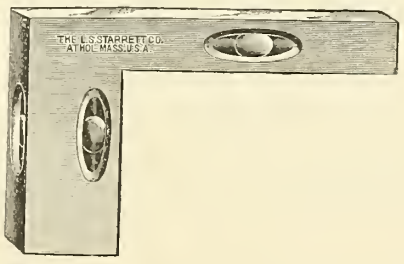
Cross-Test Levels

Starrett



As the cut shows, two levels are united in one frame, extending at right angles 2¾ inches each way. The level weighs but 4 ounces. When placed on work to be leveled in both directions, it is not necessary to move the tool.

No. 136 Each ..... $ .65



No. 134 2 x 3 x ½ inches thick, steel, nickel-plated, Leveling is indicated every way once by this tool without removing it from the work. Each $1.50

Which-Way Level

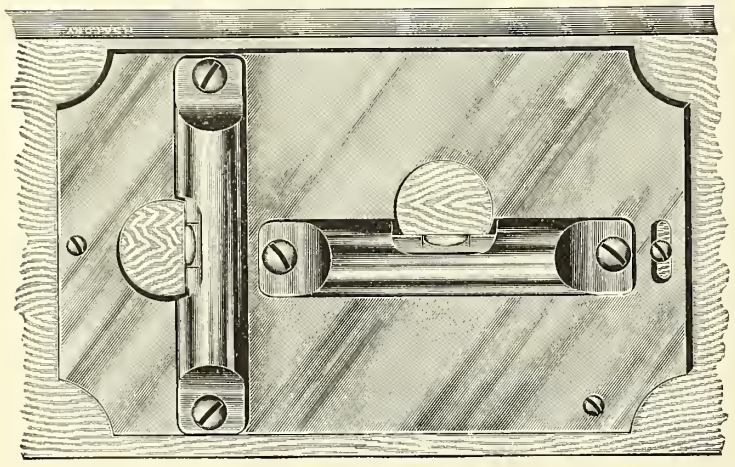
Columbia



Nickel-plated, 1½ inches diameter, each $ .50

Plumbs and Levels for Straight Edges

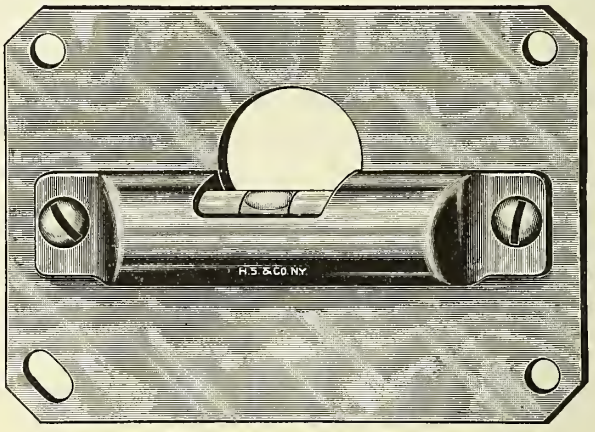
Roe



Quickly attachable to any straight edge; especially adapted for plumbing at long distances or in windy weather. Is not a complicated device, being very simple in construction, and always reliable. Is made of high grade materials and fitted with luminous level vials.

Note—Test accuracy in adjustment by reversing straight edge.

	Dozen
Polished and Lacquered Brass	$15.60
Aluminized Steel	10.30

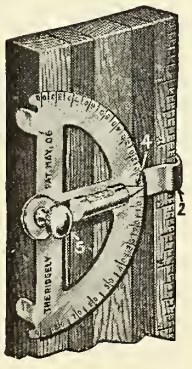


Has only one vial, and can be put on any board, or straight edge, either as a plumb or a level.

Made to furnish a cheaper Level to those who do not need the double vial.

Dozen $6.00

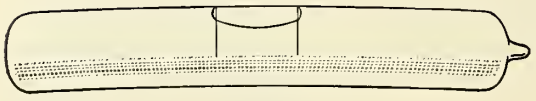
Ridgely



No. 2 Gives not only plumb and level, but verifies any angle desired. Made of highly polished brass, 4 inches long by 2 inches wide, and has large graduations. Can be used on any straight edge—you simply snap it on and the spring marked "2" in the cut holds it firmly. No screws to fuss with. Any graduation for panel or relief work obtained instantly by moving bubble pointer marked "4" in cut, then setting it by means of set-screw "5."

Each $1.25

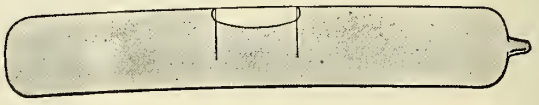
Level Glasses



Proved

Made of extra thick tubing by a patented process. Each Glass is marked at its central or crowning point by two indelible lines, enabling the user to very quickly center the bubble.

Length, inches	1	1¼	1½	1¾	2	2¼
Dozen	$ .80	.80	.80	.80	.84	.88
Length, inches	2½	3	3½	4	4½	Asst'd
Dozen	$ .88	.96	1.08	1.20	1.25	.96



Ground

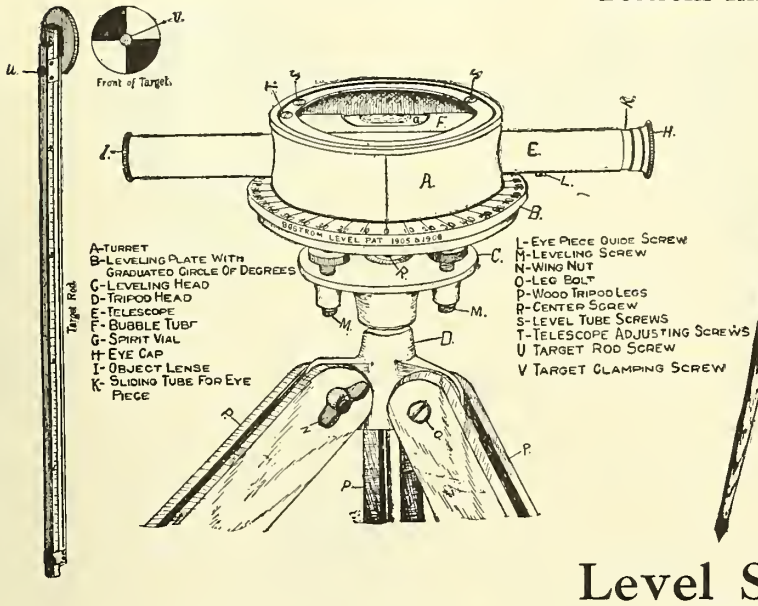
The inside surface is ground smooth and true, making the bubble extremely sensitive. The same system of marking is used on these Glasses as explained in the description of Proved Glasses opposite.

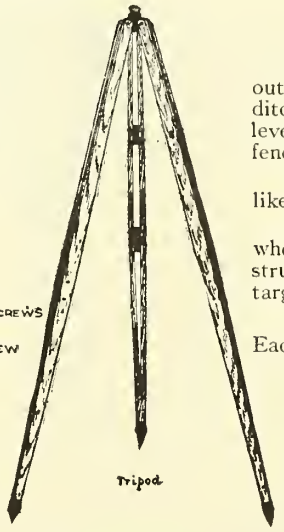
Length, inches	1	1¼	1½	1¾	2
Dozen	$5.00	5.00	5.00	5.00	6.00
Length, inches	2½	3	3½	4	4½
Dozen	$6.50	7.00	7.50	8.00	9.00

SEE DISCOUNT SHEET

Farm Level

Bostrom Improved





A simple, accurate, durable and complete outfit for irrigation work, laying tile drain, ditching, terracing, grading, road building, leveling buildings and foundations, running fences, setting out orchards, etc.,

Has a telescope with magnifying glasses like a surveyors instrument.

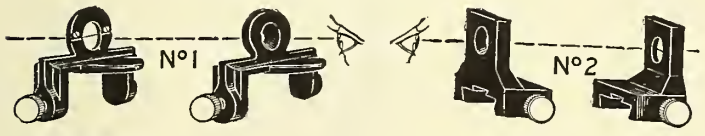
Designed for use by farmers and others who are not skilled in handling surveying instruments. Outfit includes tripod and sliding target-rod.

Level in neat wooden case.

Each $15.00

Level Sights

Stanley



Can be attached to any level, for leveling from one given point to another a long distance away. When not in use, are easily detached, and can be packed away in a small space for future use.

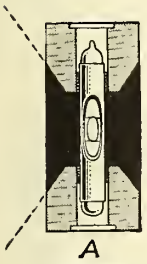
No. 1 Level Sights for Wood Levels. Package: 1 pair weight, ¼-pound, pair ..... $ .75

No. 2 Level Sights for Iron Levels. Package: 1 pair, weight ¼-pound, pair ..... .75

Information Concerning Stanley Plumbs and Levels

Illustrated on Pages 321 and 322







This group of sectional cuts illustrates the principal mechanical features of the Stanley Plumbs and Levels that are used in combination with various woods, types of glasses and different forms of brass trim to make up the most complete line on the market.

Cut "D"—A level glass set in plaster as in a non-adjustable level.

Cut "A"—The plumb glass in the same form of setting, in the center.

Cut "B"—The adjustable setting of a level glass. The glass is set in plaster in a metal case. This is held at each end against a spiral spring by a screw engaged in a steel-plate which in turn is permanently screwed into the stock of the level. The top-plate is entirely independent of the setting, thus preventing any tampering with the adjustment.

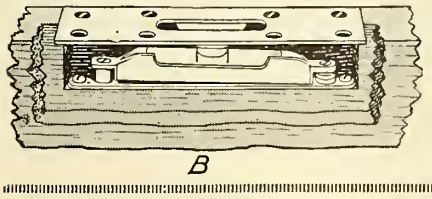
Cut "C"—The adjustable setting of a plumb glass. The glass is set in a metal case 3-pronged at the bottom. The top of this case is screwed to a plate set in the stock; this plate has a slot allowing for the accurate adjustment of the glass. This adjustment is also protected by an independent top-plate.

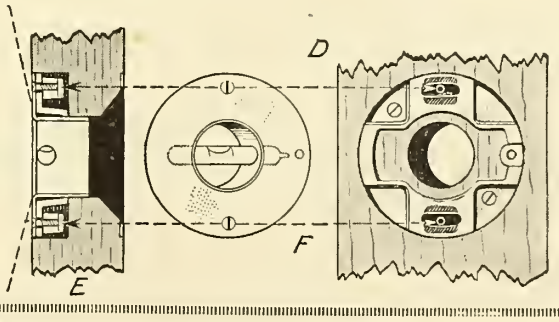
Cut "F"—The form of setting used for the plumb and the second level glass in the Duplex Levels. The glass is set in a brass cylinder flanged at one end. This flanged cylinder is secured to a specially formed casting so made that there is a leeway for rotating the flanged cylinder for the proper adjustment. This casting is firmly held into the level stock by screws. Casting can be turned to any point to permit of the glasses being used as a plumb or level, as desired.

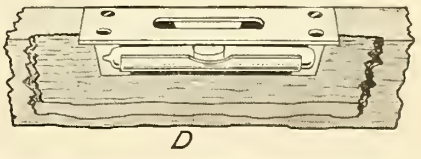
Cut "E"—Showing the position of the Duplex plumb glasses close to the surface of the level with the increased angle of vision as compared with the regular form shown directly above in cut "A".

Cut "G"—A cross section of No. 96 five-piece level, showing the novel method of securely holding the sections of all the 3-ply and 5-piece levels in place by a series of tongues and grooves running the entire length of the levels. Also showing the way the brass binding is secured on the corners of levels.

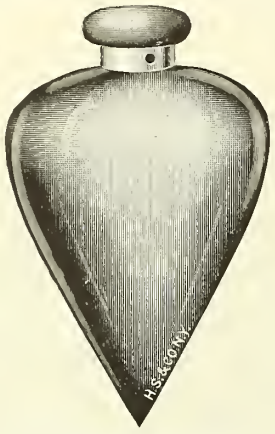
The "Hand-y" grip, a feature of all Stanley levels, gives the workman a secure hold on his level and decreases the chance of dropping the tool. Both Plumb and Level side views are blackened, a trade mark and exclusive Stanley feature, which concentrates the light directly on the bubble, thus enabling the user to quickly locate its position.





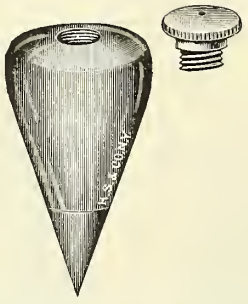


Plumb Bobs



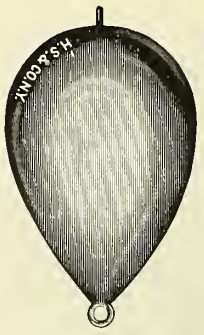
Iron Japanned. Adjusted Top

		Dozen
No. 00	18 ounces	$2.70
No. 0	42 ounces	5.80



Cast Brass, Hardened Steel Point, Screw Top

		Dozen
No. 5	6 ounces	$7.25
No. 6	11½ ounces	10.00



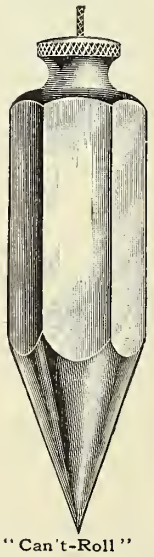
Lead, Masons Wire

		Dozen
No. 13	16 ounces	$6.25
No. 15	32 ounces	10.50



Iron, Nickel-Plated

		Dozen
No. 11	5⅓ ounces	$2.00
No. 12	14⅔ ounces	2.50



"Can't-Roll"

Made from Hexagon steel, nickle-plated and polished. Top is screwed on.

		Dozen
No. 10	8 ounces	$4.00
No. 20	12 ounces	6.00



H. S. & Co.

H. S. & Co. No. 50 Long Neck, Brass Composition, with Screwed-in Steel Point

Weight, ounces	4	8	12	16	20	24
Dozen	$7.25	12.00	17.00	21.00	25.00	29.00

Starrett No. 87 Mercury

Each

These bobs are made from solid steel, bored and filled with mercury. Noteworthy features are their great weight in proportion to size, low center of gravity, small diameter, hardened and ground points, and the simple and effective device at top for fastening end of line after winding up. Each is provided with a braided silk line. The line is fastened without a knot and is securely held by the slotted neck at the top.

4 inches long, ½-inch diameter, 3½ ounces	$1.00
5 inches long, ⅝-inch diameter, 6 ounces	1.50
5½ inches long 7⁄8-inch diameter, 12 ounches	2.00
6 inches long, 1-inch diameter, 16 ounces	2.50

Starrett No. 177 Solid Steel

The same in design as No. 87, but made from solid steel.

Each

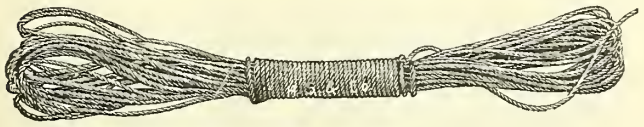
4 inches long, ½-inch diameter, 2¾ ounces	$ .75
5 inches long, ⅝-inch diameter, 5 ounces	1.00
5½ inches long, 7⁄8-inch diameter, 8½ ounces	1.50
6 inches long, 1-inch diameter, 14½ ounces	2.00



Nos. 87 and 177

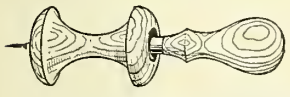
Pencils, Crayons, Chalk and Chalk Lines

Mason and Chalk Lines



No. 5	Braided, 84-foot hanks, dozen hanks	$1.50
No. 7½	Cotton, light, 20-foot hanks, dozen hanks	.60
No. 10½	Cotton, heavy, 20-foot hanks, dozen hanks	.84
No. 6	Mason linen, light, 84-foot hanks, dozen hanks	3.13
No. 15	Mason linen, white, twisted, in ¼-pound balls, dozen	1.60
No. 24	Mason linen, white, twisted, in ½-pound balls, dozen	3.20
No. 27	Mason cotton, 1-pound hanks, about 600 feet to pound, pound	.50
No. 36	Mason cotton, 1-pound hanks, about 450 feet to pound, pound	.50

Chalk Line Reels



Hardwood, polished, 3 inches long, 2 inches diameter.

No. 14	With scratch awl, dozen	$ .95
No. 15	With scratch awl, and 60 feet of line, dozen	2.25

Carpenters Chalk

Red	In half-spheres, gross	$1.20
White	In half-spheres, gross	.96
Blue	In half-spheres, gross	1.20

White Chalk Crayons

For School Use

1 gross in a box, gross ..... $ .18

Metal Workers Crayon

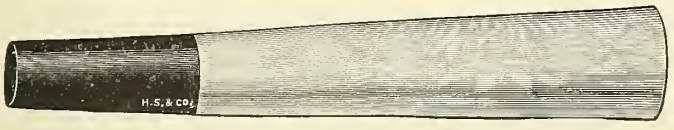


Soapstone

These are made from selected soapstone (or talc) and the marks made with them will not disappear when used on iron and heated. ¼-inch square, 5 inches long, gross $2.00

No. 524 $\frac{3}{16}$x½x5 inches, gross 4.00

Marking Crayons



Black, 5 inches long. For all marking purposes. Will not smut, blur or wash off. Dozen ..... $ .54

Checking Crayons



Black, 6½ inches long. Will not smut, blur or wash off. Dozen $ .50

Lumber Pencils



No. 361	Black, 4¾ inches long, ½ inch diameter, dozen	$ .50
No. 520	Red, 4¾ inches long, ½ inch diameter, dozen	.85
No. 521	Blue, 4¾ inches long, ½ inch diameter, dozen	.85

Carpenter or Framer Pencils



No. 777 Octagon Shape Plumb Line, yellow polish, 7-inch. Special fine quality.
Dozen ..... $ .50 Gross ..... $ 4.90

No. 807 Octagon shape, mottled finish, 7-inch.
Dozen ..... $ .50 Gross 4.90

No. 757 Octagon shape, natural finish 7-inch.
Dozen ..... $ .50 Gross 4.50

No. 727 Oval, plain cedar, 7-inch
Dozen ..... $ .30 Gross 2.80

No. 729 Oval, plain cedar, 9-inch
Dozen ..... $ .35 Gross 3.40

Gage, Octagon

Plain cedar, 7 inches.
Dozen ..... $ .60 Gross 6.00

Weather-proof Pencils



No. 6639 Round, black polish, with extra thick soft black lead. Specially desirable for mechanics and railroad and express work.
Dozen ..... $ .50 Gross $4.50

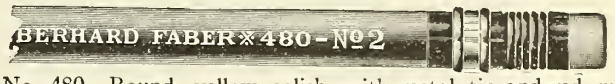
Glass Marking Pencils

No. 785 Round, blue polish, thick blue lead. Specially adapted for marking on all glazed surfaces.
Dozen ..... $1.25 Gross $12.00

Editors or Press Pencils

No. 6329 Grade 1, round, natural polish, extra thick, soft lead.
Dozen ..... $ .50 Gross $4.50

Mongol Pencils



No. 480 Round, yellow polish, with metal tip and red rubber, in grades 1, 2, 3, or 4.
Dozen ..... $ .50 Gross $5.40



No. 482 Hexagon, yellow polish with metal tip and red rubber, in grades 1, 2, F, 3 or 4.
Dozen ..... $ .50 Gross $5.50

Mongol Drawing Pencils

No. 481 Same as No. 482, except without rubber, and in twelve grades, as follows, 6B, 3B, 2B, B, HB, F, H, 2H, 3H, 4H, 5H, 6H.
Dozen ..... $ .50 Gross $5.40

Explanation of Grading of Lead Pencils

Commercial Styles

No. 1	Very Soft	No. 3	Medium Hard
No. 2	Soft	No. 4	Hard
No. F	Firm or Medium Soft	No. 5	Very Hard

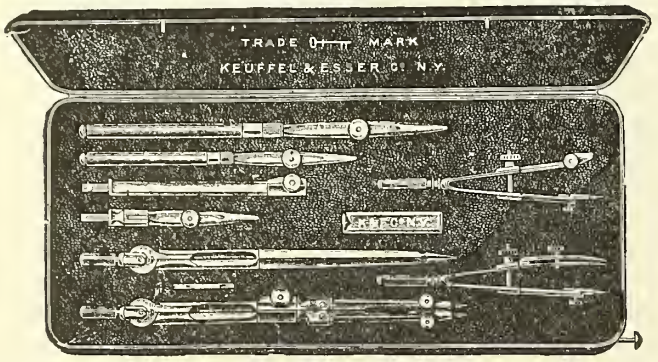
Drawing Styles

No. 6B	Softest and Blackest	No. H	Medium Hard
No. 5B	Extra Soft and Extra Black	No. 2H	Hard
No. 4B	Extra Soft and Very Black	No. 3H	Very Hard
No. 3B	Extra Soft and Black	No. 4H	Extra Hard
No. 2B	Extra Soft	No. 5H	Extra Hard and Very Firm
No. B	Very Soft		
No. HB	Soft	No. 6H	Hardest
No. F	Firm or Medium Soft		

Drawing Instruments

Keuffel & Esser

Extra Fine German Instruments with Pivot-Joint. Rolled German Silver, Fine Steel Points, Highly Finished, in Fine Morocco Pocket Cases, Velvet Lined

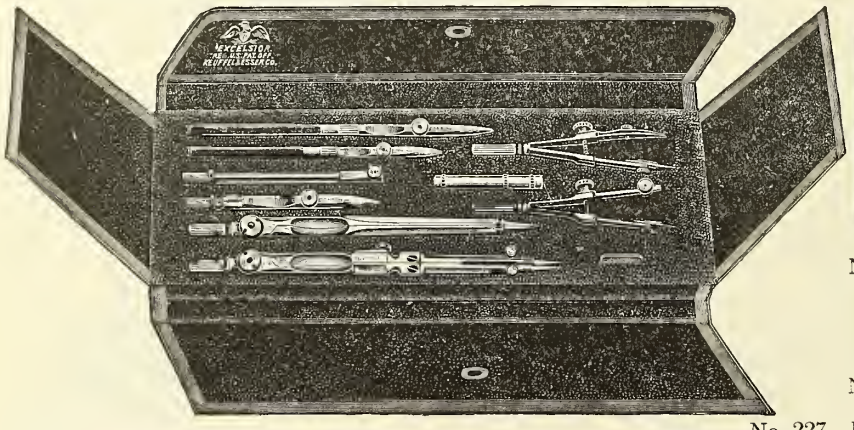


No. 218 Bar-lock Pocket Case. Each $12.50

Containing
- 1 Compass, 6½ inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
- 1 Divider, 5½ inches
- 1 Each Steel Spring Bow Pen and Pencil
- 1 Each Drawing Pen, Ebony Handle, upper blade with spring, 4½ and 5½ inches
- 1 Box with Leads

No. 218 P Pocket Case, folding flaps, containing same assortment as No. 218. Each 12.70

German Silver; Steel Points. Velvet-Lined Cases



No. 206 Bar-lock Pocket Case. Each $4.50

Containing
- 1 Compass, 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil-Point and Lengthening Bar
- 1 Divider, 6 inches
- 1 Drawing Pen, 5½ inches, with spring blade
- 1 Box with Leads

No. 206F Pocket Case with folding flaps, containing same assortment as No. 206. Each 4.80

No. 207 Bar-lock Pocket Case. Each 5.80

Containing
- 1 Compass 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil Point and Lengthening Bar
- 1 Divider, 6 inches
- 1 Steel Spring Bow Pen, 3½ inches, with Needle-Point
- 1 Drawing Pen, 5½ inches, with spring blade
- 1 Box with Leads

No. 207F Pocket Case with folding flaps, containing same assortment as No. 207. Each 6.20

No. 208 Bar-lock Pocket Case. Each 7.70

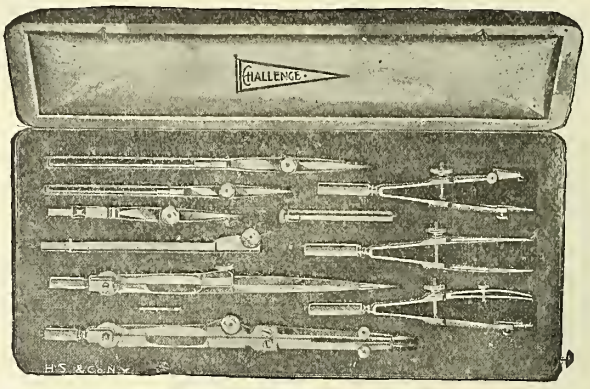
Containing
- 1 Compass, 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil Point and Lengthening Bar
- 1 Divider, 6 inches
- 1 Each, Steel Spring Bow Pen and Pencil, 3½ inches, with Needle Point
- 1 Each, Drawing Pen, 4½ inches, 5½ inches, with spring blade
- 1 Box with Leads

No. 208F Pocket Case with folding flaps, as illustrated, containing same assortment as No. 208, each 8.20

No. 209 As No. 208, but also including a pair of 3½-inch steel-spring Dividers, and 6-inch Hair-spring Dividers in place of the regular dividers, each 9.40

No. 209F Pocket Case with folding flaps, containing same assortment as No. 209, each 10.00

German Silver; Steel Points. Finely Made and Finished. Velvet-Lined Cases

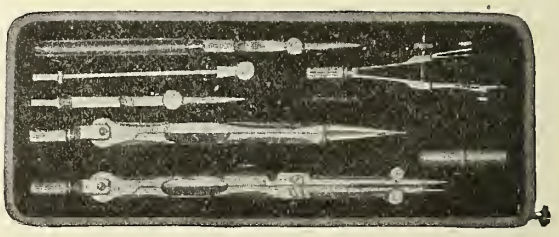


No. 214 Bar-lock Pocket Case. Each $11.80

Containing
- 1 Compass, 6 inches, with fixed Needle-Point, Pen-Point with spring blade, Pencil Point and Lengthening Bar, 2 Shouldered Needles
- 1 Hairspring Divider, 6 inches
- 1 Steel Spring Bow Divider, 3½ inches
- 1 Steel Spring Bow Pen, 3½ inches, with Needle-Point
- 1 Steel Spring Bow Pencil, 3½ inches with Needle-Point
- 1 Each, Drawing Pen, 4½ inches and 5½ inches, with spring blades
- 1 Box with Leads.

No. 214F Pocket Case with folding flaps, containing same assortment as No. 214. Each 12.40

German Silver of Moderate Price



No. 207½ Pocket Case, with bar-lock. Each $3.40

Containing
- 1 Compass, 6 inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
- 1 Divider, 5½ inches
- 1 Spring Bow Pen, 3¼ inches, with Needle-Point
- 1 Drawing Pen, 5¼ inches, upper blade with spring
- 1 Box with Leads

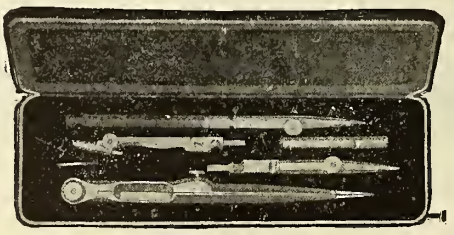
No. 207½F Pocket Case with folding flaps, containing same assortment as No. 207½. Each 3.70

No. 227 Pocket Case with bar-lock. Each 4.40

Containing
- 1 Compass, 6 inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
- 1 Divider, 5½ inches
- 1 Steel Spring Bow Divider, 3¼ inches
- 1 Steel Spring Bow Pen, 3¼ inches, with Needle Point
- 1 Steel Spring Bow Pencil, 3¼ inches, with Needle Point
- 1 Drawing Pen, 5¼ inches, upper blade with spring
- 1 Box with Leads

No. 227F Pocket Case with folding flaps, containing same assortment as No. 227. Each 4.70

Nickel-Plated, of Moderate Price



No. 106 Bar-lock Pocket Case. Each $1.15

Containing:
- 1 Compass, 5 inches, with Pen and Pencil Point
- 1 Ruling Pen, 5 inches, with black handle
- 1 Box with Leads

No. 109 Bar-lock Pocket Case. Each 1.76

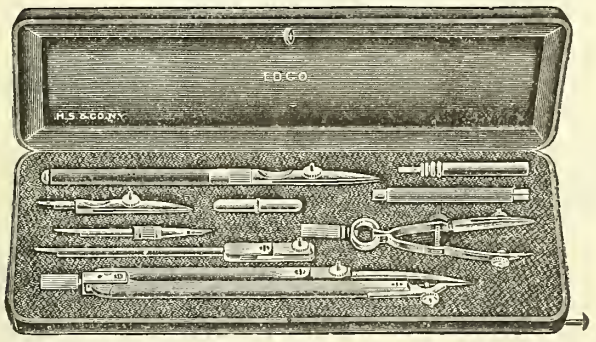
Containing:
- 1 Compass, 5 inches, with fixed Needle-Point, Pen, Pencil-Point and Lengthening Bar
- 1 Divider, 5 inches
- 1 Ruling Pen, 5 inches, with black handle
- 1 Box with Leads

For Drafting Protractors, see page 298

Cases of Drawing Instruments

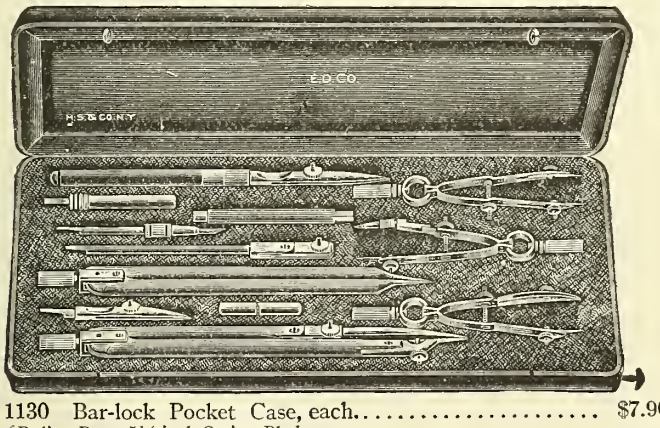
Dietzgen

German Silver and Steel Points in Morocco Pocket Cases Lined with Velvet



No. 1127 Bar-lock Pocket Case, each $5.10

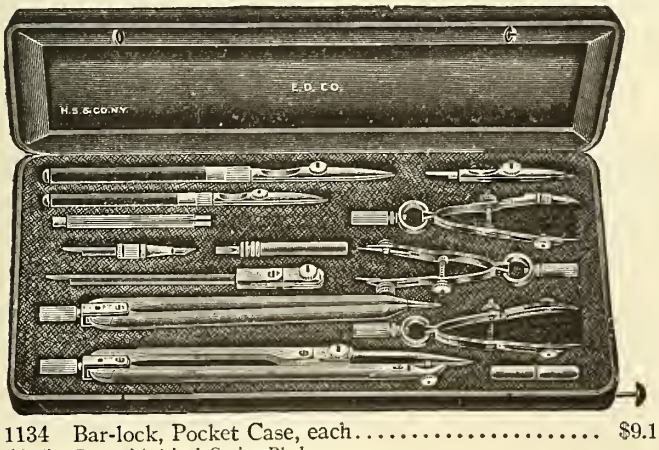
Containing
- Ruling Pen, 5¼-inch Spring Blade.
- Circular Steel Spring Bow Pen, 3½-inch metal Handle.
- Compasses, 6 inches, with Handle Straightening Device, Fixed Needle Point, Divider Point, Pen, Pencil Point and Lengthening Bar.
- Box with 3 Needle Points, Metal Handle for Pen, Pencil and Needle Parts, Combination Key and Lead Box.



No. 1130 Bar-lock Pocket Case, each..... $7.90

Containing
- Ruling Pens, 5¼-inch Spring Blade.
- Circular Steel Spring Bow Dividers, 3½-inch Metal Handle.
- Circular Steel Spring Bow Pencil, 3½-inch Metal Handle.
- Circular Steel Spring Bow Pen, 3½-inch Metal Handle.
- Plain Dividers, 6 inches, with Handle Straightening Device.
- Compasses, 6 inches, with Handle Straightening Device, with Fixed Needle Point, Divider-Point, Pen, Pencil-Point and Lengthening Bar.
- Box with 3 Needle Points, Metal Handle for Pen, Pencil, and Needle Parts. Combination Key and Lead Box.

No. 1131 As above but in Pocket Case, folding flaps, each... $8.25



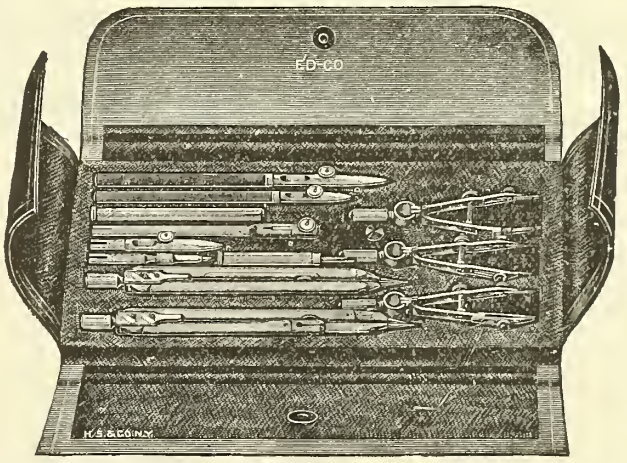
No. 1134 Bar-lock, Pocket Case, each..... $9.15

Containing
- Ruling Pen, with 4-inch Spring Blade.
- Ruling Pen, 5¼-inch Spring Blade.
- Circular Steel Spring Bow Dividers, 3½-inch Metal Handle.
- Circular Steel Spring Bow Pencil, 3½-inch Metal Handle.
- Circular Steel Spring Bow Pen, 3½-inch Metal Handle.
- Hairspring Dividers, 6 inches, with Handle Straightening Device, Compasses, 6 inches, with Handle Straightening Device, with Fixed Needle Point, Divider Point, Pen, Pencil Point, and Lengthening Bar.
- Box with 3 Needle Points, Metal Handle for Pen, Pencil and Needle Parts. Combination Key and Lead Box.

No. 1135 As above but in Pocket Case, folding flaps, each.... $9.55

Highest Grade

Each Instrument is Stamped Excello
Made of Cold-Rolled German Silver with Best English Tool Steel
Leather Cases Lined with Silk Velvet

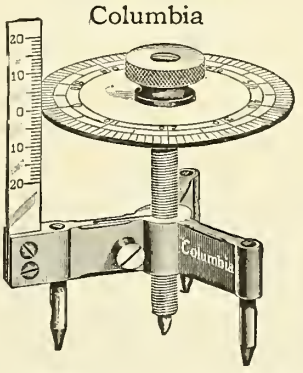


No. 795 Pocket Case, folding flaps, containing—
- Ruling Pen, 4½-inch Metal Handle.
- Ruling Pen, 5½-inch Metal Handle.
- Circular Steel Spring Bow Dividers, 3½-inch Metal Handle.
- Circular Steel Spring Bow Pencil, 3½-inch Metal Handle.
- Circular Steel Spring Bow Pen, 3½-inch Metal Handle.
- Hairspring Dividers, 5¾-inch, with Handle Straightening Device, Replaceable Steel Points.
- Compasses, 6 inches, with Handle Straightening Device, Replaceable Needle Points, Pen and Pencil Points, Lengthening Bar and Straightening Device Combination Key and Lead Box.
- Center Tack, ¾-inch Diameter.
- Metal Handle, 3-inch, with Four Needle Points.

Each $23.50

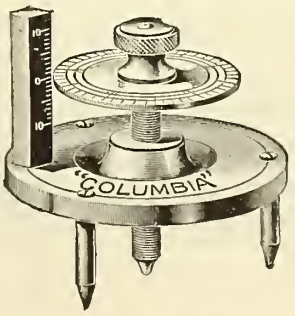
Spherometers

Columbia



Well finished, and the higher priced ones are very accurate.
The three feet stand over a two-inch circle, and the measuring screw takes in 40 millimeters.

No. 55 Reading 100ths of millimeters, for students use..... $5.00
No. 60 Reading 100ths of millimeters, very accurate..... 10.00
No. 65 Reading 1000ths of millimeters, very accurate 25.00



Is a very popular instrument, screw has two threads to each millimeter and disk is divided into 50 parts.

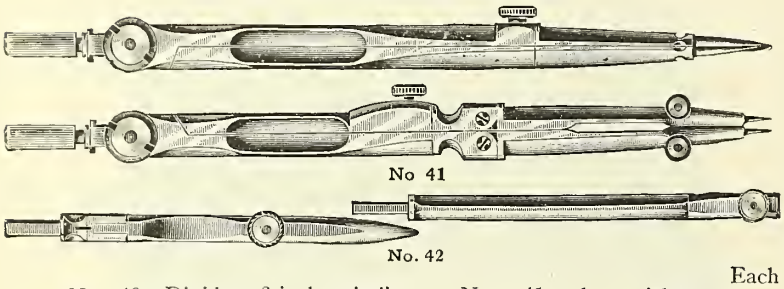
No. 50 ..... $6.00

For Drafting Protractors, see page 298

Drawing Instruments

German Silver Steel Points

Dividers and Compasses

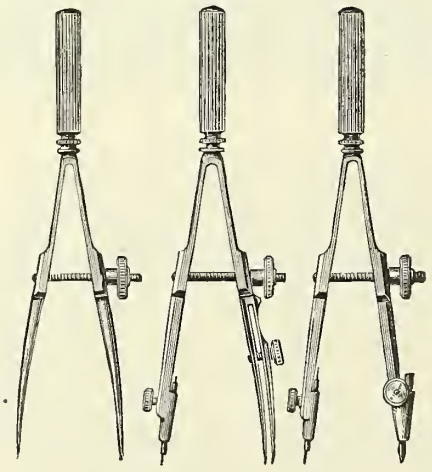


No 41

No. 42

	Each
No. 40 Divider, 6-inch, similar to No. 41, but without removable point	$ .75
No. 41 Hairspring Divider, 6-inch	1.15
No. 42 Compasses, 6-inch, with fixed needle-point, pen-point, with spring-blade, pencil-point and lengthening bar, 2 shouldered needles	1.90

Spring Bows



	Each
No. 45 Steel Spring Dividers, 3½-inch, German silver handle	$ .60
No. 46 Steel Spring Bow Pen, with spring blade, 3½-inch, needle-point, German silver handle	.75
No. 47 Steel Spring Bow Pencil, 3½-inch, needle-point, German silver handle	.75

Drawing or Ruling Pens



No. 24½



No. 48

	Each
No. 48 German silver, ebony handle, 4½-inch, with joint	$ .45
No. 24½ German silver, white handle, 5½-inch, with pin	.50

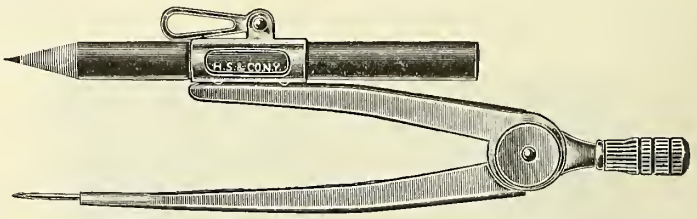
Proportional Dividers

German Silver



	Each
No. 10 6¼-inch, in case	$2.40
No. 11 7-inch, with rack movement, graduated for lines and circles, in case	6.00

Compasses



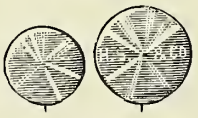
Eagle, No. 576 Nickel-plated, with pencil, dozen $1.50



Eagle No. 569 Nickel-plated, with metal holder for lead and extra box of leads, dozen $3.60

Thumb Tacks

Solidhed



The finest Thumb Tack manufactured

	Gross
No. 10 Steel, ⅜-inch diameter	$ .50
No. 12 Steel, ½-inch diameter	.60
No. 13 Brass, ⅜-inch diameter	1.00
No. 14 Brass, ½-inch diameter	1.10

H. S. & Co.

Punched out of one piece sheet steel, 1000 in a package

No. 1 $\frac{5}{16}$-inch diameter head, thousand	$ .70
No. 2 $\frac{3}{8}$-inch diameter head, thousand	.80
No. 3 $\frac{7}{16}$-inch diameter head, thousand	1.00
No. 4 $\frac{9}{16}$-inch diameter head, thousand	1.50

Drawing Paper

Mechanical White

For Pen Work	Ream
Extra fine quality, 8½x11 inches	$1.75
Extra fine quality, 11 x17 inches	3.25
Extra fine quality, 17 x22 inches	6.00

Springfield White

For Pencil, Water Color or Crayon	Ream
Fine quality, 6x 9 inches	$ .50
Fine quality, 9x12 inches	1.00
Fine quality, 12x18 inches	2.00

Springfield Gray

For Pencil, Water Color or Crayon	Ream
Fine quality, 6x 9 inches	$ .50
Fine quality, 9x12 inches	1.00
Fine quality, 12x18 inches	2.00

Manila

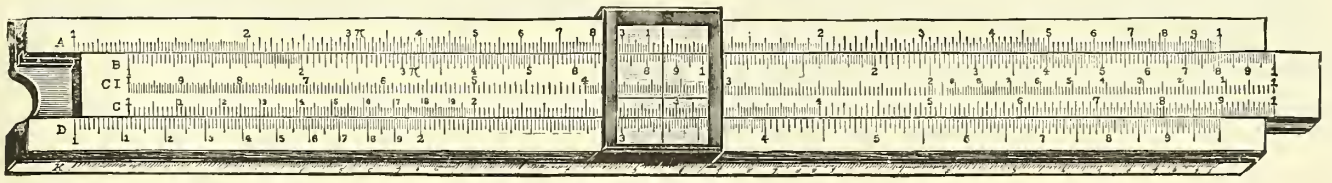
For Common Use	Ream
For common use, 6x9 inches	$ .20
For common use, 9x12 inches	.40
For common use, 12x18 inches	.80
Unglazed. In rolls 36 inches wide. Rolls contain about 150 pounds.	125 to Pound
In full roll lots	$ .09
In 10 pound lots	.10¾

For Drafting Protractors, see page 298

Slide Rules

The principle involved in the Slide Rule is the graphic representation of logarithmic values, but a knowledge of logarithms is not required for the successful manipulation of this rule. The principles are few and simple and can easily be mastered.

Arithmetrical, algebraic and trigonometrical problems can be solved more easily and rapidly and with much less chance of error than by ordinary calculation. It is useful to anybody who has any figuring to do. Complete plain directions are furnished with each rule.



No. 4053-3

Mannheim

No. 4041 10-inch, engine divided, divisions on white faces, glass indicator. In plain morocco case.
Each $4.50

The Polyphase Slide Rule has in addition to the regular scales of the Mannheim, a scale of cubes on the vertical edge of the rule and an inverted scale (CI) on the face of the slide, which scales may readily be used in conjunction with the other scales by means of the indicator. This arrangement combines some of the features of the Duplex Rule with the regular Mannheim type.

The inverted scale enables taking three factors at one setting of the slide, and reading reciprocals by means of the indicator.

No. 4053-3 10-inch, in morocco case, with book of instructions.
Each $5.00

Multiplex, with Mack Adjustment

No. 1762B 10-inch, with cube and reciprocal scales. 5-inch divisions on white ivorine. Glass indicator and Mack improved automatic adjustment. In case, with book of instructions.
Each $5.00



Shows Mack improved automatic adjustment, which makes it unnecessary to use a screw-driver each time atmospheric conditions change, as it automatically adjusts the rule.

The Roylance Electrical Slide Rule

Can be used for all the calculations made with the ordinary Slide Rule. In addition to the usual scales, it carries a series of scales or gauge marks by means of which the different properties of copper wire, such as size, conductivity, weight, etc., may be determined without the use of tables. The gauge marks, graduated on the square edge of the Rule, cover all sizes of the B. & S. standard wire gauge between No. 0000 and No. 40, and are brought into alignment with the graduations on the face of the Rule by means of the runner which is provided with an index.

Scales showing the (Underwriter's) carrying capacity for different kinds and sizes of wires are placed in the groove in the body of the Rule beneath the slide. The upper row of figures shows the ampere carrying capacity of rubber covered wire; the second row, weather-proof wire; third row, rubber covered cable; fourth row, weather-proof cable. For the third and fourth rows, the gauge marks read hundred thousand circular mils. No. 8 reads 800,000 cm.; No. 14, 1,400,000 cm., etc. These scales are read in connection with the gauge marks by means of the runner.

Other features embodied in the rule are the extra hair lines on the runner, the special gauge mark (746) for the conversion of horsepower and kilowatts, and a special set of figures giving the degree centigrade corresponding to resistance in ohms per 1,000 feet.

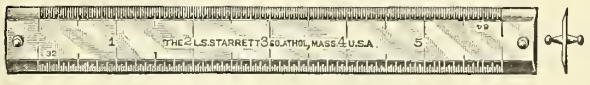
No. 4133 Roylance Electric Slide Rule, adjustable, 8-inch Mannheim style, engine divided on white facings, glass indicator, in leather case, with directions.

Each $5.00

Drafting Scales

Steel

Starrett



Has tilting studs, so placed that each of its four corners, with different graduations, will come in contact with the paper by its own weight when resting on the studs, with the back edge raised at an angle of about 30 degrees. Graduated on each corner in parts of inches as follows:

Inches	6	12
No. 405 10ths, 40ths, 50ths, 100ths, each	$1.00	$1.50
No. 405A 8ths, 16ths, 32ds, 64ths, each	1.00	1.50

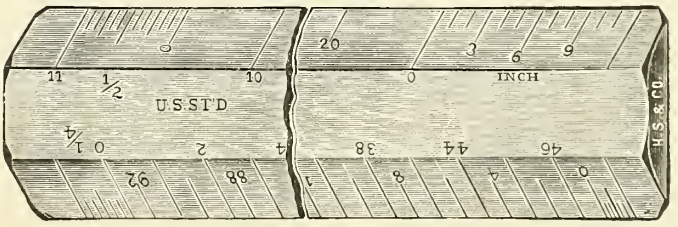
Graduated in the Metric System, one edge of each side in millimeters, the other edge in ½ millimeters.

Centimeters	15	30
No. 405M Each	$1.00	$1.50

Prices for above rules of graduations different than listed, quoted on application.

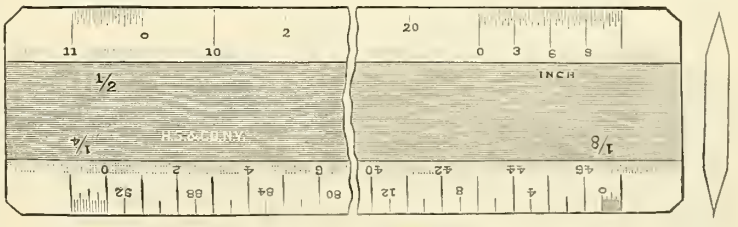
Boxwood

Flat



Graduated ⅛, ¼, ½ and 1 inch to the foot.

		Dozen
No. 536	12 inches long	$5.00
No. 580	With white edge, 6 inches long	7.50
No. 581	With white edge, 12 inches long	10.00



Beveled on both sides. Graduated into ⅛, ¼, ⅜, ½, ¾, 1, 1½ and 3 inches to the foot.

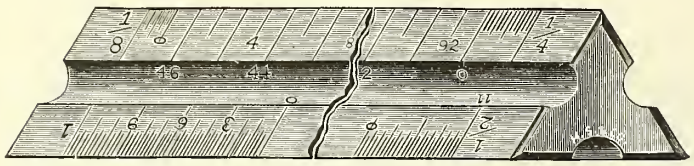
		Dozen
No. 546	12 inches long	$10.00
No. 591	White edge, 12 inches long	22.50

See next page for Triangular Boxwood Scales. For Drafting Protractors, see page 298

Drafting Scales

Boxwood

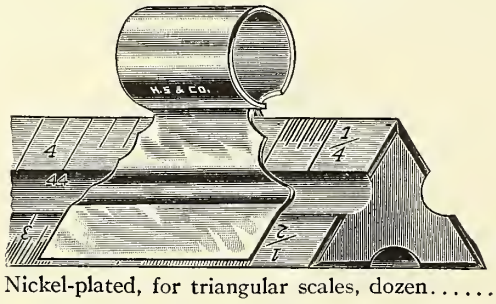
Triangular



Graduated $\frac{3}{32}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 3 inches to the foot, and one edge 16 to the inch.

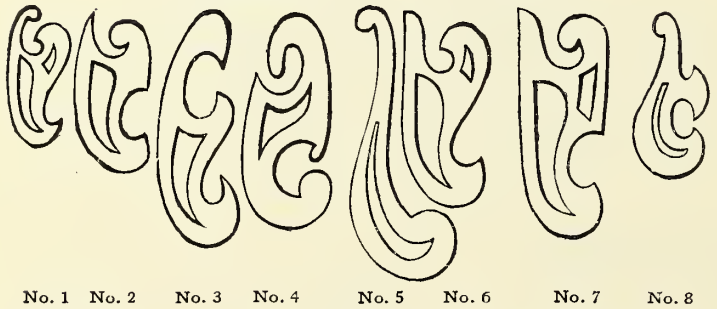
		Dozen
No. 488	6 inches long	$6.25
No. 489	12 inches	7.50
No. 574	With white edge, 6 inches long	20.00
No. 575	With white edge, 12 inches long	27.50

Scale Guards



No. 495	Nickel-plated, for triangular scales, dozen	$3.00

Irregular Curves



No.	1	2	3	4	5	6	7	8
Shape No.				1	2	3	4	5	6	7	8
No. 174	Wood, dozen			$2.80	3.25	3.50	3.50	3.50	3.25	3.50	2.80
No. 176	Transparent amber or celluloid, doz.			4.50	6.00	6.75	6.75	6.75	6.00	6.75	4.50

Shifting Parallel Rules

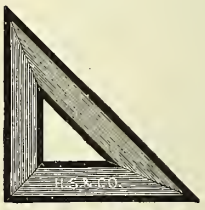


			Each
No. 200	6 inches long.	Ebony	$ .70
No. 200	12 inches long.	Ebony	1.00
No. 200	18 inches long.	Ebony	1.75

Triangles



30 x 60 Degrees



45 x 45 Degrees

30x60 Degrees

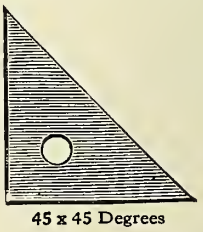
Inches	7	9	11	13
No. 124 Cherry, dozen	$2.20	2.80	3.40	
No. 132 Mahogany, ebony lined, dozen	5.65	6.90	9.40	12.50
No. 145 Transparent amber or celluloid, dozen	5.93	7.68	10.80	

45x45 Degrees

Inches	5	6	8	10
No. 125 Cherry, dozen	$2.00	2.20	2.80	3.50
No. 133 Mahogany, ebony lined, dozen	5.00	5.65	6.90	9.40
No. 146 Transparent amber or celluloid, dozen	5.93	6.75	9.90	12.00



30 x 60 Degrees



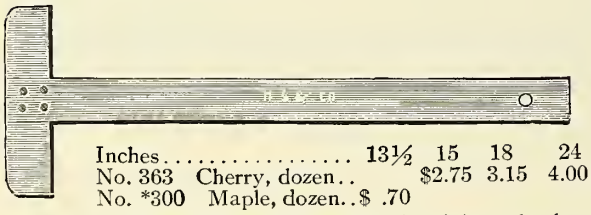
45 x 45 Degrees

These are especially adapted for manual training school work.

			Dozen
No. 100	30x60 Degrees	4½-inch Maple	$ .72
No. 101	45x45 Degrees	3-inch Maple	.72

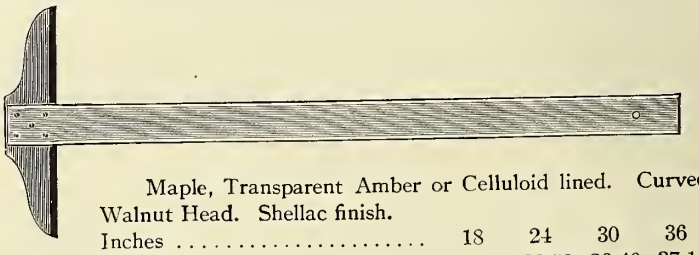
T-Squares

Stationary Head



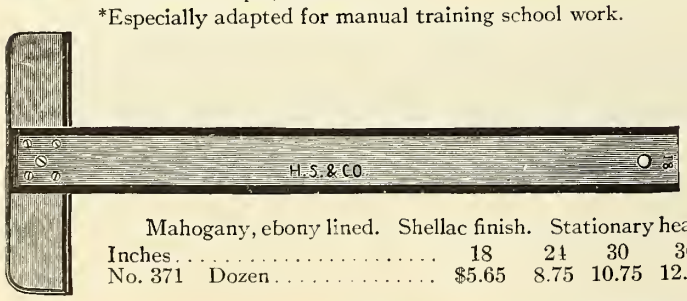
Inches	13½	15	18	24	30	36
No. 363 Cherry, dozen		$2.75	3.15	4.00	4.75	5.75
No. *300 Maple, dozen	$ .70					

*Especially adapted for manual training school work.



Maple, Transparent Amber or Celluloid lined. Curved Walnut Head. Shellac finish.

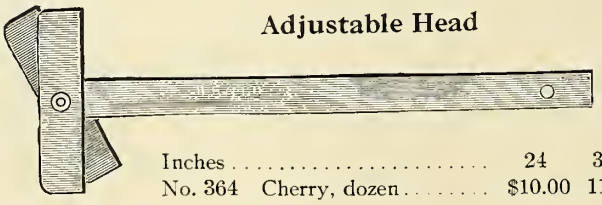
Inches	18	24	30	36
No. 373 Dozen	$18.00	22.50	30.40	37.15



Mahogany, ebony lined. Shellac finish. Stationary head.

Inches	18	24	30	36
No. 371 Dozen	$5.65	8.75	10.75	12.50

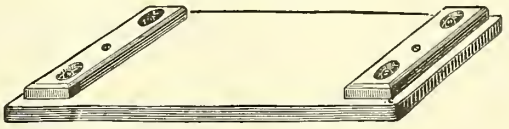
Adjustable Head



Inches	24	30	36
No. 364 Cherry, dozen	$10.00	11.25	12.40

For Drafting Protractors, see page 298

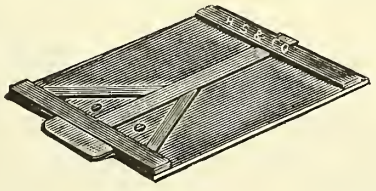
Drawing Boards



No. 444 Has cleats on under side as illustration.
No. 442 Without cleats, flush on both sides.

			Each
No. 442	18x24 inches, ½-inch thick.	Clear white pine.....	$1.13
No. 442	20x26 inches, ⅞-inch thick.	Clear white pine.....	1.50
No. 442	23x31 inches, ⅞-inch thick.	Clear white pine.....	1.88
No. 442	31x42 inches, ⅞-inch thick.	Clear white pine.....	2.75
No. 444	18x24 inches, ½-inch thick.	Clear white pine.....	1.50
No. 444	20x26 inches, ⅞-inch thick.	Clear white pine.....	2.00
No. 444	22x31 inches, ⅞-inch thick.	Clear white pine.....	3.13
No. 444	31x42 inches, ⅞-inch thick.	Clear white pine.....	5.00

Drawing Kits

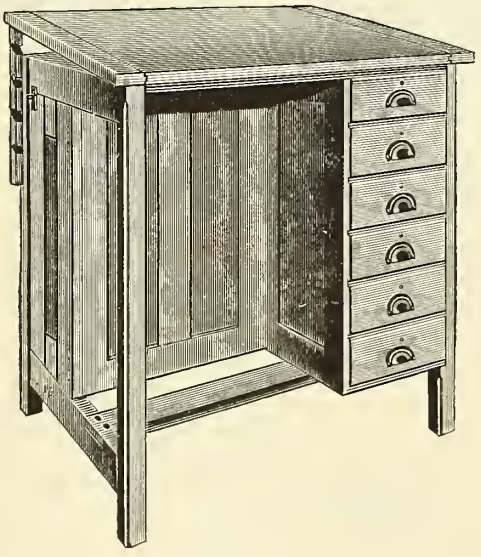


Each Kit consists of 1 Drawing Board, 1 T-Square and 2 Triangles.

		Each
No. 1	10x12-inch board.....	$ .35
No. 2	13x19-inch board.....	.60
No. 3	17x22-inch board.....	1.00

Drawing Table

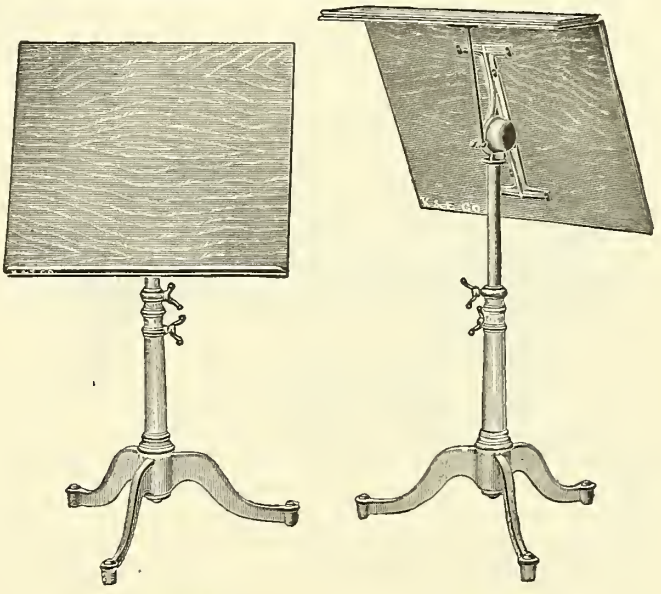
No. 3



	Each
With adjustable top, weight, 150 pounds.....	$23.00
With stationary top, weight, 140 pounds.....	21.00

Dimensions—Top, 28x36 inches. Height, 40 inches. Drawers, 4 inches high, 9 inches long, 22 inches deep. Drawing Board Cabinet, 9 inches wide, 24½ inches high, 20 inches deep. Provides either a stationary or an adjustable top, ample foot rails and foot room underneath and a compact arrangement of private lockers and drawing board cabinet. The design will appeal to those who want a compact and artistic table representing exceptional efficiency for space it occupies.

College Drawing Tables



No. 2560 No. 2561

Our College Drawing Tables possess all the features of an efficient and satisfactory drawing stand for the class room.

		Each
No. 2560	College Drawing Table, ash top, 21x24 inches.....	$8.50
No. 2561	College Drawing Table, ash top, 22x26 inches.....	9.00
No. 2561	With Accessory T-Square.....	10.25

These Tables are crated for shipment without extra charge.

Accessories for College Drawing Tables

T. S. Top Shelf, 6½ inches wide, remaining horizontal at any inclination of the table top, extra, each.....	$1.25
D. S. Top Shelf, as above but with two drawers, extra, each...	2.50
Casters on College Drawing Tables (2 casters and 1 iron foot), extra, per table.....	.50

Books

Mechanical Drawing for Trade Schools

By Charles C. Leeds
Fully Illustrated. 10¾x7⅞ inches

Machinery Trades Edition. 58 lessons, 150 pages.....	$2.00
High School Edition. 40 lessons.....	1.25

(Author is assistant professor of mechanical drawing at the Carnegie Institute of Technology.)

This work on Mechanical Drawing has been prepared with the purpose in view of thoroughly grounding young draftsmen and others of the various machinery trades in the principles of mechanical drawing. Each lesson will guide the student by easy steps, illustrate some fundamental point in mechanical drawing, and work as a whole towards the development of a creative draftsman. The text of the two editions is identical as far as lesson 40. The larger edition containing 18 additional advance problems.

Mechanical Drafting

By H. W. Miller

A new departure among text books on mechanical drawing. It is intended to supplement the work of the instructor in such a way as to reduce lecture work to a minimum. It is written about a flexible course but may be used equally well with any course. The book abounds in illustrations, both line drawings and half-tones. It shows a wise selection of material, a keen insight into the work of the draftsman and a thorough knowledge of the principles and method of teaching. Above all it is a practical treatment of subject matter and a student's text easily adaptable to varied schools and conditions. Contains 219 pages and 225 illustrations, and is bound in black flexible leather.

Pocket book size..... $1.50

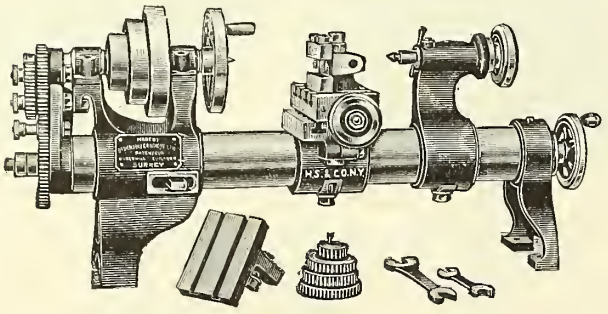
For Drafting Protractors, see page 298

Light Precision Lathe

Drummond

4-inch with 30-inch Bed

Especially Adapted for Model Makers and Industrial School Work



Light Precision Lathe complete with Accessories

This self-acting, sliding, boring, screw-cutting and milling Lathe is of the finest precision workmanship throughout. The bed is of cast steel, very stiff and of circular form, and is ground accurately to a limit of error one ten-thousandth of an inch. The mandrel is steel, 1-inch diameter in bearings ground dead true after running. The nose of mandrel is tapped for ¾-inch and bored No. 1 Morse taper. Centers are cast steel, hardened and interchangeable. The poppet head has set over adjustment for taper work and has steel barrel and polished hand wheel. The lead screw is fitted in centers of bed, completely out of the way of chips and dirt. The saddle is ⊥-slotted, and therefore suitable for milling and boring. The cross slide can be turned to any angle, and is graduated. A set of nine change wheels is included, and will cut 16 U. S. threads from 5 to 48 and many odd and finer threads can also be cut. A reversing wheel with secondary quadrant is provided, so that left or right-hand screws can be cut. All gear wheels are cut from solid blanks.

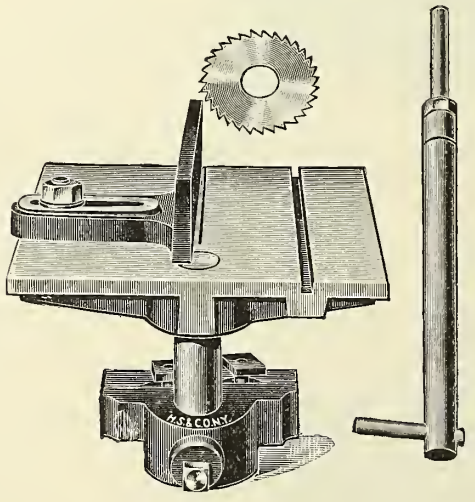
Complete Lathe, with accessories as shown	$50.00
Extra for Countershaft for power	14.00
Extra for Foot Motor with heavy Fly-wheel	12.00
Extra for complete Stand with Treadle for foot power	25.00

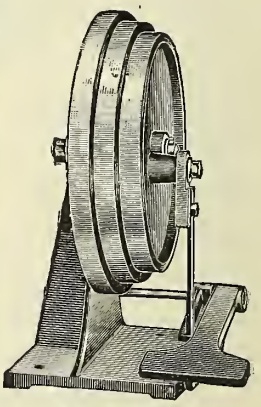
Saw Table

Complete with best quality Circular Saw, suitable for metal or hard wood, and including Saw Spindle.

These Tables are surfaced true, are capable of being raised or lowered, are fitted with an adjustable fence, and are also provided with a slot millled from the solid in which any special temporary guide for odd shapes or angles can be guided across the Saw.

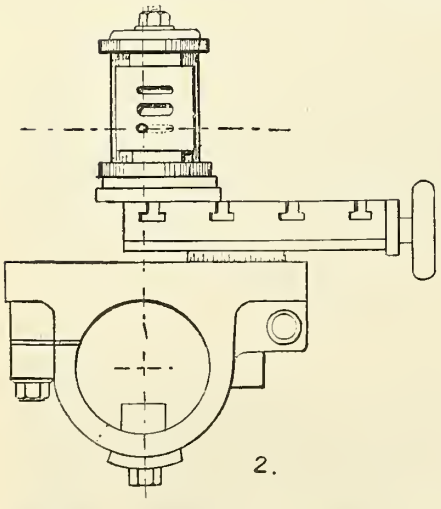
Each..... $21.00



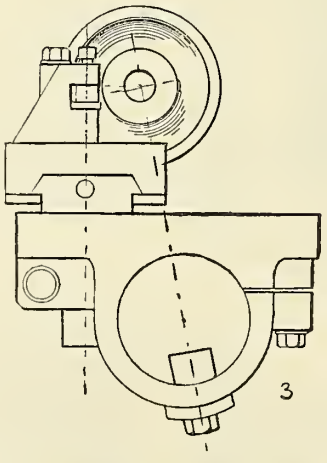


Foot Motor with heavy Fly-wheel Listed above

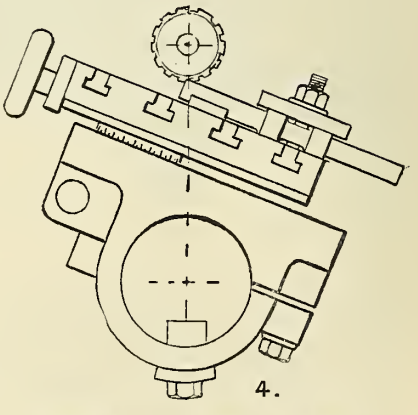
Some Positions of Slide Rest When Turning and Milling



Milling Steam and Exhaust Ports in Cylinder. Packing pieces can be put, as shown, under cylinder, these being as thick as the distance between ports and removed one by one as ports are cut.



Turning Hollow Radius in Face of Ring. Center of slide base being brought to coincide with center of radius.

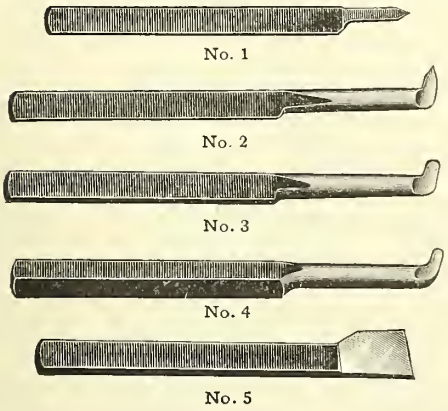


Milling Key-way in Small Crank Shaft

If interested, send for complete catalogue on above equipment. See next page for tools

Tools for Drummond 4-Inch Lathe

As listed on preceding page



Tools Numbers 1 to 12

For use with Slide Rest.

Cast Steel

Set of 12 ..... $6.75

Set of 3 Dogs

For holding work to Face Plate.

Set 2.10

Bolts and Nuts

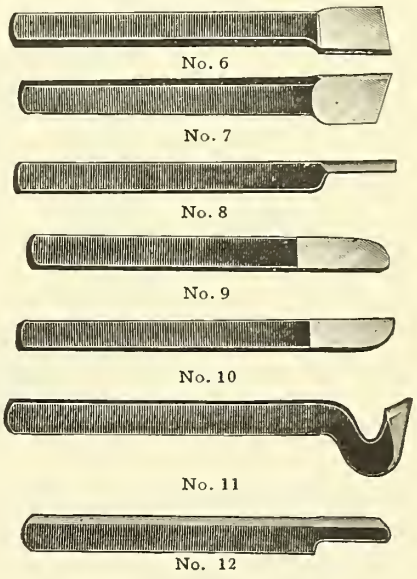
For Face Plate or Angle Plate.

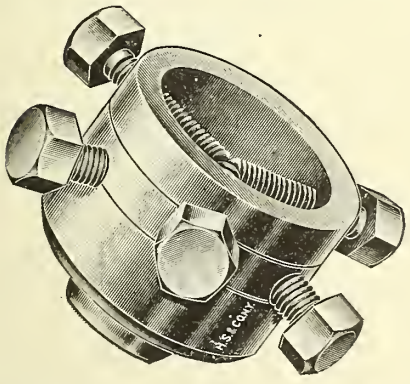
Up to 2½ inches long, each ..... .15

12-Inch Bolts

For fastening work to Boring Table.

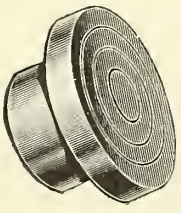
Each ..... .45



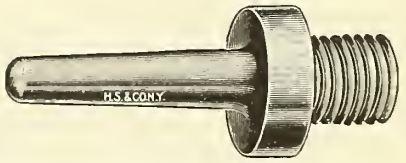


8-screw Bell Chuck, 4-inch lathe, 3 inches diameter, holding 2½ inches.

Each $7.50



Drill Pad, each $1.50

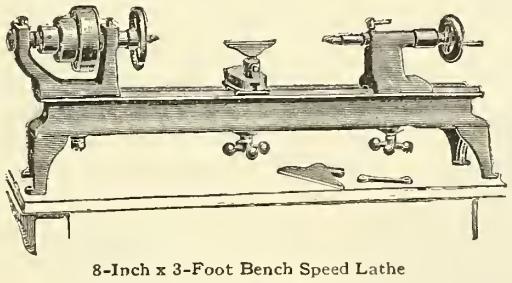


Adapter for Tailstock. With the same nose as headstock spindle.

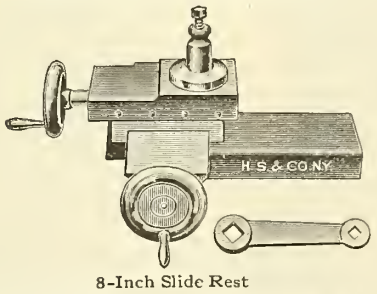
Each $1.80

Light Bench Speed Lathe

Oliver



8-Inch x 3-Foot Bench Speed Lathe



8-Inch Slide Rest

For the tool room or general machine shop use this lathe will be found very acceptable, being strong and accurate, with centers lining perfectly. The cone is turned inside as well as outside, and is for 1¼-inch belt. There is a ½-inch hole through spindle, and this as well as the tail spindle is of steel; the latter has a self-discharging center.

Swing, 8 inches. Length of bed, 3 feet. Between centers, 20 inches. Net weight, 73 pounds. Weight for shipment, 115 pounds.

Complete $30.00

Attachments for 8-Inch x 3-Foot Speed Lathes

Cup Center, each	$1.00
Spur Center, each	1.00
Screw Chuck, each	2.00

Slide Rest

An exceedingly well-made tool, adapted to 8-inch swing hand or foot lathe. The longitudinal motion is 5 inches, and the transverse motion 2¾ inches.

Each	$15.00
Set of eight tools	2.00

Weight boxed, 13 pounds.

Countershafts

To be used in connection with above lathes.

No. 2	With 10x2-inch Flat Pulley	$7.00
No. 2	With 12x2-inch Flat Pulley	7.00
No. 2	With Cone Pulley	7.00

Drop, 8 inches. Tight and loose pulleys, 5 inches diameter for 1¾-inch belt. Net weight, 35 pounds. Gross weight, domestic shipment, about 45 pounds.

No. 3	With 10x2-inch Flat Pulley	$8.00
No. 3	With 12x2-inch Flat Pulley	8.00
No. 3	With Cone Pulley	8.00

Drop, 7 inches. Tight and loose pulleys, 5 inches diameter for 1⅞ inch belt. Net weight, 42 pounds. Gross weight for shipment, about 52 pounds.

Equipped as follows for Foot Power

The driving wheel has ample weight, is well turned and balanced; the connecting shaft runs in our improved self-adjustable boxes, insuring perfect alignment.

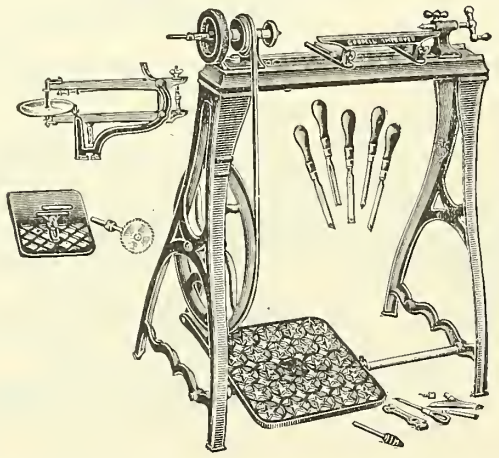
The table is of finely finished hardwood, and each lathe has one face plate, two pointed centers, short and long T-rests, wrench and belt.

Net weight, 225 pounds. Weight for shipment, 285 pounds.

Complete, for foot power $50.00

Amateur Lathes and Scroll Saws

Goodell Lathe and Saw



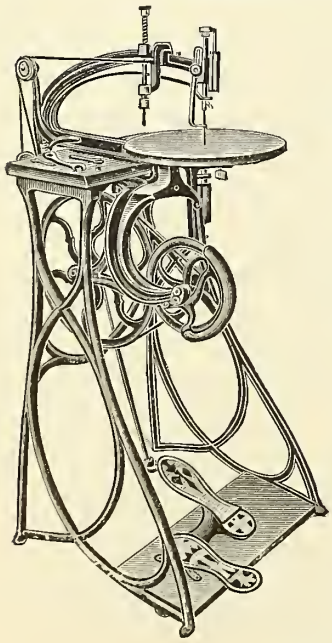
Drive Wheel and Cone Pulley with two grooves to permit change of speed.
Accurate Drill Chuck holding from 0 to ¼-inch in diameter round shank drills for boring in metal or wood.
Long and Short Tool Rests.
Five Turning Tools, Wrench and Drill Points, etc.
Lathe Head with 2-inch Face Plate and Spur Center and Screw Center for turning cups.
Emery Wheel, 4½x⅞ inches.
Drill Spindle with Chuck for drill points for wood boring.
Tail Stock with Screw Feed clamped at any point.
Swing of lathe, 5 inches; distance between centers, 13½ inches; distance of bed from floor, 27 inches; length of bed, 24 inches.
Fret Sawing Attachment, quickly attachable or detachable, with nickeled table, ash wood arms, dust blower, adjustable saw guide and lever, saw blades, designs, etc.
Circular Saw Attachment, with saw table 6x7 inches, saw arbor, saw blade 3 inches in diameter, and straight-edge guide.
The whole machine is thoroughly built and highly finished, polished parts being nickeled.

	Weight Boxed Pounds	Weight Net Pounds	Each
Lathe and Lathe Tools	71	50	$13.00
Lathe and Scroll Saw Attachment	78	57	15.00
Scroll Saw Attachment	16	7	2.00
Circular Saw Attachment	..	3	1.25

Knocked down and packed 1 machine in a wooden box.

In ordering state whether either or both of the saw attachments are wanted

Fleetwood Scroll Saw



This machine is not a toy, but is built along mechanical lines and is a first-class practical Scroll Saw, intended for the finest work.

Is very light and easy running and does accurate and clean-cut work.

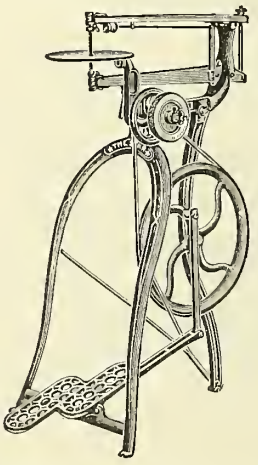
Has a 15¾-inch swing, a tilting table and has drilling and blowing attachments.

The stand is plain, nicely japanned and finished.

Belt Gear, Metal Arm, either foot or power.

	Each
No. 3 Complete, with blower, boring attachment and treadle mounted on plain stand, as illustrated	$21.00
No. 3 Saw only, with treadle and blower	13.50
No. 3 Saw only, with blower and T. & L. pulley for power	13.50

The Star Fret Saw



A well-balanced, steady machine.
Iron castings japanned black and ornamented with red stripes; steel arbors.
Heavy Drive Wheel, giving power.
Arms hung in the middle of their supporting casting to give free and easy motion; adjustable, so may be kept parallel.
Two balance wheels, one each of iron and emery, adding steadiness to the motion.
Adjustable Clamps for the emery wheel, capable of embracing other sizes of emery and buffing wheels, grindstones, etc.
Nickeled Tilting Saw Table.
Automatic Dust Blower.
Lever Saw Clamps and Adjustable Saw Guide.
Depth of arms, 18 inches.
Whole height of machine, 37 inches.
Weight, boxed, 60 pounds; net, 40 pounds.

Each $6.50

Knocked down and packed 1 in a wooden box.

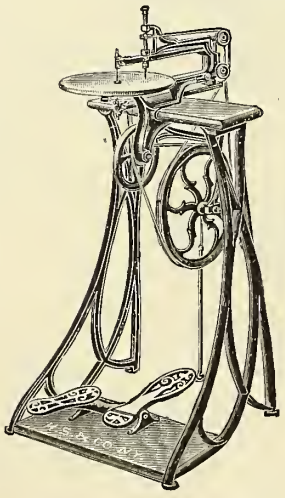
The New Rogers Fret Saw

Construction similar to above, but lighter.
Iron castings, japanned black, with red and gilt stripes; steel arbors; arms and pitman of best selected ash wood.
Bearings to the arms carefully adjusted.
Automatic Dust Blower.
Jointed Stretcher Rod, permitting free action of arms.
Adjustable Lever Saw Clamps with Hinged Jaw to overcome a disagreeable raking overthrow of the saw blades and to prevent breakage of blades.
Drilling Attachment on the right hand side of balance wheel.
Parts secured to each other by nicely fitting screws and bolts.
Each machine is set up and run and carefully inspected before leaving our works.
Also furnished with each machine: 12 Saw Blades, 1 Wrench, 3 Sheets of Designs, 1 Awl, Impression Paper, and 3 Drill Points.
Height, 35 inches.
Weight, boxed, 45 pounds; net, 28 pounds.

	Each
No. 1 With japanned tilting table and iron balance wheel	$4.50
No. 2 With nickeled tilting table and emery balance wheel	5.25

Knocked down and packed 1 in a wooden box

Dexter Scroll Saw



Swings 16 inches. Belt Gear. Tilting Table. For Foot Power only.

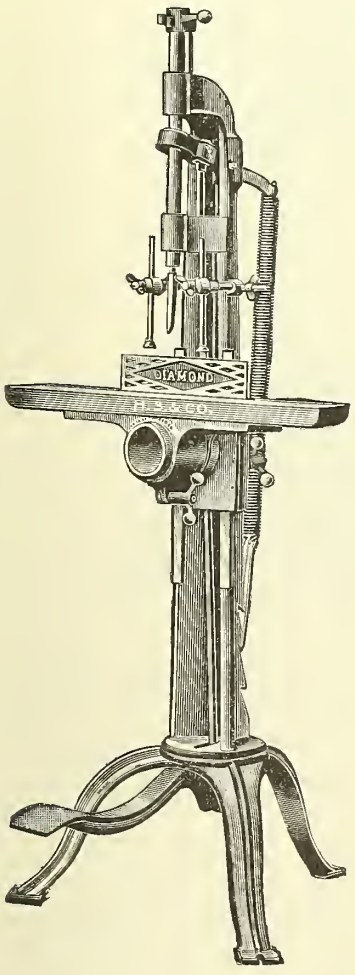
Similar in construction to Fleetwood, but somewhat lighter in construction and has wooden arm.

	Each
Style "C" Saw complete, with boring attachment and blower mounted on stand	$13.00
Saw complete, without boring attachment	11.50
Saw complete, without stand	10.00

For books of Scroll Saw Designs, Scroll Saw Woods and Hand Frames, see Index

The Diamond Mortiser

For Foot Power



Strongly and substantially built, has a powerful motion, accurate action, is suited to a large range of work, and in all respects is the most perfect foot power mortising machine ever offered.

Built entirely of iron and steel, except the hardwood strip on top of table, and the novel construction of the frame renders it extremely strong and rigid.

The treadle motion is so arranged as to obtain great leverage and power on the chisel spindle without undue strain on the working parts.

The table has simple, accurate and positive, horizontal, vertical and angle adjustments. The angle adjustment is a specially valuable feature that will be appreciated by all mechanics. It is provided with a graduated scale by which the operator may tilt the table either to the right or left to mortise or cut work on any desired angle.

It has a heavy coiled wire spring of the best steel, oil tempered, which can easily be adjusted for any desired tension.

The chisel reverser is attached to the upper end of chisel spindle and is provided with a stop, to secure perfect accuracy in reversing the chisel.

It will mortise ¼ to 1 inch wide, by 3 inches deep, from one side, or by reversing work a depth of 6 inches can be attained, and with the addition of the diamond tenoning tool, cut tenons ⅛ to 1 inch thick, by 3 inches wide, or 6 inches wide by reversing the work.

Equipment

The Diamond Mortiser is provided with three mortising chisels, one each, ⅜, ½ and ⅝-inch. Other sizes may be substituted if desired. Net weight, 145 pounds.

Complete $25.00

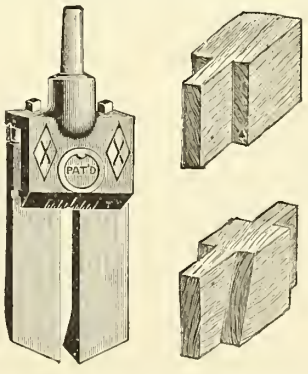
Diamond Mortising Chisels



With 1¾-inch shank, tapering from 15/32 to 17/32-inch.

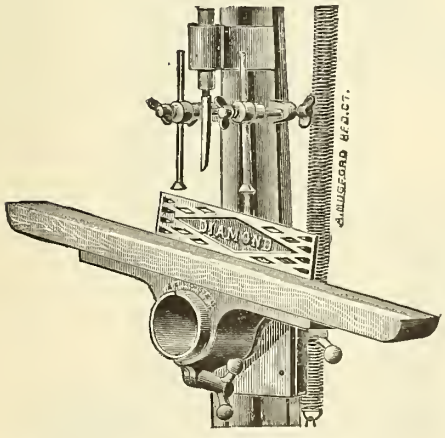
Inches	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Each	$1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

No. 2 Diamond Tenoning Tool

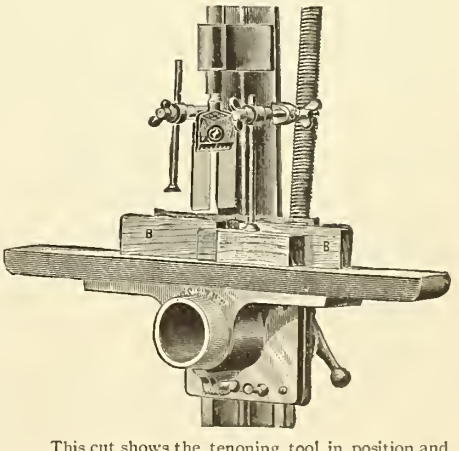


This tool will be found a valuable attachment to the "Diamond" Mortising Machine for making sash, screen doors, frames, and all light tenoning. It is provided with knives, which can be easily and quickly adjusted to cut tenons ⅛ to 1 inch thick; 3 inches wide from one side, or six inches wide by reversing the work. The knives are constructed with side lips, and also have a draw or shear cut on both front and side edges, which leaves the shoulders and sides of tenon true and smooth.

Each $5.00



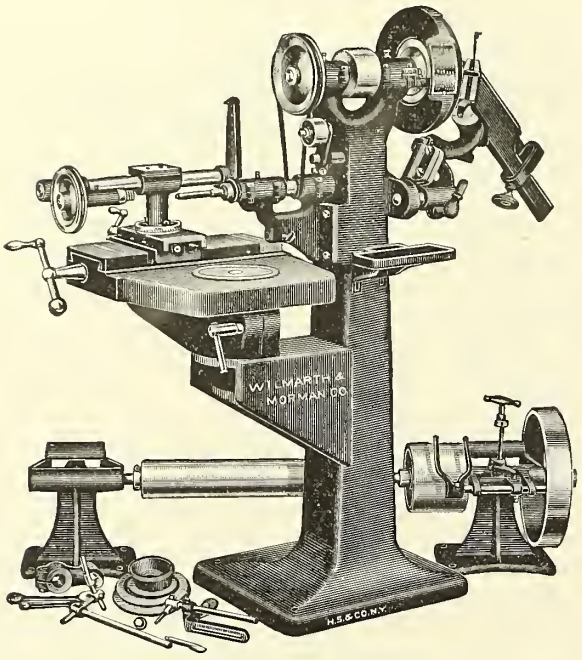
This cut shows the table tilted for cutting work on an angle. It can be tilted either way, to the right or left, and to any angle desired.



This cut shows the tenoning tool in position and table arranged for work. The pieces B B are ⅞-inch strips secured to back of table, leaving a small opening in the center for the passage of the tool.

Grinders for Drills, Reamers and Cutters

Wilmarth & Morman



Style BX New Yankee Grinder

Complete with Cylindrical and Internal Grinding Attachment for Cutters, Reamers, Drills, etc.

Specifications

Grinds Face and Side Milling Cutters up to 12 inches diameter.
Grinds Angle Milling Cutters (any angle) up to 8 inches diameter.
Grinds Plain Milling Cutters (any type) up to 8 inches diameter.
Grinds Gear Cutters up to 5½ inches diameter.
Grinds Hobbs up to 5½ inches diameter.
Grinds Forming Cutters (any length) up to 5½ inches diameter.
Grinds Flutes of Taps up to 11½ inches long.
Grinds Reamers (straight or taper) up to 17 inches long over all.
With Flutes not over 11½ inches.
Grinds Cylindrical Work (straight or taper) up to 7¼ inches diameter and up to 11½ inches long.
Distance between Centers, 17 inches long.
Grinds Holes in Internal Work up to 4 inches deep.
Grinds Holes in Internal Work up to 10½ inches swing.
Main Spindle speed, 1600 R. P. M.
Small Spindle speeds, 4800 and 9600 R. P. M.
Speed of Countershaft, 530 R. P. M.
Pulley on Main Spindle, 4x2¼ inches.
Driving Pulley, 12x2¼ inches.
Tight and Loose Pulleys, 6x2¼ inches
Floor space occupied, 21x46 inches.
Weight, net, 488 pounds; crated, 565 pounds.
Weight, boxed, 715 pounds.
Cubic feet, boxed, 33.

Style BX, grinds Drills from ⅛ inch up to 2¼ inches diameter.
Each..... $185.00

Style JBX, grinds Drills from $\frac{3}{32}$ inch up to 1¼ inches diameter,
Each..... 182.50

Style LBX, grinds Drills from No. 60 up to ⅝ inch diameter,
Each..... 180.00

Style N

Motor Driven

(Direct Current)

Capacity ¼ to 3½-inch Drills

Dimensions

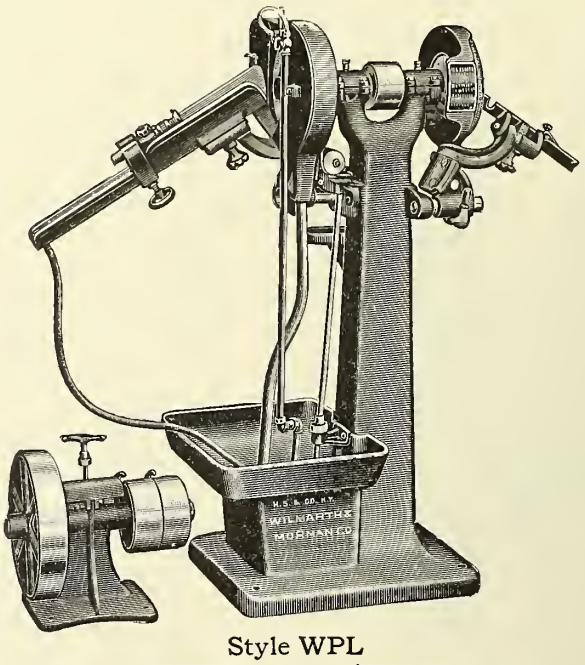
Diameter of Emery Wheel, 12 inches.
Speed of Emery Wheel, 1240 R. P. M.
Height to Center of Spindle, 43 inches.
Floor space occupied, 2x3 feet.
Weight, net, 565 pounds.
Weight, crated, 690 pounds.
Weight, boxed, 770 pounds.
Cubic feet, boxed, 22.
Specify whether 110 or 220 volts.

Each..... $225.00

Style N Point

Same as Style "N," but with point thinning wheel. Dimensions same; weighs 20 pounds more.

Each..... $235.00



Style WPL

Capacity No. 60 to 2¼-inch Drills

Dimensions

Diameter of Emery Wheel, 9½ inches.
Speed of Countershaft, 530 R. P. M.
Driving Pulley, 12x2¼ inches.
Height to Center of Spindle, 43 inches.
Weight, net, 390 pounds; crated, 455 pounds.
Cubic feet, boxed, 17.
Speed of Emery Wheel, 1600 R. P. M.
Pulley on Wheel Spindle, 4x2½ inches.
Tight and Loose Pulleys, 6x2¼ inches.
Floor space occupied, 1½x4 feet.
Weight, boxed, 530 pounds.
Code, Wepel.

This is the most desirable machine for cases in which the present need and probable future requirements do not call for greater capacity than 2¼ inch drills.

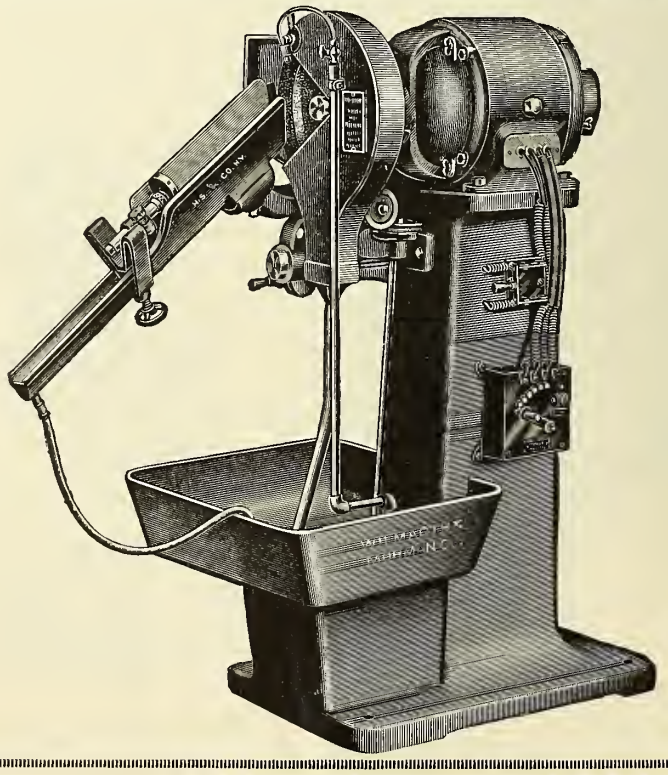
Each..... $130.00

Style WPJ

Capacity $\frac{3}{32}$ to 2¼-inch Drills

Same as WPL but with the smaller drill holder of larger size, such as used on Style J. Dimensions the same; weight 10 pounds more.

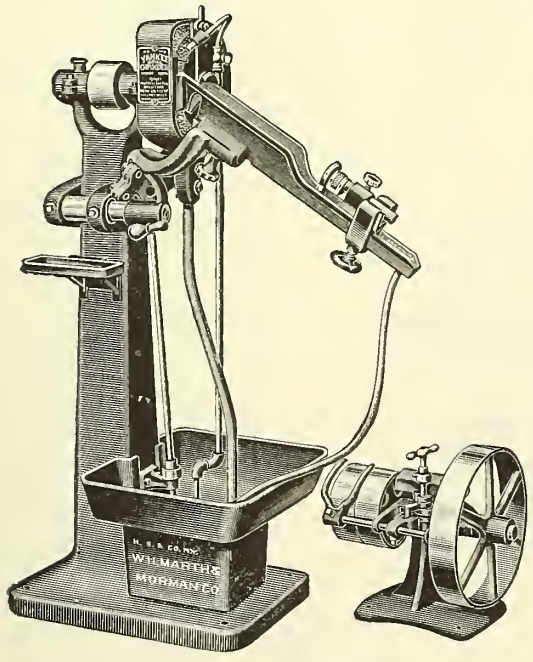
Each..... $132.50



SEE DISCOUNT SHEET

Grinders for Drills and Surfaces

Wilmarth & Morman



Style P O Drill

Capacity 1/8 to 2¼-inch Drills

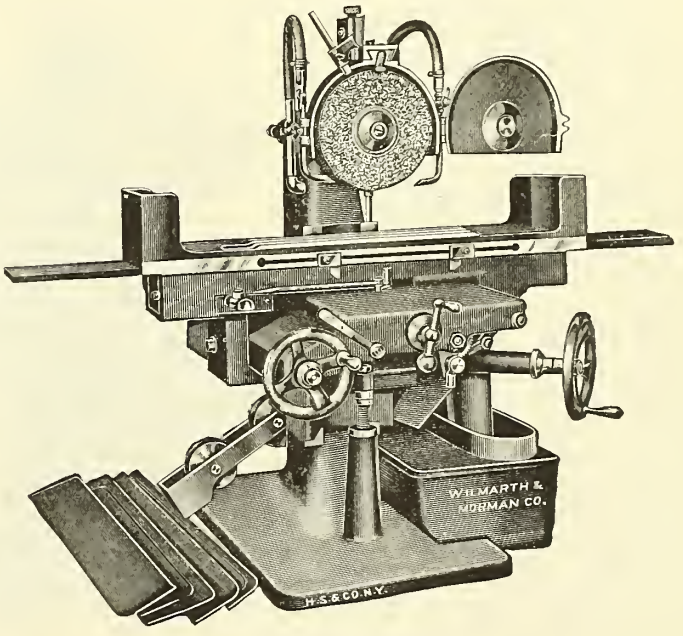
Dimensions

Diameter of Emery Wheel, 9½ inches.
Speed of Emery Wheel, 1600 R. P. M.
Speed of Countershaft, 530 R. P. M.
Pulley on Wheel Spindle, 4x2¼ inches.
Driving Pulley, 12x2¼ inches
Tight and loose pulleys, 6 x 2¼ inches.
Height to Center of Spindle, 43 inches.
Floor space occupied, 1½x3 feet.
Weight, net, 350 pounds.
Weight, crated, 415 pounds.
Weight, boxed, 490 pounds.

Note that this machine has separate counter shaft.

Besides enabling the machine to be placed at a distance from the line shaft. This has the advantage that in the combination machines the tight and loose pulleys or the belts are not in the way when the rear end of the machine is being used.

Each..... $90.00



No. 3 Surface

View showing machine with table water guards removed and wheel hood cover opened 3½ inches

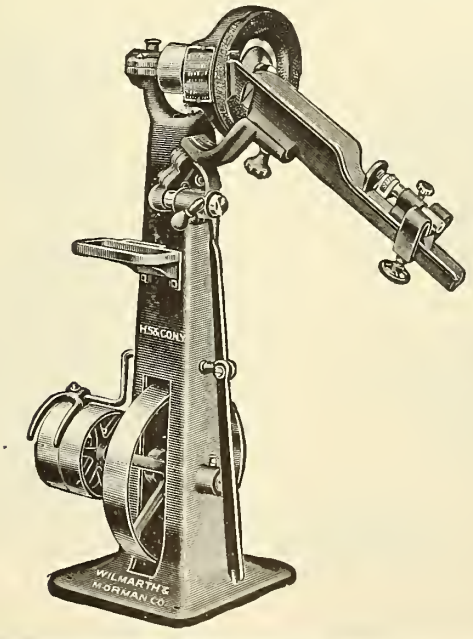
Capacity 8 x 24 inches surfaces

Dimensions

Grinding Wheel, 12x1x1⅜ inches.
Working Surface of Table, 8x24 inches.
Longitudinal movement, 25 inches.
Transverse movement, 9 inches.
Vertical movement under 12-inch Wheel, 9½ inches.
Maximum distance Spindle to Table, 15½ inches.
Spindle speed, 1600 R. P. M.
Countershaft speed, 550 R. P. M.
Spindle Pulley, 6x5½ inches.
Driving Pulley, 18x5½ inches.
Tight and Loose Pulleys, 10x4¾ inches.
Height to Center of Spindle, 49 inches.
Floor space occupied, 58x96 inches.
Weight, net, 2,215 pounds.
Weight, crated, 2,360 pounds.

Each..... $575.00

Style A Drill



Capacity 1/8 to 2¼ inch Drills

Dimensions

Diameter of Emery Wheel, 9½ inches.
Speed of Emery Wheel, 1600 R. P. M.
Speed of Countershaft, 425 R. P. M.
Pulley on Wheel Spindle, 4x2¼ inches.
Driving Pulley, 15x2¼ inches.
Tight and Loose Pulleys, 7½x2¼ inches.
Height to Center of Spindle, 42 inches.
Floor space occupied, 1½x3 feet.
Weight, net, 215 pounds; crated, 250 pounds.
Weight, boxed, 305 pounds.

Each..... $65.00

Style A Point

Same as Style A, but with point thinning wheel. Dimensions same, weight 20 pounds more.

Each..... $69.00

Style JA

Capacity 3/32 to 1¼-inch Drills

Same as Style A, but with smaller capacity drill holder. Other dimensions same, weight 10 pounds less.

Each..... $62.50

Style JA Point

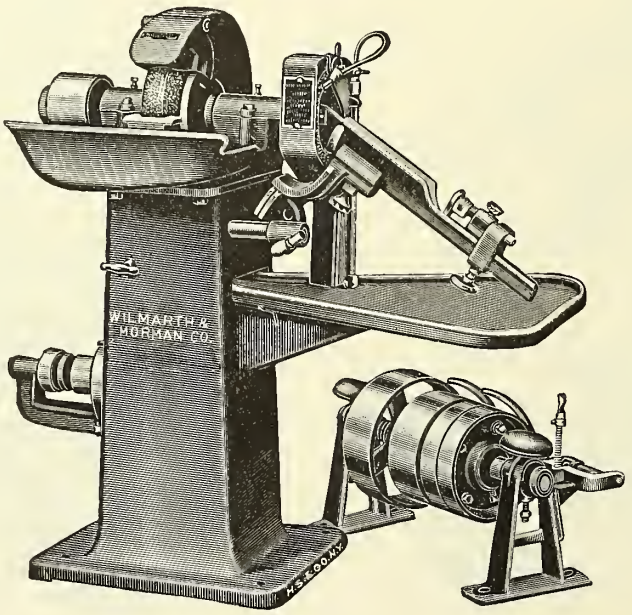
Capacity 3/32 to 1¼-inch Drills

Same as Style A Point, but with smaller capacity drill holder. Weight 10 pounds less.

Each..... $66.50

Grinders for Drills and Tools

Wilmarth & Morman



Combination Tool and Drill Ginder

Two machines for one price, one floor space, and one power bill. Each capable of individual and simultaneous use. This machine is an ideal one, as every shop needs a wet tool grinder and every shop uses twist drills. Combination machines usable for only one thing at a time are unsatisfactory. This machine handles both classes of work simultaneously, the same as two separate machines. The drill grinding attachment never interferes with the tool grinding. One floor space, one countershaft, one set of belts, one power bill and one price are advantages gained without the slightest compensating disadvantage.

This machine has many advantages. While modest in first cost, it nevertheless avoids the defects which exist in those machines where price is the only recommendation.

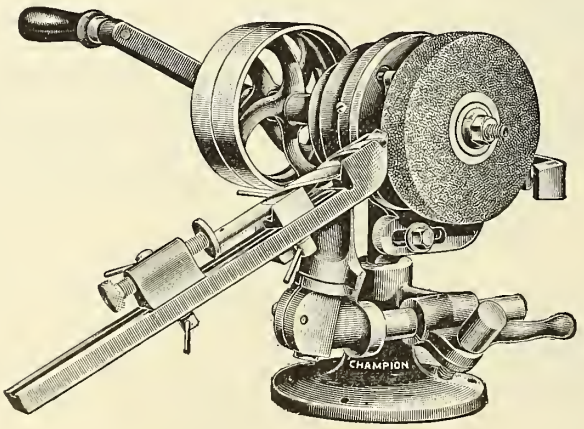
The spindle bearings are 1¾ inches in diameter by 8 inches and 6 inches in length. The split box bearings carry interchangeable bushings lined with high grade babbitt which are securely clamped in place by the box cap.

Drill Capacity ⅛—2¼-inch or $\frac{3}{32}$—1¼-inch

Diameter of Drill Wheel, 9½ inches
Tool Grinding Wheel, 16x2 inches
Spindle Speed, 1000 R. P. M.
Countershaft Speed, 500 R. P. M.
Tight and Loose Pulleys, 10x4 inches
Driving Pulley, 12x4 inches
Spindle Pulley, 6x4 inches
Height to Spindle, 40 inches
Floor space occupied, 3x4 feet
Weight, net, 840 pounds; crated, 930 pounds
Weight, boxed, 1100 pounds
Furnished with ⅛ to 2¼-inch capacity if not otherwise ordered

Each $138.50

Champion

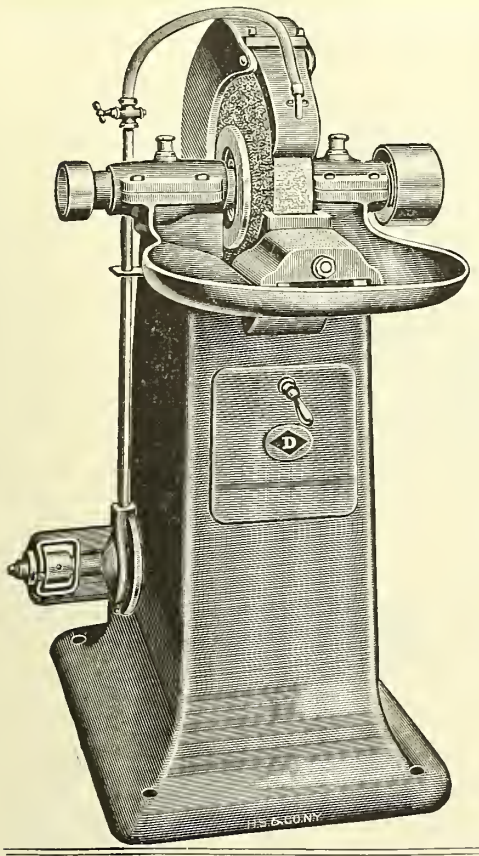


Universal Twist Drill Grinder No. 10. Is full universal and in every respect equal to the higher priced machines.

The holder is perfectly true, which insures the drills being ground sharp and true. Has double speed in cutting which means double life to the drill. Suitable for all machine shops, garages, blacksmith shops, etc. Weight 35 pounds.

For hand and power drive.

Each $15.00



Improved Tool Grinding Machines

The accompanying cut of the No. 2 Tool Grinding Machine shows the general features of the improved Nos. 1, 2 and 3 Machines. Particular attention is called to the pump, which is of new design, mechanically simple and powerful, with the least possible number of "wearing parts." These may be easily replaced, if necessary, at a trifling cost.

The machines are furnished with or without truing device, but we recommend the machines with truing device as being more economical, for the device is always ready for immediate use. The wheel may easily be kept in perfect condition, and the life of both machines and wheel is materially lengthened.

Grinding Machines, Nos. 1, 2, 3, 4 and 5 can be furnished motor driven. They are usually furnished driven by sprockets and chain which are entirely enclosed in a sheet iron guard, but belt connection can be supplied instead if desired.

The motor is fully enclosed to protect it from dust and dirt and is easily accessible, a great advantage if repairs are necessary. The machines are usually equipped with direct current motors for 110 volts or 220 volts as desired. But alternating current motors can be supplied. These grinders can also be supplied arranged for motor drive with sprocket on the wheel arbor but without a motor.

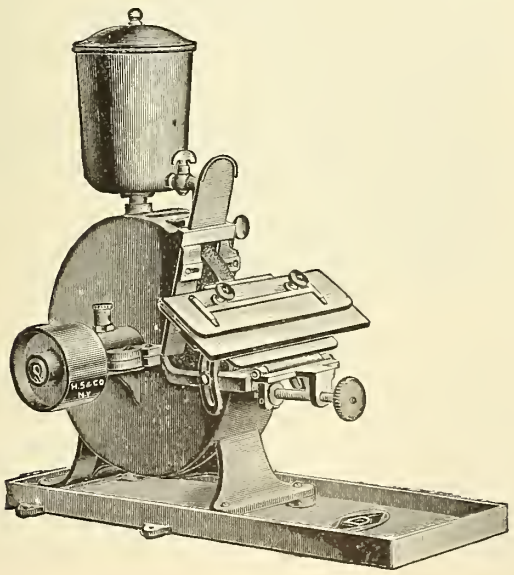
Prices quoted on receipt of specifications.

There is a single pulley on the spindle. The diameter of the spindle and the size of the bearings are larger than in earlier machines. The bearings are babbitted, and on the No. 2 Machine are provided with ring oilers.

In ordering, please state plainly whether the machine is wanted with or without truing device, as machine complete with truing device will be sent unless orherwise specified.

Specifications, numbers	1	2	3	4	5
Size of base, inches	18x25	22x32	24x35	28x45	28x51
Height from floor to center of spindle, inches	35	36	37	37	37
Length of bearings, each, inches	5	7	7		
Diameter of spindle in bearing, inches	1¼	1¾	1¾		
Size of pulley on spindle, inches	5x3½	6x3½	10x5	14x6	14x6
Weight with countershaft, pounds	435	760	1,000	1,900	2,100
Will take an emery wheel, inches	14x2x1½	20x2½x7	24x3½x10	30x4x16	36x4x21
Size of tight and loose pulleys on countershaft, inches	6x2¾	7x3¼	10x5¼	10x6	10x6
Size of driving wheel on countershaft, inches	12x2¾	14x3¼	16x5¼	18x6	18x6
Drop of hanger on countershaft, inches	8	10	10	12	12
Countershaft should run, revolutions	400	325	350	350	300
Complete with wheel, countershaft and truing device, each	$87.50	$137.50	$225.00	$275.00	$325.00
Complete with wheel and countershaft without truing device, each	80.00	120.00	212.50		

Bench Tool Grinding Machines



These machines are designed for sharpening machinists tools of all kinds, running emery wheels in water. They take up bench room of only 22x12 inches.

Set the grinder on bench or stand, slightly sloping to the front, the front edge of the base projecting over the bench so the water will run to the front (where a hole is drilled) into a bucket furnished with these machines.

No. 1 Bench Tool Grinding Machine takes an emery wheel 10x1x1 inch.

No. 2 Bench Tool Grinding Machine takes an emery wheel 10x2x1 inch.

These machines are furnished with tight and loose or single pulleys. In ordering please state which is desired.

The Adjustable Angle Rest with Traverse Table is made for use with this machine. It is convenient for grinding tools or any work where it is desired to produce a beveled surface. It will grind true and straight any length up to 9 inches. The work is moved to the wheel by a screw shown in front of the machine; any angle can be obtained that is desired. The traverse across the face of the emery wheel is by hand movement. The upper table, on which the work is held, slides on V-ways.

Adjustable Angle Rest with Traverse Table only	$15.00
Adjustable Angle Rest only	3.50

Price (including wheel)

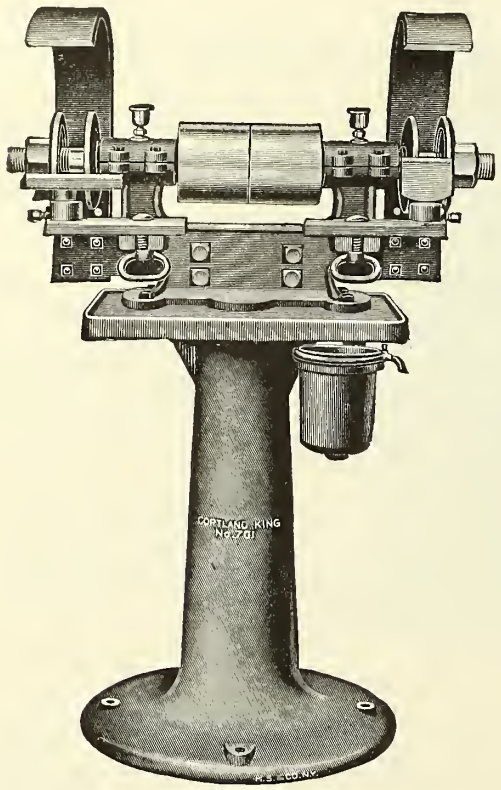
No. 1	Bench Tool Grinding Machine, with column and countershaft	$49.00
No. 2	Bench Tool Grinding Machine, with column and countershaft	54.00
No. 1	Bench Tool Grinding Machine, only	25.00
No. 2	Bench Tool Grinding Machine, only	30.00
Column only		12.00
Countershaft only		12.00

Weights

		Pounds
No. 1	Bench Tool Grinding Machine, with column and countershaft	240
No. 2	Bench Tool Grinding Machine, with column and countershaft	245
No. 1	Bench Tool Grinding Machine, only	70
No. 2	Bench Tool Grinding Machine, only	75

Grinding Machines

Cortland King



No. 701

Will carry two wheels 18x2 inches or smaller. Regularly equipped with cone pulley (single tight pulley or tight and loose pulleys if desired), two adjustable rests, babbitted bearings, brass oil cups, tool shelf, water pot and hot rolled-steel wheel-guards.

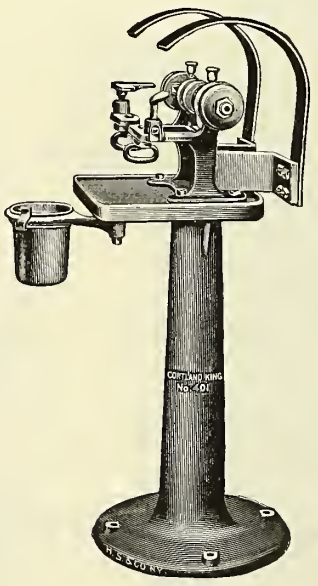
Height from Base to Center of Arbor, inches	10
Distance between Wheels, inches	21
Length of Bearings, inches	4¾
Length of Arbor, inches	31
Diameter of Arbor in Bearings, inches	1⅝
Diameter of Arbor between Flanges, inches	1½
Size of Cone Pulley, inches	8½x4⅛x5⅛
Size of Wheel Guards, inches	½x4
Height of Column, inches	25
Diameter of Column Base, inches	21
Weight of Column, pounds	125
Size of Tool-Shelf, inches	16x20
Total Weight of Machine, pounds	365
Each	$47.00

No. 601

Same general design as No. 701, but lighter in construction.

Including Column, Tool Shelf, Water Pot, and Wheel Guards. Will carry two wheels 14x2 inches or smaller. Equipped with adjustable babbitted bearings, two adjustable rests, brass oil cups, and cone pulley. Single tight pulley if desired.

Wheel Guards, inches	3½x½
Weight, complete, pounds	290
Height from Floor to Center of Arbor, inches	38
Length of Bearings, inches	4½
Distance between Wheels, inches	18
Length of Arbor, inches	27
Diameter of Arbor in Bearings, inches	1⅜
Diameter of Arbor between Flanges, inches	1¼
Size of Cone Pulley, inches	4½x3½x4
Tool Shelf, inches	14x18
Height of Column, 28 inches, weight, pounds	100
Base of Column, diameter, inches	17
Each	$38.00



No. 401

Will carry two wheels 10x1½ inches or smaller. Regularly equipped with tight and loose pulleys (single tight pulley if desired), two adjustable rests, babbitted bearings. (Note the four set screws to each bearing), brass oil cups, tool shelf, water pot and hot rolled steel wheel-guards.

Height from Base to Center of Arbor, inches	7¼
Distance between Wheels, inches	12
Length of Bearings, inches	3
Length of Arbor, inches	18½
Diameter of Arbor in Bearings, inches	⅞
Diameter of Arbor between Flanges, inches	¾
Size of Pulleys, inches	2¾x2½
Size of Wheel Guards, inches	⅜x3
Height of Column, inches	29
Diameter of Column Base, inches	16
Weight of Column, pounds	70
Size of Tool Shelf, inches	12x14
Total Weight of Machine, pounds	145
Each	$26.00

No. 501

Is the same general design as No. 401, but somewhat heavier in construction.

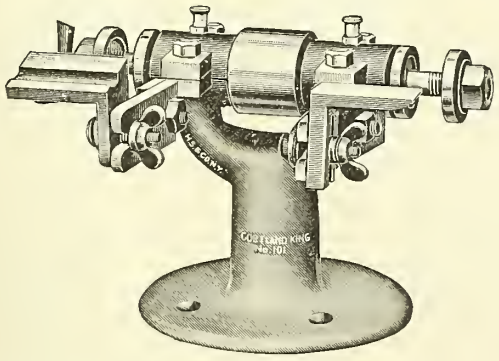
Will carry two wheels, 12x2 inches or smaller. Regularly equipped with tight and loose pulleys (single tight pulley if desired), two adjustable rests, babbitted bearings, brass oil cups, tool shelf, water pot and hot rolled-steel wheel-guards.

Height from Base to Center of Arbor, inches	8½
Distance between Wheels, inches	15
Length of Bearings, inches	4
Length of Arbor, inches	23
Diameter of Arbor in Bearings, inches	1⅛
Diameter of Arbor between Flanges, inches	1
Size of Pulleys, inches	3½x2⅝
Size of Wheel Guards, inches	½x3
Height of Column, inches	29
Diameter of Column Base, inches	15½
Weight of Column, pounds	70
Size of Tool Shelf, inches	12x14
Total Weight of Machine, pounds	165
Each	$29.00

The prices quoted on these machines are exclusive of wheels. For prices on wheels see page 354

Grinding Machines

Cortland King

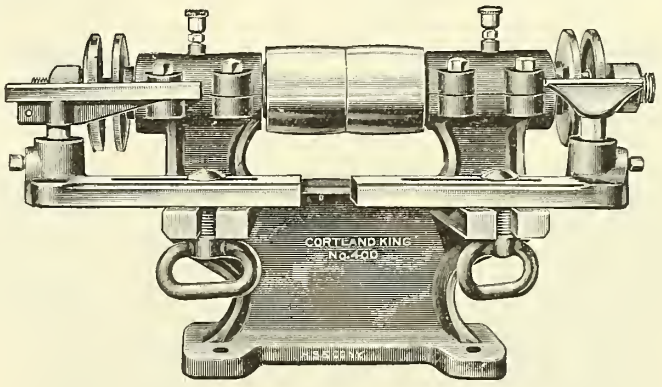


No. 101

Is furnished with Tool Rests, with Chisel Holder, Drill and Shear Grinding Guides.

For Jewelers, Dentists, Repair Shops, or any other light grinding. Will carry two wheels 6x1-inch or smaller. A Taper Spindle can be instantly attached for buffing and polishing work. Equipped with adjustable babbitted bearings, and nickel-plated spring cap oil cups.

Height from Base to Center of Arbor, inches	5½
Distance between Wheels, inches	6
Length of Bearings, inches	1⅞
Length of Arbor, inches	9½
Diameter of Arbor in Bearings, inch	9/16
Diameter of Arbor between Flanges, inch	½
Size of Pulley, inches	1 13/16 x 1½
Weight, pounds	10
Each	$6.25
No. 100 Same as 101, except without Tool Rests	5.00

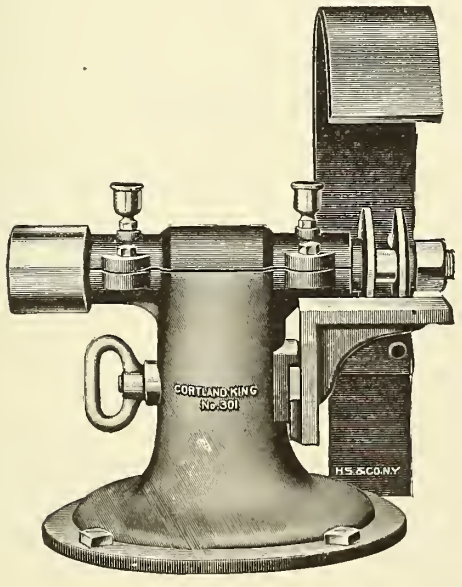


No. 400

The above cut shows the style of our Nos. 400, 500, 600 and 700 bench type Cortland King Grinders. The variation in size may be seen by referring to the following:

	No. 400	No. 500	No. 600 With cone pulley	No. 700
Distance between Wheels, inches	12	15	18	21
Length of Bearings, inches	3	4	4½	4¾
Length of Arbor, inches	18½	23	27	31
Diameter of Arbor in Bearings, inches	⅞	1⅛	1⅜	1⅝
Diameter of Arbor between Flanges, inches	¾	1	1¼	1½
Size of Tight and Loose Pulleys, inches	2¾ x 2½	3½ x 2⅝	3⅞ x 3½	5 x 4½
Will carry two Wheels, inches	10 x 1½	12 x 2	14 x 2	18 x 2
Weight, pounds	26	55	103	130
Each	$10.00	$12.50	$17.00	$21.00

No. 301



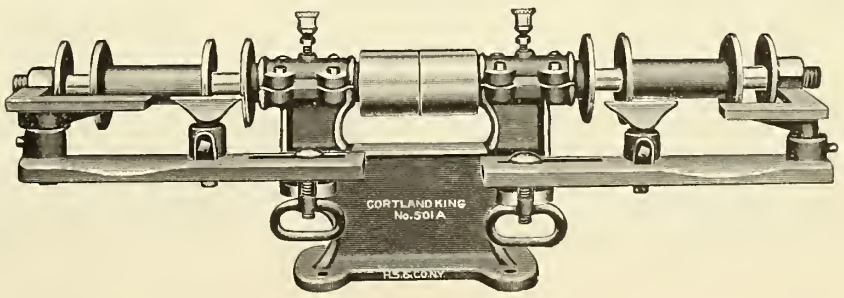
For Blacksmiths, Carpenters, Pattern Shops, Saw-gumming and Wood-working plants. An exceptionally rigid, substantial machine. Adjustable rest, babbitted bearings, brass oil cups.

Height from Base to Center of Arbor, inches	9
Length of Bearings, inches	3
Length of Arbor, inches	14¾
Diameter of Arbor in Bearings, inch	⅞
Diameter of Arbor between Flanges, inch	1
Size of Pulley, inches	3 x 2½
Size of Guards, inches	⅜ x 2½
Diameter of Base, inches	12
Weight, pounds	54
Each	$11.50

No. 300

Same as 301, without Wheel Guards, weight 44 pounds 8.00

No. 501A



Carries four wheels 10x1½ inches. Length of shaft, 35 inches. Distance between inner wheels, 15 inches. Distance between inner and outer wheels, 5 inches. Weight, 72 pounds.

Each $15.50

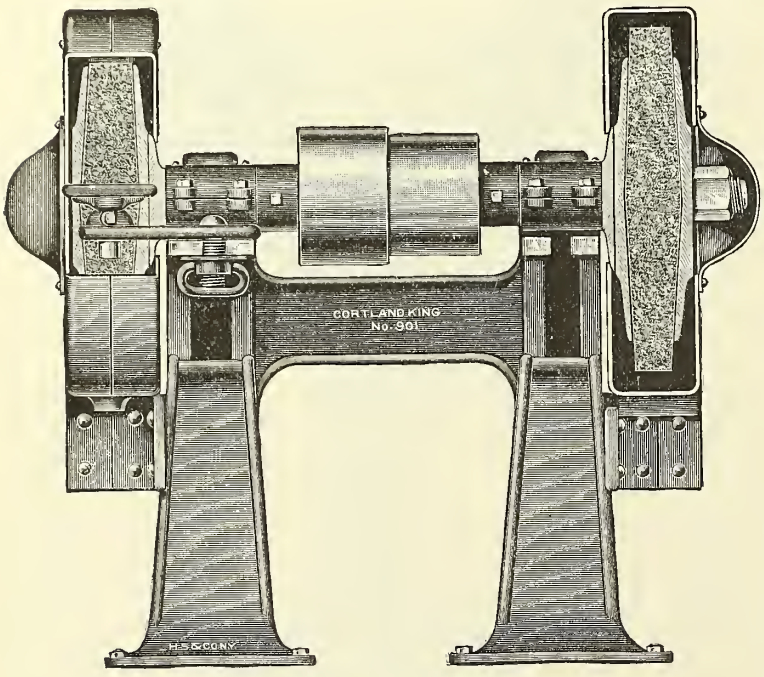
With column, tool shelf, water pot and wheel guards.

Each $32.00

The prices quoted on these machines are exclusive of wheels. For prices on wheels see pages 354

Grinding Machines

Cortland King



No. 901

Designed and built with special attention to strength and safety, and for heavy and fast work. Will carry two wheels 24x4 inches or smaller. Equipped with cone pulley, adjustable frictionless metal bearings (chain oiled), extra heavy universal tool rests, malleable iron safety wheel coverings, and two sets safety flanges.

Entire side of safety hood removed by taking off six nuts when wheel can be dismounted.

Height from Floor to Center of Arbor, inches	33
Distance between Wheels, inches	34
Length of Bearings, inches	9½
Length of Arbor, inches	50
Diameter of Arbor in Bearings, inches	2¼
Diameter of Arbor between Flanges, inches	2
Size of Cone Pulley, inches	8x9x6½
Size of Stationary Flanges, inches	10x1
Size of Safety Flanges, inches	20x1, 14x1
Floor Space, inches	54x32
Weight, pounds	1,750
Each	$260.00

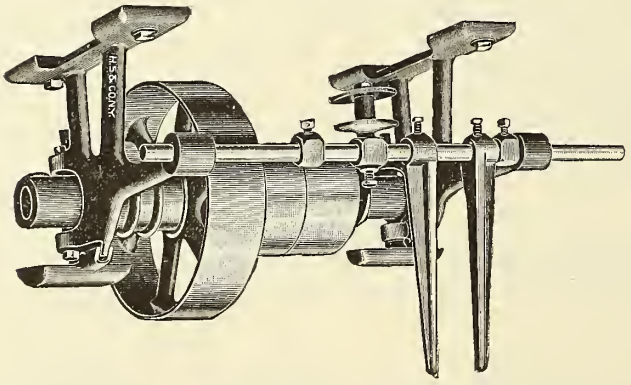
No. 900

Same general design as No. 901, but lighter in construction. Will carry two wheels 24x4 inches or smaller. Equipped with cone pulley, adjustable babbitted bearings (chain oiled) extra heavy universal tool rests.

Height from Floor to Center of Arbor, inches	33
Distance between Wheels, inches	34
Length of Bearings, inches	9½
Length of Arbor, inches	50
Diameter of Arbor in Bearings, inches	2¼
Diameter of Arbor between Flanges, inches	2
Size of Cone Pulley, inches	8x9x6½
Size of Flanges, inches	10x1
Floor Space, inches	50x30
Weight, pounds	1,100
Each	$160.00

Countershafts for Grinding Machines

Cortland King



Dimensions, Style 4 for No. 900

Tight and Loose Pulleys, inches	8x7¼
Driving Pulleys, inches	17x18x6¼
Drop of Hangers, inches	11
Diameter of Shaft, inches	1¾
Weight, pounds	317
Each	$48.00

Dimensions, Style 1 for Nos. 100, 101, 300, 301

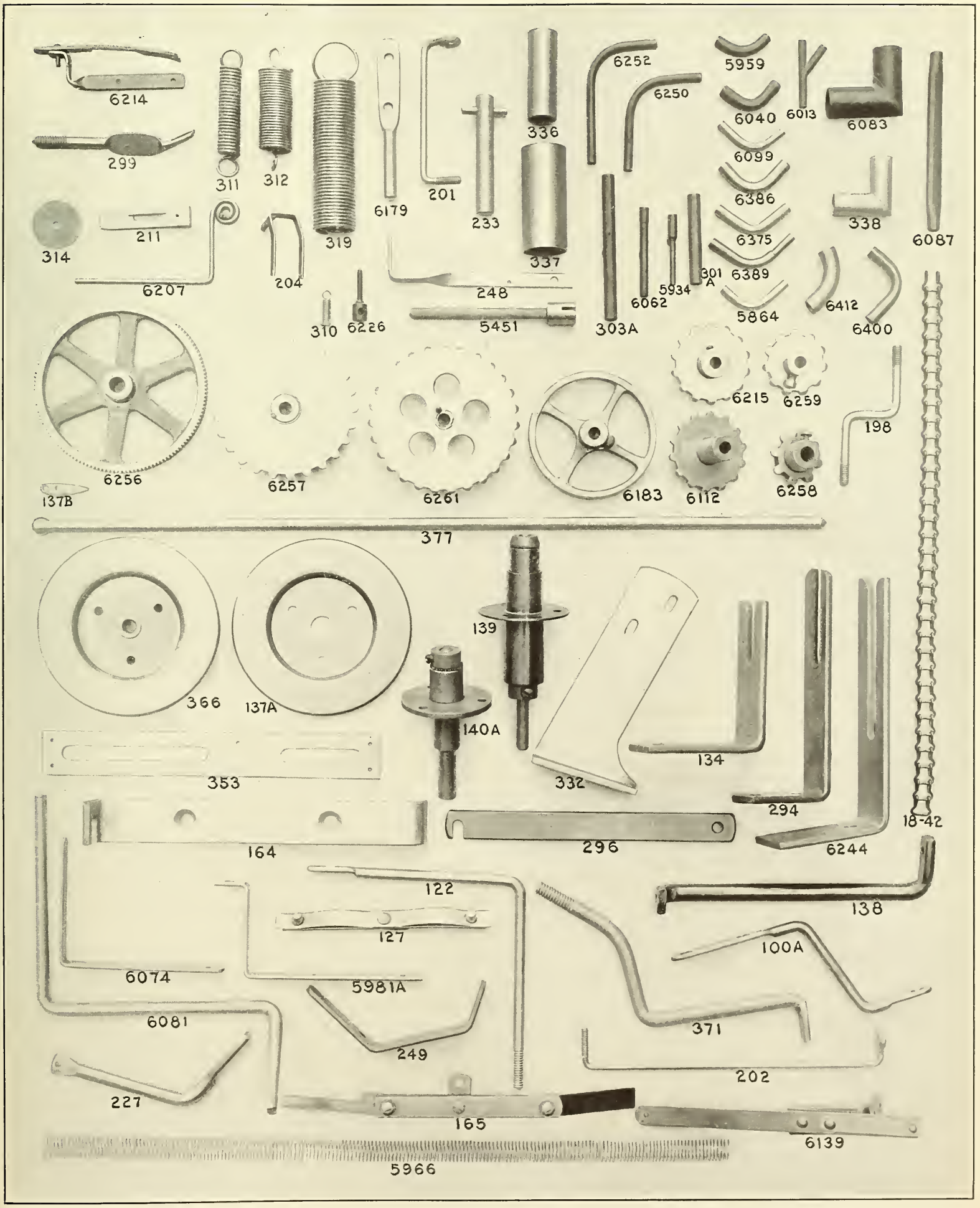
Tight and Loose Pulleys, inches	4x2¾
Driving Pulleys, inches	8x1¾
Drop of Hangers, inches	5
Diameter of Shaft, inch	⅞
Weight, pounds	56
Each	$12.00

Dimensions, Style 2 for Nos. 400, 401, 500, 501, 501 A

Tight and Loose Pulleys, inches	5x3¾
Driving Pulley, inches	10x2¾
Drop of Hangers, inches	7
Diameter of Shaft, inches	1¼
Weight, pounds	86
Each	$13.50

Dimensions, Style 3 for Nos. 600, 601, 700, 701

Tight and Loose Pulleys, inches	6x5¼
Driving Pulleys, inches	13x14x4¼
Drop of Hangers, inches	9
Diameter of Shaft, inches	1 7/16
Weight, pounds	118
Each	$28.00



See following page.

Also facing pages 313, 857 and 888

Let us quote you on Supplies and Special Parts

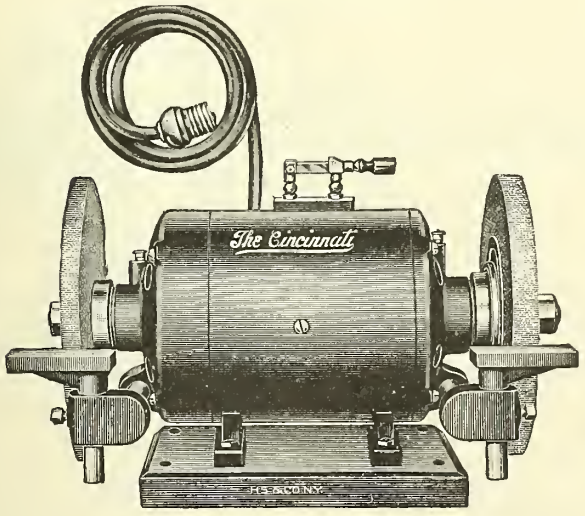
See preceding page.

Also pages facing 313, 857 and 888

Electric Grinding Machines

The Cincinnati

Two-Wheel Bench



Direct and Alternating Current

This Portable Bench Grinder is arranged to carry one wheel at each end of the spindle.

It may be used for grinding, buffing or polishing, as any kind of wheel can be used. Under immediate control of the operator by means of a switch on the motor. Sent out as above illustrated, including two emery wheels, one medium and one hard grade.

Adjustable cone bearings to take up the wear.

Fully enclosed and dirt and dust proof.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

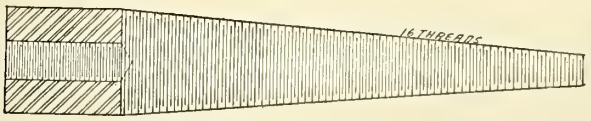
Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
BB	$35.00	¼	18	4⅜x10	4200	4½x⅜x½	$40.00	BBA
BH	48.00	½	45	6x13½	2500	8 x¾x⅝	62.00	BHA

Single Wheel Bench Grinder

Is the same in general design as above two-wheel grinder.

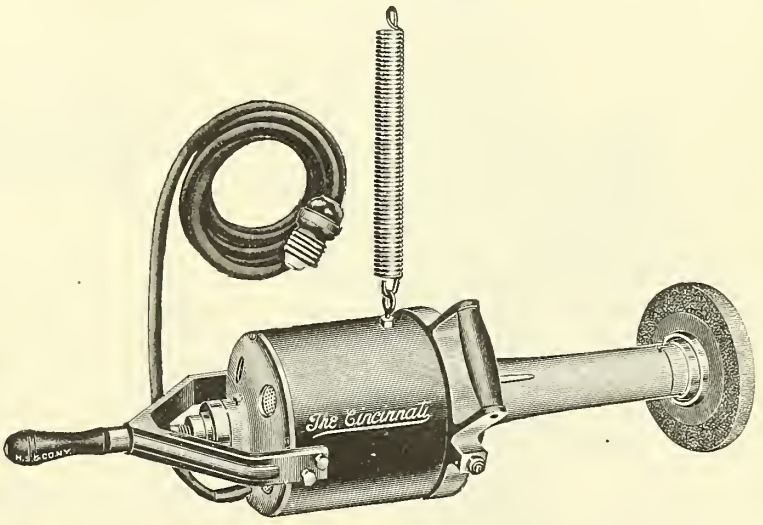
Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
BW	$30.00	¼	15	4⅜x10	4200	4½x⅜x½	$36.00	BWA

Extension Tapered Buffing Spindles



	Each
4 inches long for ¼ H. P., type BB or BW	$3.00
6 to 8 inches long for ½ H. P., type BH	5.00
Twist Drill Grinding Attachment, each	5.00

Aerial with Extension



Direct and Alternating Current

Above Aerial Grinder has shaft extended 12 inches for internal and external work. Longer or shorter shaft can be furnished as required. The extension is detachable, permitting use for shallow work as well as deep grinding. Different size wheels can be used.

The Grinder can be carried to the work or suspended anywhere as any length cord can be used. Furnished complete as illustrated. Power from any incandescent lamp socket.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
AE	$64.00	½	40	6 x21	2500	4x¾x⅝	$77.00	AEA
AS	80.00	1	75	7½x22	2000	5x1 x¾	98.00	ASA

General Description of Motors Supplied with the Cincinnati Grinders

The Motor Windings are of the highest grade material and fully enclosed and protected. Dust Hoods are fitted on the spindle to protect the bearings and windings from emery, dust and dirt.

The Bearings are of special bronze, cone-shaped and adjustable to wear by means of a threaded nut in the motor caps. No part of the motor housing is used as a bearing. The end play is taken up by adjusting the round nut on rear end of spindle.

Air-Cooled by means of a fan on the Armature Shaft, which forces a continuous circulation of air through the holes of the end cap.

The Wheel can be run in either direction by reversing the two leads on the body of the motor.

The Shank is of steel and is fitted to the V-slide. It has a round end permitting the motor to be set at any angle. Different size shanks can be used.

The Motor has a 3-inch horizontal travel through the V-slide by means of a worm, and is fitted with a gib to take up the wear.

The Feed is obtained through our specially designed handle, the latter being placed at an angle, giving the operator free-hand room.

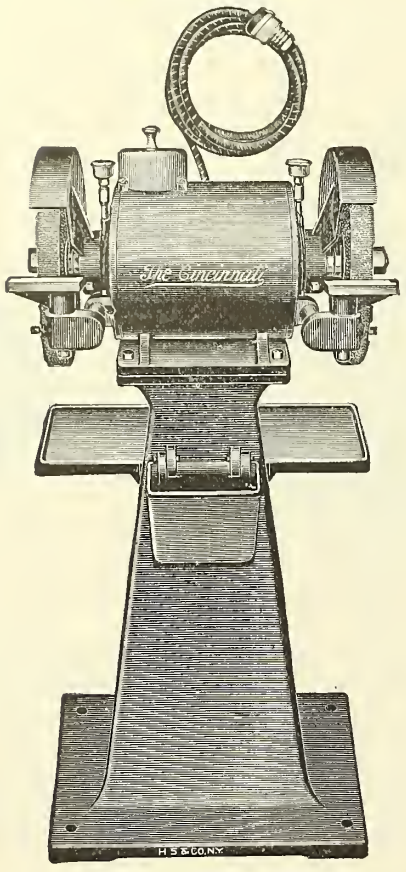
The Brush-Holders are enclosed and fully protected. They are easily accessible and brushes can be readily renewed when necessary.

Oil-Cups are provided for the spindle bearings.

Electric Grinding Machines

The Cincinnati

Two-Wheel Floor



Direct and Alternating Current

Heavy Duty Bench Grinder mounted on a pedestal and used as a Floor Grinder. The pedestal is fitted with water pot and tool pans. Especially built for constant use it is rapidly taking the place of belted machines. It is dirt and dust proof.

Can be furnished equipped with wet grinding attachment at one or both ends of the spindle.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
FO	$85.00	1	175	7½x19½	2000	10x1 x ¾	$105.00	FOA
FT	118.00	2	290	11x21	1600	12x1½x1	143.00	*FTA
FC	148.00	3	390	11x22	1400	14x2 x1	170.00	*FCA

*Made in two or three phase only.

Heavy Duty Bench

Direct and Alternating Current

This is the Portable Heavy Duty Bench Grinder illustrated above, but without pedestal, and which we can safely recommend for heavy grinding of all kinds; also for buffing and polishing. The motor is fully enclosed and equipped with two detachable tool rests and wheel guard. The bearings are adjustable to wear.

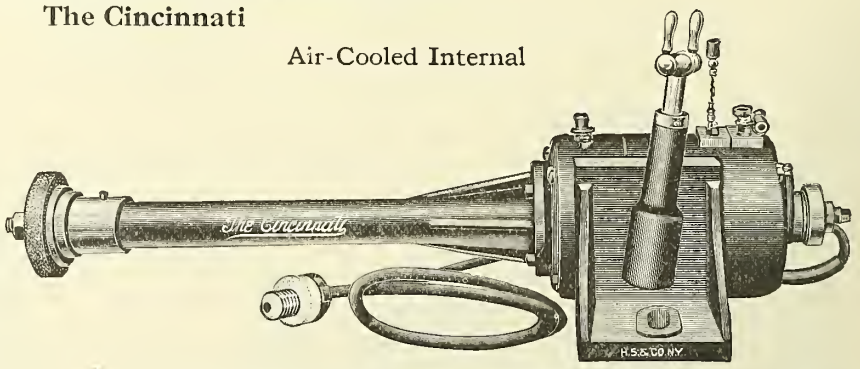
We can furnish this Grinder with wet grinding attachment at one or both ends of the spindle.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
BO	$70.00	1	80	7½x19½	2000	10x1 x ¾	$95.00	BOA
BT	100.00	2	175	11x21	1600	12x1½x1	125.00	*BTA
BL	128.00	3	225	11x22	1400	14x2 x1	148.00	*BLA

*Made in two and three phase only.

Air-Cooled Internal



Type of Internal Grinder for finishing Air, Steam or Gas Engine Cylinders. Also for dies and cylindrical work of all kinds. This Tool is of the same general design as Type T Grinder, shown below, having a vertical adjustment of about 4 inches and is used in the same manner.

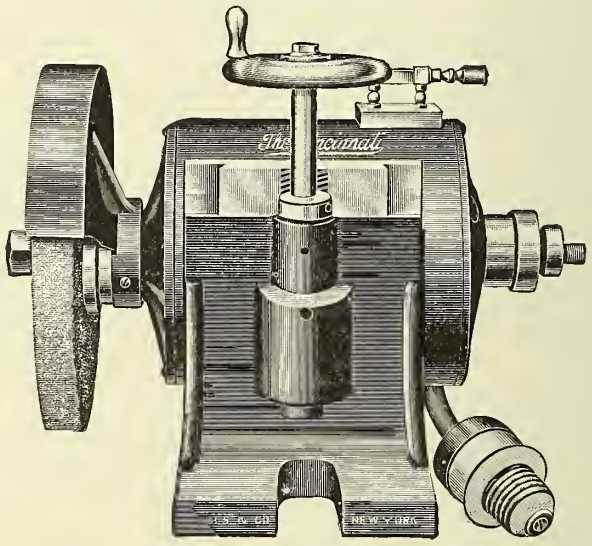
The standard size of extension spindle is 12 inches, but shorter or longer may be furnished if required. This extension is detachable at the body of the motor and the Grinder can be used for external work. Larger size wheels can be attached to standard spindle if desired.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
V	$84.00	½	59	6 x21	{2 Speeds 2600-3600}	8x ¾x⅝ 4x ¾x⅝	$98.00	VA
VV	90.00	1	95	7½x22	2000	5x1 x¾	104.00	VVA

Two-speed machines furnished in ½ H. P., Direct Current only.

Air-Cooled Parallel



Direct and Alternating Current

This Portable Heavy Duty Parallel Grinder is especially adapted for grinding spindles, rolls, journals, bushings, crank shafts, connecting rods and parallel work of all kinds.

The angle plate of Grinder tool bolted on a lathe, or can be used in a planer, boring mill or other machine tool. It has a vertical adjustment of 4 inches to 6 inches, according to size. The motor is fully enclosed and dust-proof. Bearings are adjustable to wear. One H. P. and over furnished with wheel-guard.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

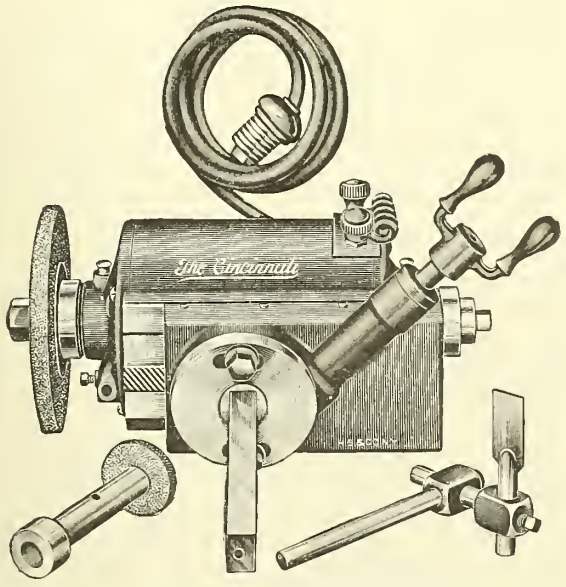
Type Direct Current	Each	H.P.	Weight Pounds	Motor Dimensions	Speed R.P.M.	Wheels Included	Each	Type Alternating Current
T	$65.00	½	45	6 x12½	2600	8x ¾x ⅝	$77.00	TA
TT	80.00	1	80	7½x16	2000	10x1 x ¾	102.00	TTA
TV	126.00	2	175	11 x19	1600	12x1½x1	135.00	*TVA
TF	150.00	3	220	11 x21	1400	14x2 x1	165.00	*TFA

*Made in two and three phase only.

For General Description of Motors, see preceding page

Electric Portable Tool Post Grinders

The Cincinnati
With Feed



Direct and Alternating Current

This Portable Electrical Tool Post Grinder has horizontal free hand feed.

Especially adapted for grinding Lathe Centers, Cutters, Reamers, Dies, Rolls, etc., and for Surface, Parallel and Internal Grinding jobs of all kinds. Used on Lathe, Planer, Boring Mill, Milling Machine and Shaper.

They are sent out with all attachments as illustrated.

Order by Type, Current and Volts
If Alternating, Give Cycles and Phase

Type Direct Current	Each	H. P.	Weight Pounds	Motor Dimensions	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
S	$37.00	¼	20	4½x10½	4200	6x⅜x½	$44.00	SA
SS	60.00	½	45	6 x13	2800	8x½x⅝	72.00	SSA

Type S: Size extension mandrel 4½ inches long. Wheel included, 1½x⅜x⅜ inches bore.

Type SS: Size extension mandrel 5½ inches long. Wheel included, 2x½x½ inches bore.

Made in larger sizes on order. Prices on application.

Without Feed
Direct and Alternating Current

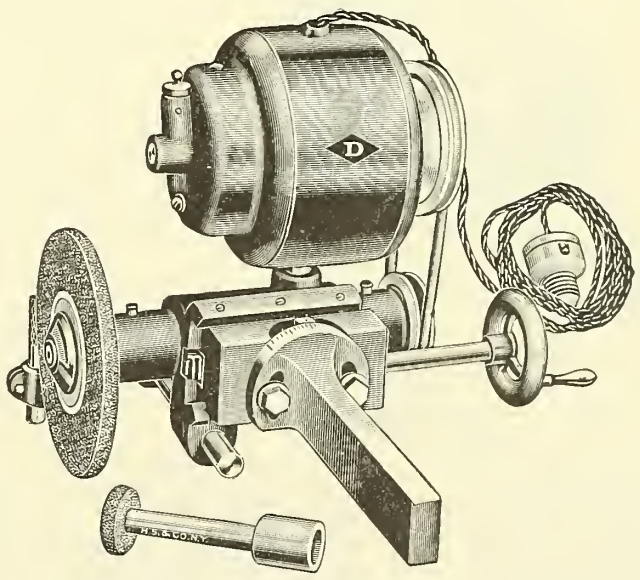
Type P Tool Post Grinder is practically the same as type S except that it has no horizontal feed. The latter is not necessary on work where no feed is required, or if the Grinder is used on a lathe with compound rest or machine tool with feed.

This type Grinder is extremely rigid and particularly adapted for use on work where absolute rigidity is required. Adjustable bearings to take up the wear. Tool Rest and Extension Mandrel included with Types P and PH only.

Order by Type, Current and Volts
If Alternating, Give Cycles and Phase

Type Direct Current	Each	Weight Pounds	Motor Dimensions	H. P.	Speed R. P. M.	Wheels Included	Each	Type Alternating Current
P	$30.00	16	4½x10½	¼	4200	6x ⅜x ½	$35.00	PA
PH	52.00	35	6x13	½	2800	8x ½x ⅝	62.00	PHA
PO	70.00	75	7½x15	1	2000	10x1 x ¾	85.00	POA
PT	110.00	110	11x18	2	1600	12x1½x1	125.00	PTA

Diamond
With Feed



No. 10 and No. 12 Grinding Attachments are for use in the tool post of a lathe, planer, shaper, or milling machine. They will grind cutters, reamers, dies, rolls, lathe centers, etc., and will do surface or internal grinding. Each machine has an independent feed of over 3 inches by worm and hand wheel, making it convenient for use in lathes without a compound rest. The attachment can be set at any angle for grinding either straight or taper work. The tool post shank is graduated to show different angles of inclination of the spindle and wheel. The bronze bearings of the grinding spindle are adjustable for wear and protected from dust or grit. Each machine has a universal work rest adjustable in all directions and an extension spindle for internal grinding.

One of the best features of these machines is the mounting of the motor above the grinding wheel instead of on the same spindle. This arrangement makes it possible to run the motor and the emery wheel at separate speeds. Moreover, two grooved pulleys of different sizes are provided for the motor, and a substitution of one for the other changes the speed of the wheel. Thus, small wheels for internal grinding can be run fast, and large wheels at a slower rate. These advantages are lost when the wheel is mounted directly on the motor shaft.

We are able to furnish these attachments for use with alternating current as well as with direct current. As an alternating current motor must be run at a moderate speed, it is not practical to mount the grinding wheel directly on the motor shaft, and our design becomes especially valuable.

We use a standard type of motor which is easy to repair if it should become necessary.

Style	Weight	Code Word	Price
No. 10 American Grinding Attachment, with Direct Current Motor, 110 volts..	30	Paragon	$50.00
Alternating Current Motor, 110 volts..	35	Paragona	60.00
No. 12 American Grinding Attachment, with Direct Current Motor, 110 volts..	35	Patron	62.00
Alternating Current Motor, 110 volts..	45	Patrona	75.00

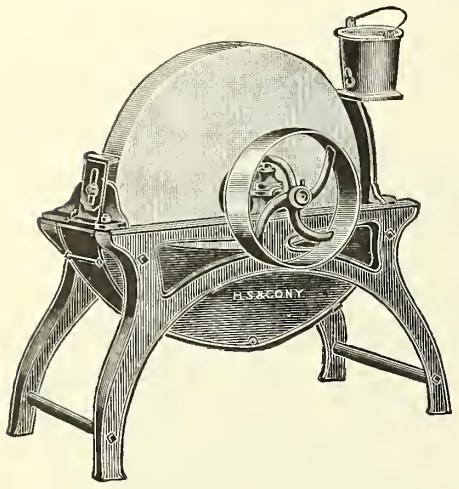
Prices with 220-volt motor, $2.00 extra.

We must always be advised as to the voltage and the frequency of the current if alternating.

A special price will be charged if the alternating current motor is not for a 60-cycle, single-phase current.

Iron Frame Grindstones

Hoppen



The frame of the Hoppen Grindstone is designed like a pyramid with all the weight hung central and low—no material overhanging floor bearing. This insures safe transportation as there is no chance of the stone tipping under the roughest handling.

All drippings drain into trough.

The stone is firmly held by powerful flanges and nuts on a shaft that is turned from a steel bar and hung true.

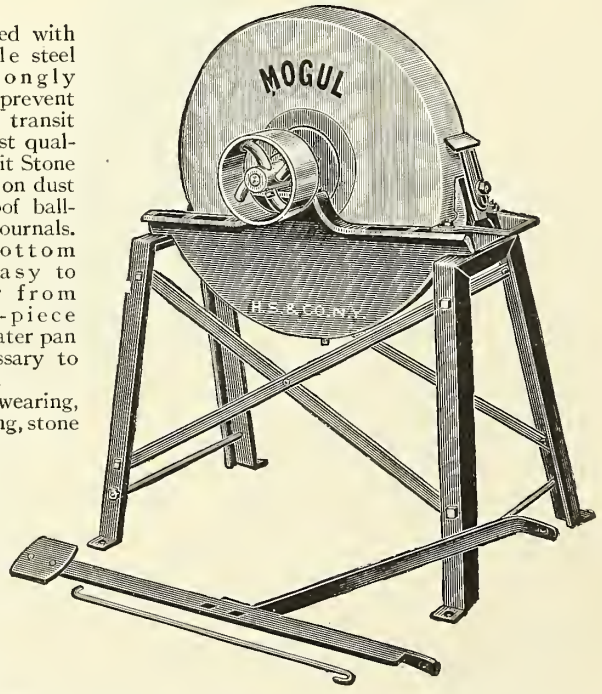
It spins lightly on self-oiling, self-aligning journals; thus little power is required.

The foot-power frame has swivel treadle for right or left foot.

Number			With Stone Each	Without Stone Each
10A	Frame with Pulley.	Stone, 24x2½ inches	$18.25	$15.00
10B	Frame with Treadle.	Stone 24x2½ inches	18.25	15.00
10C	Frame with Treadle and Pulley.	Stone, 24x2½ inches	20.45	17.20
11	Frame with Pulley.	Stone, 24x3 inches	19.60	15.00
12	Frame with Pulley.	Stone, 27x3½ inches	31.25	24.60
13	Frame with Pulley.	Stone, 30x4 inches	34.60	26.96
14	Frame with Pulley.	Stone, 36x5 inches	59.25	45.60

	Each
Shield, Pan and Bucket with Faucet, for Nos. 10 and 11	$1.70
Shield, Pan and Bucket with Faucet, for No. 12	2.75
Shield, Pan and Bucket with Faucet, for No. 13	2.80
Shield, Pan and Bucket with Faucet, for No. 14	3.75
Hand Crank, for No. 10 or No. 11	.75

Mogul No. 07



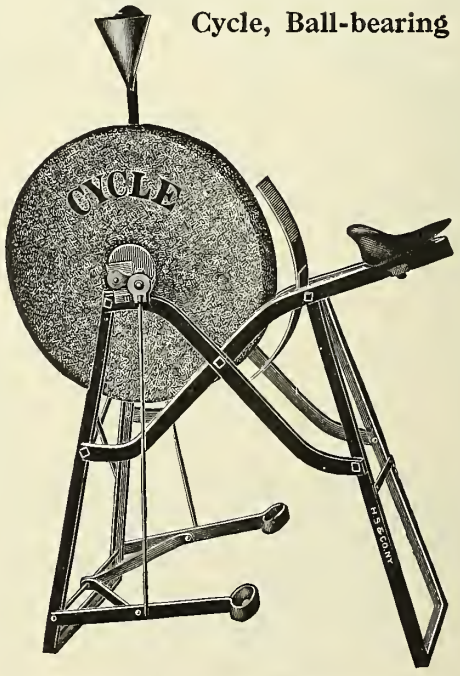
Equipped with heavy angle steel frame strongly braced to prevent breakage in transit or use. Best quality Berea Grit Stone is mounted on dust and grit proof ball-bearing journals. Plug at bottom makes it easy to drain water from heavy one-piece gray iron water pan—not necessary to remove pan.

Long wearing, quick cutting, stone runs from 22 to 24 inches in diameter, 3 to 3½ inches thick. Pulley 6 inches in diameter, with 3-inch face.

Tool rests are adjustable with deep tray draining into water pan—a feature not found in other power stones.

	Each
Without foot power attachment	$12.00
With foot power attachment	13.50

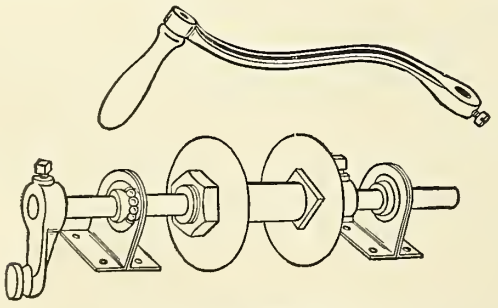
Cycle, Ball-bearing



Stones 19 to 22 inches, 2 to 2¼ inches thick. Best quality Berea grit. Front and rear legs, each formed of one piece heavy steel angle. Upper frame is constructed to form a brace for legs, making a most rigid frame. Weight 85 pounds.

No. 300 Each	$6.00
Fixtures only, per set	1.00

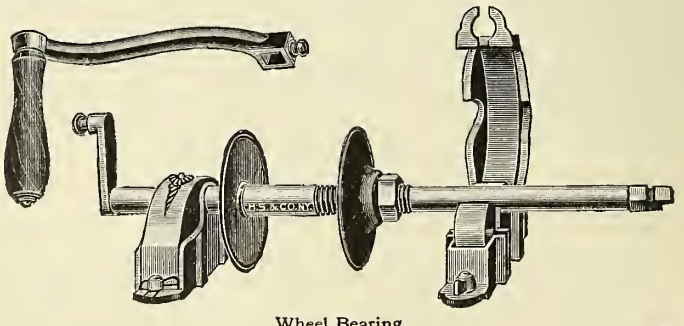
Grindstone Fixtures



No. 01 Ball Bearing

Can be applied to all ordinary frames. Ball-bearing journals adjustable on shaft. Suitable for stones 2 to 3 inches thick.

Each $1.50

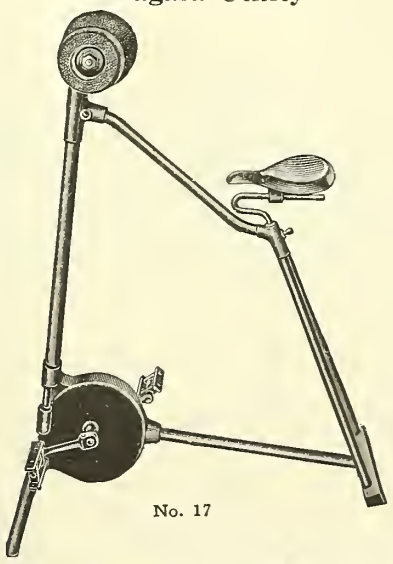


Wheel Bearing

		Set
No. 41	Shaft, 19 inches long	$ .80
No. 42	Shaft, 17 inches long	.75

Foot Power Grinders

Niagara Utility

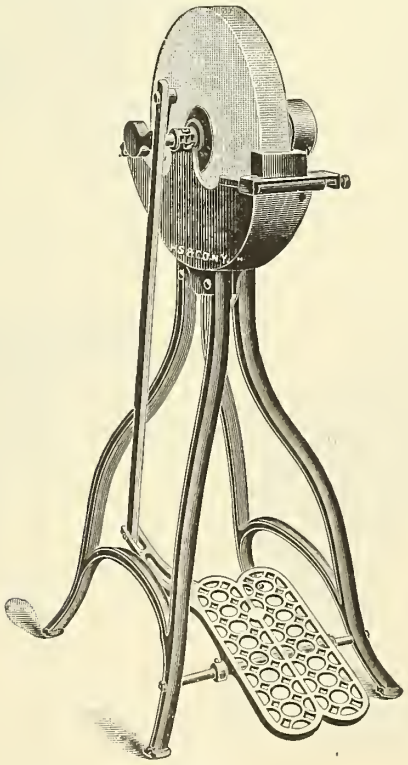


No. 17

One of the most serviceable and practical foot-power machines ever developed is the new No. 17 Niagara Utility Grinder as illustrated herewith. In its construction several important features have been embodied, which places this grinder in a class by itself. Strength, durability and simplicity are the main points which have been taken into consideration, the aim being to give the maximum amount of power for the least energy. The frame is made of strong and durable tubing, which insures rigidity under all conditions. The pedal drive is easy running and practically noiseless, while the gears are accurately machined and all parts are carefully assembled. The machine is equipped with two Carborundum grinding wheels, 7 inches in diameter, one in coarse grit and the other in fine grit. Both wheels can be used for general grinding.

Weight, packed 100 pounds, each $20.00

H. S. & Co.



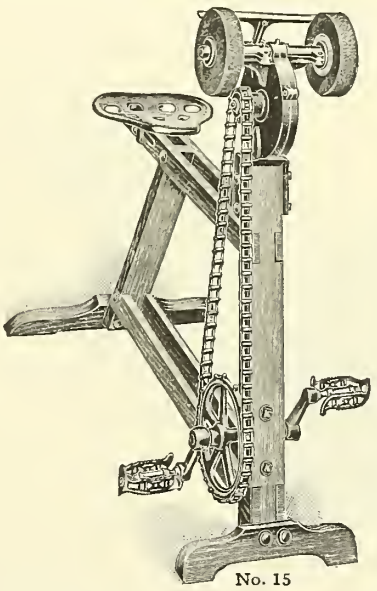
No. 4

The stone is 14 inches in diameter and 1¾ inches wide. It is a well built machine, and will be found very useful for general sharpening.

Height over all, 39 inches.

No. 4 Each $8.00
No. 4 4x2-inch Pulley, for power attachment, each ..... .65

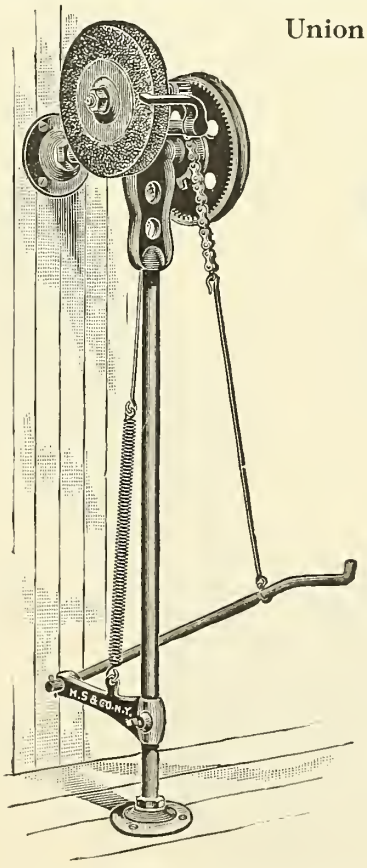
Greyhound



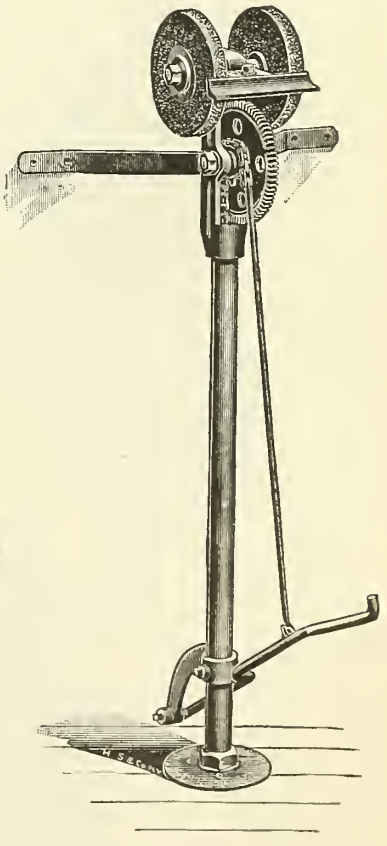
No. 15

	Each
With coarse and fine wheels, 6½x1x1	$15.00
Saw Gumming Wheel with collar attachment	.60
Beveled wheel for mower knives on special arbor	1.25
Extra corundum wheels, coarse or fine	1.50

Union



No. 1



No. 2

Gear driven. Milled pinion. New positive ball clutch. Cone bearings. Machine cut gears. 3000 to 4000 R. P. M.

Number	1	1 A	2	2 A
Number of wheels	1	1	2	2
Diameter of wheels, inches	6	8	6	8
Thickness of wheels, inches	¾	1¼	¾	1¼
Height from floor, inches	42	42	41½	42½
Weight, boxed, pounds	23	26	30	35
Each	$4.50	5.00	6.50	7.50

Tool Grinders

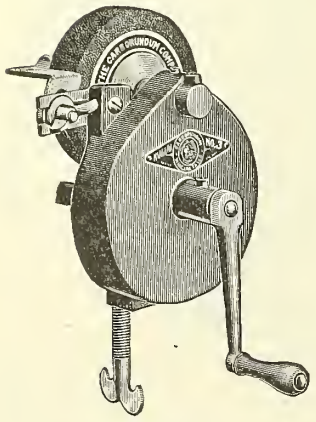
Carborundum Niagara

Every part from castings to nuts is accurately made, perfectly fitted. The gear case is made of the best grade of grey iron, the two sections being ground to a fit, making the case absolutely oil tight. The gears are accurately cut, they run smoothly and practically noiseless. The handle and thumb-screw clamp are made of malleable iron to withstand strains, and all small parts are heavily nickel-plated.

Every machine is fitted with a Carborundum wheel, the fastest, coolest cutting of all wheels for general grinding purposes.

Number	Wheel Diameter	Wheel Thickness	Weight Packed Pounds	Each
1	4	1	10	$3.00
2	5	1	11½	4.00
3	6	1	14½	6.00
4	7½	1¼	26	8.00
10	5	1½	13	7.00
28	7	1¼	36	12.50

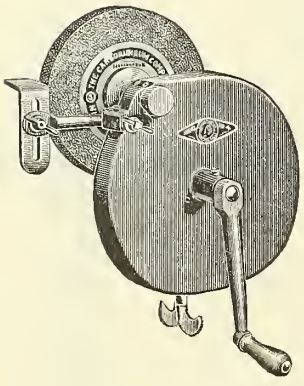
No. 19	Tool grinding guide	$ .50
No. 20	Foot power attachment for No. 3 Grinder	1.50
No. 21	Foot power attachment for No. 4 Grinder	1.50
No. 23	Twist drill attachment	2.00



Nos. 1, 2 and 3

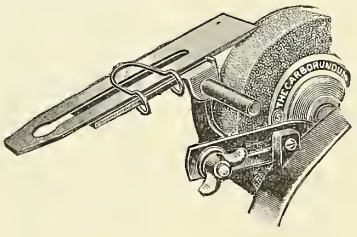


Nos. 20 and 21 Foot power attachment, fitted for Grinders Nos. 3 and 4, readily adjustable to several heights



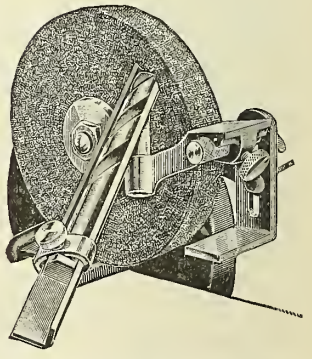
No. 4

Listed above



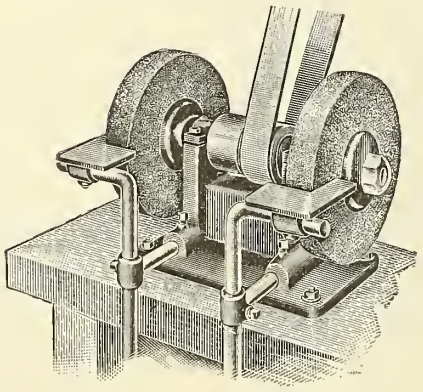
No. 19 Tool Grinding Guide

Listed above



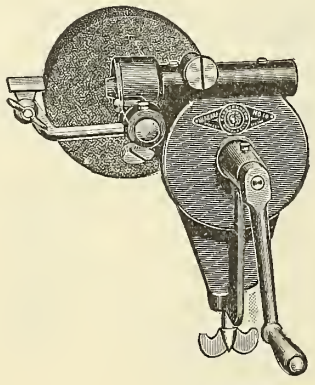
No. 23 Twist Drill Attachment, made for Grinders Nos. 3 and 4

Listed above

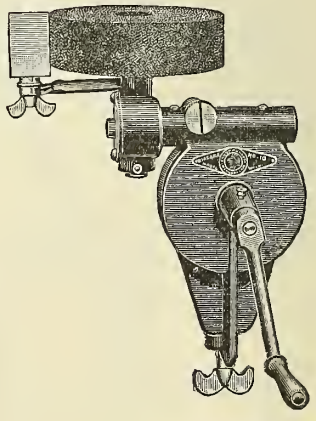


No. 28 Grinder Head

Splendid for the small shop where power is available. It is sturdy and every part is accurately machined and assembled. The idle pulley is one of the features of this compact grinder head. Bearings are lined with genuine babbitt and are adjustable so as to take up any possibe wear. Shaft is made from the best quality of crucible steel. Each grinder head is furnished with two carborundum wheels, one fine and one coarse for general grinding purposes. Listed above.



Wheel Vertical



Wheel Horizontal

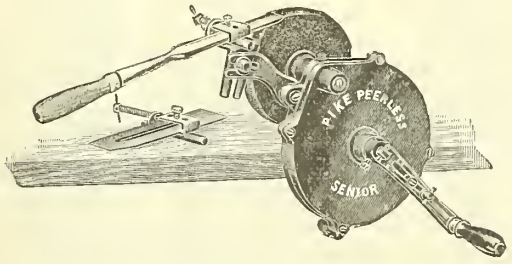
No. 10

Shaft can be reversed so as to run wheel in either position.

Listed above

Tool Grinders

Pike



No. 9 Peerless Senior Hand Power

Equipment

Pike Patented Tool Rest combining chisel holder, twist-drill guide and scissors guide.

Extension crank handle, adjustable to any length, making easy work of the most awkward grinding job.

One medium grit corundum wheel 6x1¼ inches.

Polishing outfit and foot power when ordered.

Crystolon wheels can be supplied if desired.

Size

Height 13 inches, length 12½ inches, diameter of gear case 9 inches, net weight 15 pounds, gross weight 20 pounds, cases 14x11x7 inches.

	Each
Green enamel finish	$7.00
Polishing outfit, extra	1.00
Extra corundum wheel	1.50
Extra crystolon wheel	1.50

No. 8 Peerless Junior Hand Power

An exact duplicate of the Senior model but smaller in size.

Equipment

Same as Senior except grinding wheel which is 5x1 inches.

Size

Height 10½ inches, length 7 inches, diameter of gear case 6 inches, net weight 7 pounds, gross weight 11 pounds, cases 11x9x7 inches.

	Each
Green enamel finish	$5.00
Polishing outfit, extra	1.00
Extra corundum wheel	1.00
Extra crystolon wheel	1.00



Foot-Power Attachment

For either Nos. 8, 9, 12, each $1.50

In ordering, state for which machine attachment is desired.

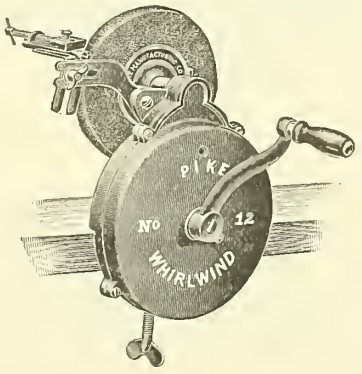
Polishing or Buffing Outfit



For attachment to No. 8 or No. 9 grinder, each $1.00

In ordering, state for which machine attachment is desired.

Pike



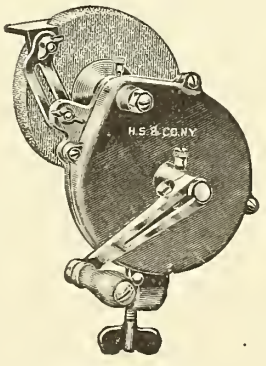
No. 12 Whirlwind Hand Power

This Grinder will do heavy, hard, accurate and quick grinding on railway construction work, quarrying, mining, contracting, building and kindred trades.

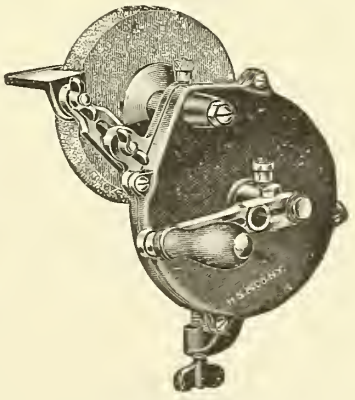
Each	$13.00
Extra corundum wheel 8x1¼ inches	1.50

Height 13½ inches, diameter of gear case 9 inches, net weight 24 pounds, gross weight 28 pounds. Size of box 16 x 10¾ x 7¼ inches.

Milwisus



Nos. 1A and 2A



Nos 3A and 4A

Nickel-plated

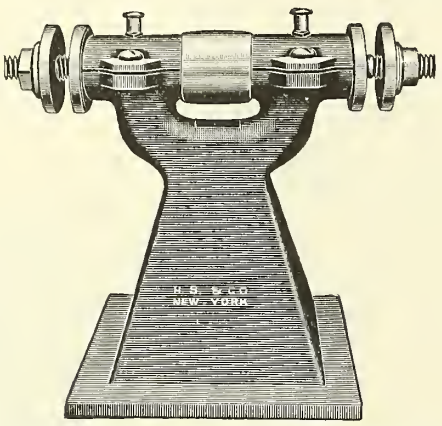
Equipped with adjustable tool grinding guide and milwisus wheel.

		Each
1A	Wheel 4x¾ inches, net weight 4 pounds	$3.00
2A	Wheel 5x1 inches, net weight 6½ pounds	5.00
3A	Wheel 6x1 inches, net weight 11½ pounds	6.50
4A	Wheel 7x1 inches, net weight 16 pounds	8.00

Foot-power Attachment "C" for Nos. 3A and 4A fitted with turnbuckle to adjust stroke to various height benches or tables. Net weight 4½ pounds.

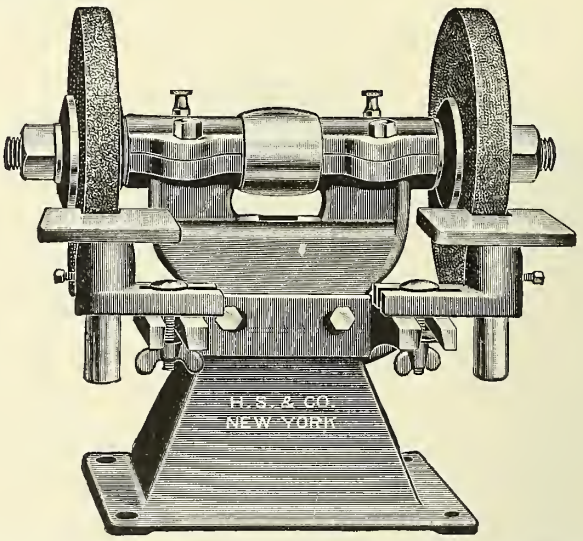
Each $1.50

Grinding Heads



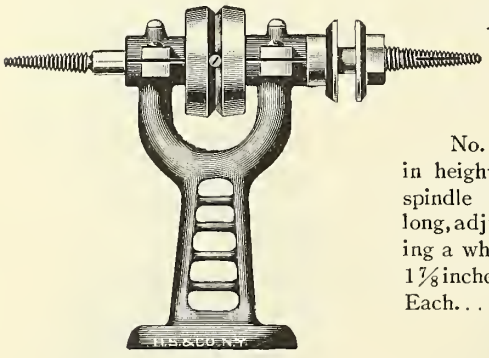
No. 26 7 inches high, has spindle 9 inches long; the diameter of the spindle in the bearing is ¾-inch and between the flanges where the wheel runs is ½ inch. It will take wheels up to 8 inches in diameter and ¾ inch thick, although ½x6-inch wheels are recommended. Is equipped with patent oil cups and the nuts are finished and case-hardened. Width of pulley 1-inch.
Each $6.00

No. 25. Same as No. 26 except lighter in construction. Japanned iron frame, brass screws and caps, 6 inches in height, has ½-inch spindle and will take wheels ⅞ inch thick. Boxes are adjustable. The pulley is grooved for ¼ inch round belt.
Each $3.50



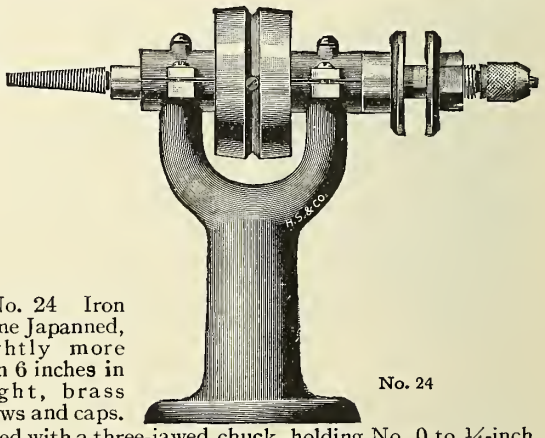
No. 40 This machine is 8 inches high and has a spindle 12½ inches long. The diameter of the spindle is 1 inch in the bearing and ¾-inch between flanges where the wheel runs. It take wheels 8 inches in diameter and 1 inch thick. The pulley is 2 inches in diameter and has a 1½-inch face. It includes an equipment of adjustable and detachable work rests as shown in cut, but it does not include emery wheels.
Each $10.00

Polishing Heads



No. 21

No. 21 Japanned iron frame, 6 inches in height, brass screws and caps, steel spindle ⅜-inch diameter and 8 inches long, adjustable boxes, flanges admit holding a wheel ¾ inch thick, grooved pulley 1⅞ inches diameter, for ¼-inch round belt.
Each $1.50



No. 24

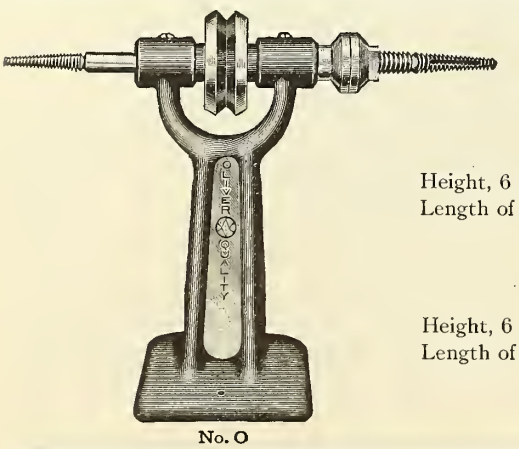
No. 24 Iron frame Japanned, slightly more than 6 inches in height, brass screws and caps. Fitted with a three-jawed chuck, holding No. 0 to ¼-inch, adjustable boxes, flanges admit holding a wheel ⅞-inch thick, grooved pulley 2¼ inches in diameter for ¼-inch round belt.
Each $4.00

No. 23 In all respects as No. 21, except that it is fitted with a three-jawed chuck, holding No. 0 to $\frac{5}{32}$-inch.
Each $2.50

No. 22 In all respects as No. 24 except that it is fitted with steel spindle ½ inch diameter and 10 inches long in place of chuck.
Each $2.50

Blue Brand

The ideal feature of the Blue Brand Polishing Heads consists of the oilless bearings—which means the elimination of the oil can. It is not necessary to give the lubrication a thought. There can be no splashing of oil if too much is applied, as often happens with the old style polishing heads. The bearings are of specially treated material, and act as cushions for the spindle, making the operation practically noiseless.



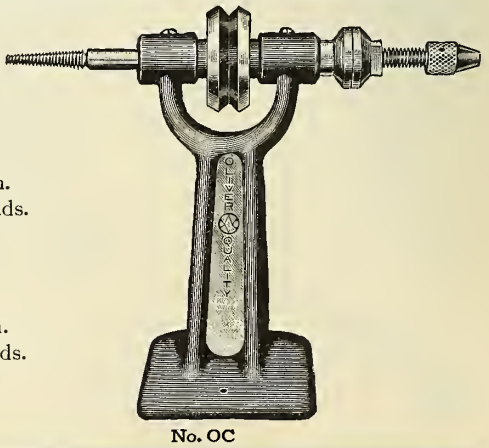
No. O

No. O

Height, 6 inches. Diameter, ⅜ inch.
Length of Spindle, 8 inches. Weight, 2½ pounds.
Each $1.25

No. OC

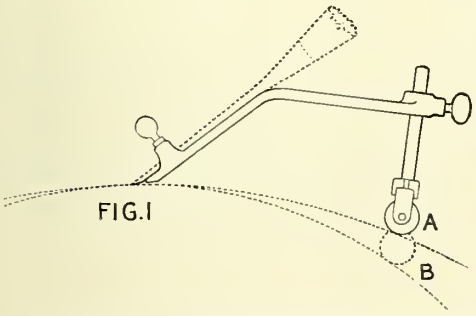
Height, 6 inches. Diameter, ⅜ inch.
Length of Spindle, 8 inches. Weight, 2½ pounds.
Each $1.50

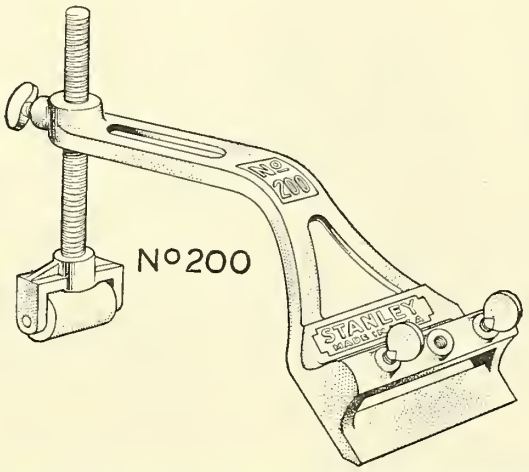


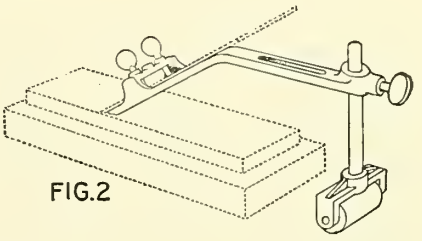
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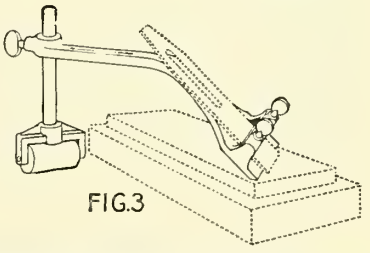
Grinders for Plane Cutters and Chisels

Stanley









The Stanley Cutter and Chisel Grinder is a device for holding Plane Irons, Chisels and other similar cutting tools that they may be ground or honed to any desired angle or bevel, insuring an accuracy that is very difficult to obtain when the tool is held in the hand.

The tool to be sharpened is rigidly held in the Grinder by thumb-screws, and may be given any desired angle by means of the large screw attached to the roller frame, which raises or lowers the main body.

As shown in the cut the Grinder is fitted with two thumb-screws and three thumb-screw holes. By the use of two thumb screws, the tool to be ground is held much more firmly than is possible with the use of a single screw.

The thumb screws are placed in the two outer holes when wide cutters are to be held. For narrow cutters the middle hole and one of the outer holes may be used.

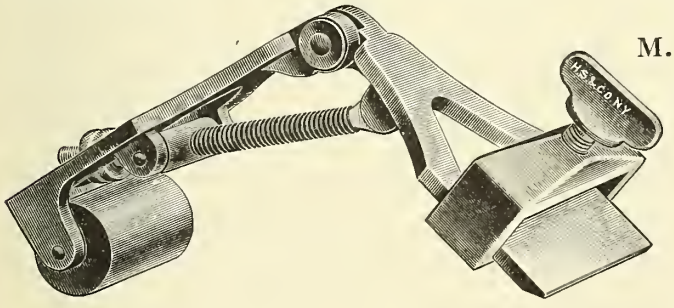
In grinding, the Roller, and beveled edge of the tool to be sharpened, are held against the face of the grindstone as in Fig. 1, "A" indicating the position of the Roller. "B" indicates the position of the roller on a stone of smaller diameter, both positions giving the same bevel to the tool being sharpened.

In honing, the Roller does not come in contact with the oil stone but acts as a rear support. (See Fig. 2.)

By turning the Roller at an angle to the main body, see (Fig. 3), the user will be able to obtain the slanting stroke so commonly used when tools are sharpened without a holder.

The Sharpener is made entirely of metal, all parts being nickel-plated.

No. 200 Each..... $ .90



M. F. Co.

Cast-iron, rough nickeled.

Adjustable to hold chisels, plane irons, etc., against grindstone at different bevels and enabling the user to obtain the same bevel the full width of the tool being ground.

Roller bearing against grindstone. Will take plane cutters or chisels up to 2¾ inches.

Each..... $1.00

Automatic Rubber Respirator

Cover



Is designed for the use of persons who are exposed to the danger of inhaling poisonous dust and gases.

It is provided with a closed and protected Automatic Ventilating Valve, which operates under all conditions, thus securing proper ventilation of the Respirator and preventing breathing over and over again of the inhaled air.

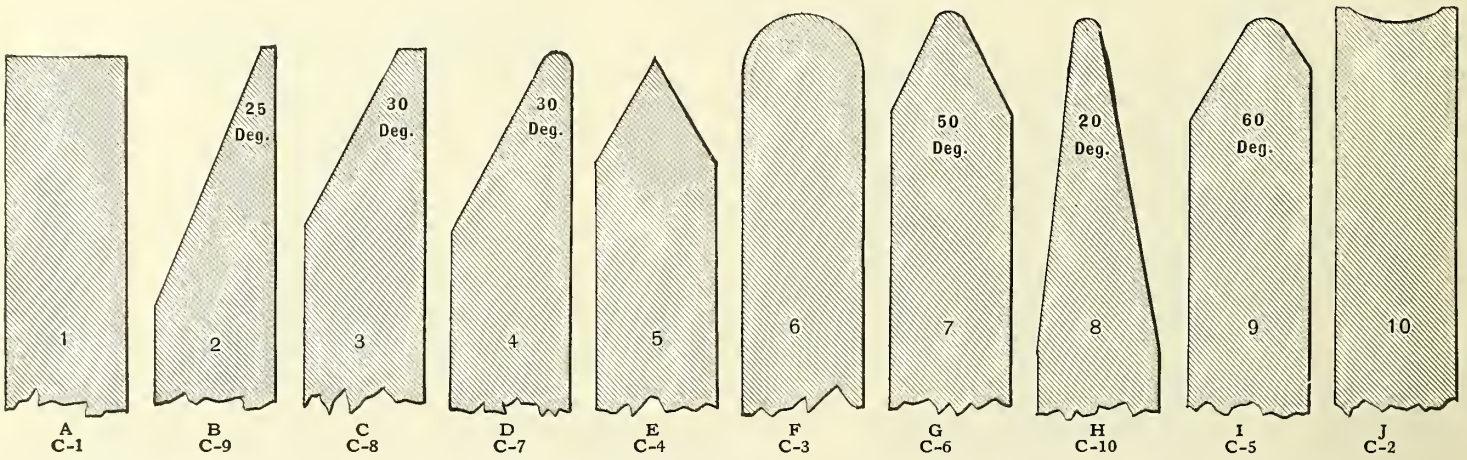
The filtering material and its arrangement in the Respirator should be such that the air will be purified while passing through it. A fine, damp sponge or a wet silk cloth are reckoned among the best known filtering materials for separating impurities from the air, and when these two valuable filtering materials are combined in their action, as they are in the Cover "Combination" Filter, the protection is complete, and it is a very difficult matter for smoke, fumes and gases to pass the silk cloth in contact with the wet sponge.

Both the sponge and the silk disc can be removed, washed clean and replaced in a few minutes.

No fireman or workman cares to carry around on his face a cumbersome apparatus that is always getting out of order and is often not at hand when most needed, but wants a simple and effective device that can be placed in any ordinary pocket without fear of crushing, and be quickly adjusted to the face.

Each..... $2.00

Shapes of Grinding Wheel Faces



In ordering emery, carborundum or aloxite wheels specify shapes by number within shape. In ordering alundum wheels, specify shapes by letter under shape. In ordering corundum wheels, specify shapes by C-number under shape.

We supply wheels of any desired shape. When special shapes are required a diagram should accompany the order.

All wheels furnished with square face unless otherwise ordered. All wheels thinner than one-quarter inch are subject to the same list price as wheels of that thickness. All wheels less than one inch in diameter are subject to the same list price of wheels of that diameter. In ordering, please be careful to state diameter and thickness of wheel, size of arbor hole or diameter of shaft on which wheel will be mounted.

It is more satisfactory, in the majority of cases, to leave the selection of grain and grit to the experienced dealer after giving as complete detailed description as possible of the requirements. Following list applies to all grinding wheels.

Thickness of Wheels in Inches

Diam. In Inches	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	4
1	$ .25	$ .30	$ .30	$ .35	$ .35	$ .40	$ .40	$ .45	$ .50	$ .55	$ .60	$ .65	$ .70	$ .75	$ .80	$ .85	$ .90	$1.00
1 1/2	.30	.35	.40	.45	.45	.50	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10
2	.35	.45	.50	.55	.55	.60	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.20
2 1/2	.40	.55	.65	.70	.75	.80	.85	.95	1.05	1.15	1.25	1.35	1.45	1.55	1.65	1.75	1.85	2.05
3	.50	.65	.80	.90	.95	1.05	1.10	1.25	1.40	1.55	1.70	1.85	2.00	2.15	2.30	2.45	2.60	2.90
3 1/2	.60	.80	.95	1.05	1.15	1.25	1.35	1.55	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35	3.75
4	.75	.95	1.10	1.25	1.35	1.50	1.60	1.85	2.10	2.35	2.60	2.85	3.10	3.35	3.60	3.85	4.10	4.60
4 1/2	.90	1.10	1.25	1.40	1.55	1.70	1.85	2.15	2.45	2.75	3.05	3.35	3.65	3.95	4.25	4.55	4.85	5.45
5	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.60	3.00	3.40	3.80	4.20	4.60	5.00	5.40	5.80	6.20	7.00
6	1.40	1.60	1.75	2.10	2.40	2.75	3.05	3.70	4.35	5.00	5.65	6.30	6.95	7.60	8.25	8.90	9.55	10.85
7	1.85	2.00	2.15	2.60	3.00	3.45	3.85	4.70	5.55	6.40	7.25	8.10	8.95	9.80	10.65	11.50	12.35	14.05
8	2.10	2.35	2.60	3.10	3.60	4.10	4.60	5.60	6.60	7.60	8.60	9.60	10.60	11.60	12.60	13.60	14.60	16.60
9	2.50	2.80	3.10	3.70	4.25	4.85	5.40	6.55	7.70	8.85	10.00	11.15	12.30	13.45	14.60	15.75	16.90	19.20
10	3.00	3.35	3.65	4.35	5.00	5.70	6.35	7.70	9.05	10.40	11.75	13.10	14.45	15.80	17.15	18.50	19.85	22.55
12	3.60	3.80	4.00	5.00	6.00	6.70	7.40	9.00	10.70	12.75	14.00	15.70	17.40	19.00	20.75	22.50	24.25	27.50
14	4.05	5.15	6.25	7.35	8.45	9.55	10.65	12.85	15.05	17.25	19.45	21.65	23.85	26.05	28.25	30.45	32.65	37.05
16	5.75	7.00	8.50	9.50	10.85	12.30	13.70	16.55	19.40	22.25	25.00	27.95	30.80	33.65	36.50	39.35	42.20	47.90
18	7.50	9.00	10.50	11.75	13.25	15.15	17.00	20.75	24.50	28.25	32.00	35.75	39.50	43.25	47.00	50.75	54.50	62.00
20	9.50	11.25	13.00	14.50	16.25	18.25	20.25	24.75	29.25	33.75	38.25	42.75	47.25	51.75	56.25	60.75	65.25	74.25
22	11.50	13.50	15.25	17.25	19.00	22.00	25.00	31.00	37.00	43.00	49.00	55.00	61.00	67.00	73.00	79.00	85.00	97.00
24	14.00	16.00	18.00	20.00	22.00	26.00	29.00	36.00	43.00	50.00	57.00	64.00	71.00	78.00	85.00	92.00	99.00	113.00
26	....	....	....	....	....	....	35.00	43.00	51.00	59.00	67.00	75.00	83.00	91.00	99.00	107.00	115.00	131.00
28	....	....	....	....	....	....	....	....	56.00	65.50	75.00	84.50	94.00	103.50	113.00	122.50	132.00	151.00
30	....	....	....	....	....	....	....	....	61.00	72.00	83.00	94.00	105.00	116.00	127.00	138.00	149.00	171.00
32	....	....	....	....	....	....	....	....	72.50	81.50	97.50	110.00	122.50	135.00	147.50	160.00	172.50	197.50
34	....	....	....	....	....	....	....	....	83.00	91.00	112.00	126.00	140.00	154.00	168.00	182.00	196.00	224.00
36	....	....	....	....	....	....	....	....	95.00	110.50	126.00	141.50	157.00	172.50	188.00	203.50	219.00	250.00

Thickness of Wheels in Inches

Diam. in Inches	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8
38	$170.00	$204.00	$238.00	$272.00	$306.00	$340.00	$374.00	$408.00	$442.00	$476.00	$510.00	$544.00
40	189.00	226.00	264.00	302.00	339.00	377.00	415.00	452.00	490.00	528.00	566.00	603.00
42	208.00	250.00	291.00	333.00	374.00	416.00	458.00	499.00	541.00	582.00	624.00	666.00
44	228.00	274.00	319.00	365.00	411.00	456.00	502.00	547.00	593.00	639.00	684.00	730.00
46	250.00	299.00	349.00	399.00	449.00	499.00	549.00	599.00	649.00	699.00	749.00	798.00
48	272.00	326.00	380.00	434.00	488.00	543.00	597.00	651.00	705.00	759.00	814.00	868.00
50	.....	354.00	412.00	471.00	530.00	589.00	648.00	707.00	766.00	825.00	884.00	943.00
52	.....	383.00	446.00	510.00	574.00	637.00	701.00	765.00	828.00	892.00	956.00	1,020.00
54	.....	412.00	481.00	550.00	619.00	688.00	756.00	825.00	894.00	963.00	1,032.00	1,100.00
56	.....	444.00	517.00	591.00	665.00	739.00	813.00	887.00	961.00	1,035.00	1,109.00	1,183.00
58	.....	476.00	555.00	634.00	714.00	793.00	872.00	951.00	1,031.00	1,110.00	1,189.00	1,268.00
60	.....	509.00	594.00	679.00	764.00	848.00	933.00	1,018.00	1,103.00	1,188.00	1,272.00	1,357.00

For grinding wheel data, see pages 355, 356 and 357. For emery and corundum data, see page 357. For carborundum and aloxite data, see page 358. For alundum data, see page 359.

Grinding Wheel Data

General Suggestions

Use protection hoods wherever possible.

Do not continue to use a wheel that does not give entire satisfaction but immediately advise us of the difficulty, giving full particulars.

Keep surface speed constant so far as it is practicable.

Complaint is sometimes made that wheels appear to be softer toward the center. Usually this is because the same surface rate of speed is not maintained as the wheel is reduced in diameter, and causes it to wear away faster and appear softer. It is also true that while the grade of the wheel may be uniform throughout, yet the smaller line of contact due to the smaller diameter will cause the wheel to appear softer. Another reason is because each particle or grain of abrasive is called upon to do more work as the wheel reduces in diameter and naturally wears faster.

The increase of the speed as the wheels wear down can be accomplished by different methods, i. e., variable speed countershafts or cone pulleys on the spindle of the grinding machine, or by transferring from the first or larger machine to a smaller one.

Grinding machines should be of heavy, rigid design, set on firm foundations.

Vibration, due to frail spindles or machines, is wasteful both of wheel and power. The heavier the machine the softer the wheel can be. To use wheels on frail machines they must be made harder. Harder wheels require more power to produce the same work and consequently more pressure against the wheel by the operator.

In grinding, avoid excessive pressure on wheel, as it causes it to glaze and fill up much more rapidly than a light pressure.

Keep all rests adjusted close to the wheel, otherwise work is liable to be caught and injury result.

Keep boxes well oiled and adjusted.

Indicate on each machine the revolutions of spindle and size of wheel to be run upon it.

Keep tickets or tags which are sent on the wheels in a record book so that if a wheel is not satisfactory reference can be made to order number when making complaint. It is equally valuable as a reference when ordering duplicate wheels.

Wheels should be run toward the operator, and constant care taken so that the rests are kept close to wheels, as they are sometimes broken by castings getting caught between the wheel and the rests.

The working strain of the wheel compares as to the square of their velocity, i. e., if the revolutions of the mandrel be doubled the working strain on the wheel will be increased four times.

Never hack wheels, as they are liable to be broken or else cracked so that they will break in use.

Grinding Wheel Dressers

Keep wheels true.

Tools for truing and dressing grinding wheels should be kept constantly at hand ready for use, as it is of the utmost importance that wheels should be kept perfectly true.

A variety of styles, both in size and shape of cutters, are desirable for wheels of different coarseness, hardness and size.

We recommend a large corrugated and twisted cutter dresser for the larger and coarser wheels; and a small twisted cutter dresser, or the Huntington, for smaller and finer wheels.

The small twisted cutter dresser is about one-half the size of the large ones.

For truing wheels used on Plain Cylindrical and Universal Grinding Machines, Cutter and Reamer Grinding Machines, etc., we recommend the diamond tool.

If too much dressing is necessary, it is an indication that the wheel is too hard for the work, or that it is speeded too high.

Never hack wheels, as they are liable to be broken or else cracked so that they will break in use.

Selection of Grains and Grades for Different Work

Conditions under which grinding wheels are used vary to such an extent that no absolute rule can be given for selecting the right grain and grade for the work.

The kind of grinding machine, wheel speed, work speed, character of material to be ground, whether to be ground wet or dry, contact of wheel and work—whether broad or narrow—must be taken into consideration.

Different shapes of work, different kinds of metal, require different cutting edges as well when grinding, as when turning; therefore, different grades and grains of wheels are required for different kinds of work.

There are no wheels so constructed that all materials can be ground equally well with one wheel.

It is more satisfactory in the majority of cases to leave this selection to the experienced dealer, after giving as complete detailed description as possible of the requirements.

Testing for Safety

In transit wheels are sometimes broken or cracked so slightly as not to be noticeable, therefore we would advise the operator to tap the wheel lightly with a hammer—if it rings it has not suffered any ill-usage and may be run with safety.

All wheels are tested by the factory at approximately fifty per cent. in excess of their maximum requirements—thus insuring a very high factor of safety.

Methods of Mounting

The grinding machine should be of rigid construction, with large spindles, well fitted bearings and securely fastened on firm foundations. A protection hood should surround the wheel. The following sizes of spindles are recommended except where the grinding wheels are extra thick.

Wheel Diameter	Spindle	Wheel Diameter	Spindle
6 inches and less	½ inch	14 inches and less	1¼ inches
8 inches and less	⅝ inch	16 inches and less	1½ inches
10 inches and less	¾ inch	18 to 20 inches and less	1¾ inches
12 inches and less	1 inch	22 to 24 inches and less	2 inches

Larger than 24 inches diameter, spindle 2¼ inches to 3 inches.

Flanges

Flanges at least one-half the diameter of the wheel should be used; never less than one-third. They should be relieved with true bearing at the outer edge.

Inside flange should always be fixed or pinned on the spindle, never left loose.

Flanges on both sides of the wheel should be of the same diameter.

When used without a protection hood not over 2 inches of radius of the wheel should project outside of the flange.

Protection flanges and wheels of beveled shoulder and ring types are furnished whenever desired; also wheels any other shape for any style of flange.

Washers

Compressible washers of pulp or rubber, slightly larger than flanges, should be used between the wheel and flanges. They distribute the pressure evenly when the flanges are tightened by taking up any imperfections in the wheel or flange.

The holes in the wheels should be bushed .005 inch large over standard size spindles. This permits the wheels to slide on the spindle without cramping and insures a good fit not only on the spindle but against the inside flange which is essential.

Tighten flanges only enough to hold wheels firmly, avoiding any unnecessary strain. The importance of this statement is emphasized by the fact that on a 1½-inch floor grinding machine equipped with 8-inch standard relieved flanges a man with a 2-foot wrench can easily exert a crushing pressure between the wheel and flanges of 3,600 pounds or over one and one-half tons.

For Listing of Dressers, see page 360. For Price List of Grinding Wheels, see page 354

Grinding Wheel Data

Rules for Calculating Speeds and Diameters of Pulleys

Proposed speed of grinding spindle being given, to find proper speed of countershaft.

Rule: Multiply the number of revolutions per minute of the grinding spindle by the diameter of its pulley, and divide the product by the diameter of the driving pulley on the countershaft.

Example: The driving pulley on the countershaft is 16 inches in diameter, the pulley on the grinding spindle is 8½ inches in diameter and makes 1,000 R. P. M. How many R. P. M. does the countershaft make?

$\frac{1{,}000 \times 8\frac{1}{2}}{16}$ equals 530 R. P. M.

Speed of countershaft given, to find diameter of pulley to drive grinding spindle.

Rule: Multiply the number of revolutions per minute of the grinding spindle by the diameter of its pulley, and divide the product by the number of revolutions per minute of the countershaft.

Example: The pulley on the wheel spindle is 7½ inches in diameter and should make 1,200 R. P. M. The countershaft runs at a speed of 530 R. P. M. How large should the driving pulley on the countershaft be?

$\frac{1{,}200 \times 7\frac{1}{2}}{530}$ equals 17 inches, diameter of driving pulley on countershaft.

Proposed speed of countershaft given, to find the diameter of pulley for the lineshaft.

Rule: Multiply the number of revolutions per minute of the countershaft by the diameter of the tight and loose pulleys and divide the product by the number of revolutions per minute of the lineshaft.

Example: A lineshaft running 150 R. P. M. is to drive a countershaft 530 R. P. M. The driven pulley on the countershaft is 8 inches in diameter. What diameter should the driving pulley on the lineshaft be?

$\frac{8 \times 530}{150}$ equals 28 inches, diameter of pulley on lineshaft.

General Principle Used to Determine Speeds and Diameters

The diameter of any driven pulley multiplied by its speed per minute always equals the diameter of the driving pulley multiplied by its speed per minute.

Weight of Wheels

To obtain the weight of Vitrified Wheels: square the diameter, multiply by the thickness and divide by 15.

To obtain the weight of Silicate Wheels: square the diameter, multiply by the thickness and divide by 13.

Rules for Obtaining Surface Speeds

To find surface speed in feet, per minute, of a wheel:

Rule: Multiply the circumference (see table below) by its revolutions per minute.

Example: A wheel 24 inches in diameter makes 796 R. P. M. What is the surface speed, in feet, per minute?

6.283 x 796 equals 5,000 feet surface speed.

Surface speed and diameter of wheel being given to find number of revolutions of wheel spindle.

Rule: Divide surface speed in feet, per minute, by the circumference. (See table below.)

Example: A wheel 20 inches in diameter is to be run 6,000 feet surface speed, per minute. How many revolutions should the wheel make?

6,000 ÷ 5.236 equals 1,146, number of R. P. M. wheel should make.

Table of Grinding Wheel Speeds

Diameter Wheel Inches	Millimeters About	Rev. per Minute for Surface Speed of 4,000 Feet or 1,200 Meters	Rev. per Minute for Surface Speed of 5,000 Feet or 1,500 Meters	Rev. per Minute for Surface Speed of 6,000 Feet or 1,800 Meters
1	25	15,279	19,099	22,918
2	50	7,639	9,549	11,459
3	75	5,093	6,366	7,639
4	100	3,820	4,775	5,730
5	125	3,056	3,820	4,584
6	150	2,546	3,183	3,820
7	175	2,183	2,728	3,274
8	200	1,910	2,387	2,865
10	250	1,528	1,910	2,292
12	305	1,273	1,592	1,910
14	355	1,091	1,364	1,637
16	405	955	1,194	1,432
18	455	849	1,061	1,273
20	505	764	955	1,146
22	515	694	868	1,042
24	610	637	796	955
26	660	586	733	879
28	710	546	683	819
30	760	509	637	764
32	810	477	596	716
34	860	449	561	674
36	910	424	531	637
38	965	402	503	603
40	1,015	382	478	573
42	1,065	364	455	546
44	1,115	347	434	521
46	1,165	332	415	498
48	1,220	318	397	477
50	1,270	306	383	459
52	1,320	294	369	441
54	1,370	283	354	425
56	1,420	273	341	410
58	1,470	264	330	396
60	1,520	255	319	383

The R. P. M. at which wheels are run is dependent on conditions and style of machine and the work to be ground.

Wheels are run in actual practice from 4,000 to 6,000 feet per minute; in some instances as high as 7,500 feet. We recommend for most grinding operations 6,000 feet, but special conditions cause changes and the surface speed per minute may run as high as 7500 feet.

For Price List of Grinding Wheels, see page 354

Grinding Wheel Data

Table Showing Maximum Horse-Power Required to Drive Wheels of Different Sizes

Grinding Machine	Number of Wheels	Max. Diameter and Thickness of Wheel Inches	Maximum Horse-power
Bench Type for Tools	1	12 x 2	2
Bench Saw Gummer	1	12 x 1½	3
Single Wheel Type	1	30 x 4	9.5
½-Inch Bench Type	2	6 x 1	1.5
⅝-Inch Bench Type	2	8 x 1	2
¾-Inch Bench Type	2	10 x 1½	3
1-Inch Bench Type	2	12 x 2	4
1¼-Inch Bench Type	2	14 x 2½	5.5
1¼-Inch Floor Type	2	14 x 2½	5.5
1½-Inch Floor Type	2	16 x 3	8
1¾-Inch Floor Type	2	20 x 3½	8.5
2-Inch Floor Type	2	24 x 4	9.5
2¼-Inch Floor Type	2	30 x 4	9.5
3-Inch Floor Type	2	36 x 4	11

The above figures are based on belt speeds and diameter and width of pulleys of Norton Standard Grinding Machines, and represent what single belts on these machines will transmit. The absolute power varies according to size of work and the pressure at which it is applied.

No fixed rule can be given, but from long experience we find that the above figures cover the power required to do the heaviest work that can be performed on the respective sizes of machines.

Table of Circumferences

Diameter of Wheel Inches	Circumference of Wheel Feet	Diameter of Wheel Inches	Circumference of Wheel Feet	Diameter of Wheel Inches	Circumference of Wheel Feet
1	.262	25	6.546	49	12.828
2	.524	26	6.807	50	13.090
3	.785	27	7.069	51	13.352
4	1.047	28	7.330	52	13.613
5	1.309	29	7.592	53	13.875
6	1.571	30	7.854	54	14.137
7	1.833	31	8.116	55	14.499
8	2.094	32	8.377	56	14.661
9	2.356	33	8.639	57	14.923
10	2.618	34	8.901	58	15.184
11	2.880	35	9.163	59	15.446
12	3.142	36	9.425	60	15.708
13	3.403	37	9.687	61	15.970
14	3.665	38	9.948	62	16.232
15	3.927	39	10.210	63	16.493
16	4.189	40	10.472	64	16.755
17	4.451	41	10.734	65	17.017
18	4.712	42	10.996	66	17.279
19	4.974	43	11.257	67	17.541
20	5.236	44	11.519	68	17.802
21	5.498	45	11.781	69	18.064
22	5.760	46	12.043	70	18.326
23	6.021	47	12.305	71	18.588
24	6.283	48	12.566	72	18.850

Grinding Wheels

Emery and Corundum

Emery is merely an impure corundum. It is an iron ore containing a varying amount of very small corundum crystals, the two minerals so intimately mixed that they cannot be commercially separated. Corundum is the hardest and sharpest mineral known except the Diamond. The precious gems, Ruby, Sapphire and Oriental Emerald, are perfectly crystalized highly colored varieties of Corundum.

Corundum is not only harder than any other mineral available for abrasive purposes, but it is possessed of great toughness and breaks with sharp, jagged edges, thus giving it great durability and wonderful cutting power.

One corundum wheel properly made and graded for its work will do more work than two emery wheels, and do it faster and better. It is necessary to state, however, that since the superiority of corundum has become better known, many wheels have been put out as "Corundum Wheels" which in reality contained but little, if any, real corundum. The user of abrasive wheels should be on his guard against forming a wrong opinion of corundum wheels from this cause. Our Corundum Wheels are made only of pure Corundum, the best obtainable, cleaned and graded with especial care for our use.

Three processes of manufacture, viz: Vitrified (the one generally used), Silicate and Elastic are described on the following page.

Explanation of Grain and Grade

The coarseness of a wheel is determined by the size of grains used. These are numbered according to the number of meshes per inch of the sieve through which they will pass. For example, No. 16 is a grain that will pass through a sieve having 16 meshes to the inch, but will not pass through a sieve having 20 meshes. The regular numbers are 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 40, 46, 54, 60, 70, 80, 90, 100, 120, 150, 180 and F.

The hardness of a wheel is denoted by the grade, the different grades being obtained by changes in the bond which cements the grains together. To avoid confusion, we have adopted the method of designating these grades by numbers for emery and letters of the alphabet for corundum as shown in opposite table

Grade	Emery Number	Corundum Letter
Extremely soft		D
		E
		F
Soft	1	G
	2	H
	2½	I
Medium soft		J
		K
		L
Medium	3	M
	3¼	N
	3¾	O
Medium hard	4	P
	4¼	Q
		R
Hard	4½	S
	5	T
		U
Extremely hard	6	V

For Price List of Grinding Wheels, see page 354

Grinding Wheels

Carborundum

Carborundum is a manufactured abrasive. It is not found in nature. It is not even an imitation of nature, but is an absolutely unique and distinct creation.

Carborundum is a chemical combination of the two elements, carbon and silicon. It is the trade name given to carbide of silicon—a substance not discovered but actually created by Edward G. Acheson in 1891.

It is very much harder than any other known abrasive, which gives it great durability. It is made up of small, sharp crystals that are just brittle enough to break slightly in use. The sharp edges of the crystals cut clean and fast; while the brittleness, by constantly presenting fresh cutting edges, prevents glazing. The combination of these qualities—durability, rapidity and uniform efficiency—gives to Carborundum its unquestioned title of being one of the best of all known abrasives.

The characteristic property of brittleness makes it highly efficient for grinding and polishing on such metals as cast-iron, chilled-iron, brass and bronze; also marble, granite and pearl—in general, materials of low tensile strength.

Aloxite

The abrasive material for successfully grinding steel must be not only hard and sharp but tough. These characteristics are found in Aloxite, a new aluminous abrasive recently developed by the Carborundum Company.

Aloxite is the purest form of aluminum oxide. It is the product of the electric furnace and differs materially from other aluminous abrasives in several of its characteristics, the principal one of which is its temper, which gives it just the proper quality to make it the ideal steel cutting material.

In its crude form Aloxite is taken from the electric furnace in the form of an immense compact pig weighing several tons. This pig, by means of special, powerful machinery, is crushed or reduced to grain form. The Aloxite grain then undergoes a thorough refining until every possible atom of impure matter is removed. The grains are then dried out, graded by sifting through a series of screens, and are then ready to be made into grinding wheels, etc.

Aloxite, because of its positive purity, its hardness, sharpness, toughness and proper temper, has been extensively successful in all classes of steel grinding. It not only cuts fast, cool and clean, but it shows wonderful durability, standing up to the work with remarkable tenacity. It is in these features that Aloxite is proving far superior to any other steel cutting abrasive.

Three Processes of Manufacture

Vitrified

This process consists of bonding the grain with certain clays and vitrifying or baking at high temperature, thus changing the clays to a substance similar to porcelain. The vitrified wheels are most generally used owing to the possibility of securing by this process a wider range of grades, and because they can be made more open and porous, thereby assuring a cool cutting wheel and because they stand up to the work with decided durability. However, owing to their rigidity, vitrified wheels are not used on work where a very thin wheel subject to side strains is required.

Silicate

In which process silicate of soda is employed as the bonding agent. They cut less harshly than the vitrified and are widely used for knife grinding, and for sharpening saws and woodworking tools in furniture, sash, door and blind factories and planing mills. The silicate wheels can be supplied with a wire web if desired.

Elastic

The thin wheels are generally made by this process, which consists of bonding the grain with a more or less elastic material such as shellac or rubber. These wheels are extremely tough, fast cutting and can be run at decidedly high speeds and under moderately heavy side strains without danger of breaking.

Explanation of Grain and Grade

Wheels used for abrasive purposes have two distinguishing characteristics, either or both of which may be varied according to the class of work to be done. These are the fineness and the hardness of the wheel. Fineness is dependent upon the size of the grains of the grinding material, and is produced by crushing and grinding the crude, treating with acids and separating by sieves into various sized grains. These are numbered, the same as emery, in accordance with the number of threads per lineal inch of the sieve through which they have passed. Thus, No. 50 is a grain which has passed through a sieve having fifty threads to the inch, but which would not pass through one having sixty threads. The factory prepare regularly the following numbers: 6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 40, 50, 60, 70, 80, 90, 100, 120, 150 180, 220.

Powders are the particles of grains too fine to size by ordinary sieving. They are graded by floating in water or other liquid.

F, FF, FFF powders are graded in a stream of flowing water. They include in their numbers all grades of fineness from F, the next finest after No. 220 to FFF, which contains the very finest dust.

The selection of the proper grain for any work depends upon the smoothness of finish required and the amount of material to be removed in a given time, when finish is not important.

Hardness, as the term is understood by makers of grinding wheels, is the quality of resistance to crumbling away which such wheels possess. The degree of hardness, called the "grade," is indicated by a letter, chosen arbitrarily with reference to certain standards. The different grades are produced by varying the binding material used to hold the grains together. The selection of grade depends upon the character of the material to be ground. A wheel which is too hard heats the work, glazes, and will not cut. If it is too soft it cuts rapidly, but at the same time wears away fast.

To successfully meet all the conditions to which Vitrified and Silicate Wheels are subjected, they are made in 25 degrees of hardness. Letters arranged in a scale are used to designate these degrees, from "D," very hard, to "Z," very very soft, as shown in the following:

Very Hard.....D
E
F
Gx
Hard.....G
Hx
H
Ix
Medium Hard.....I
J
K
L
Medium...M
N
O
Medium Soft.....P
R
S
Soft.....T
U
V
Very Soft.....W
X
Y
Very Very Soft.....Z

Elastic Wheels are graded as follows: ½, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11. Grade ½ is the hardest, 11 the softest grade.

For Price List of Grinding Wheels, see page 354

Grinding Wheels

Alundum

Alundum is a highly efficient cutting agent on materials of high tensile strength, particularly all kinds of steel. It is adapted for grinding many kinds of metal under a wide range of conditions.

Alundum is oxide of alumina (Al_2O_3) in crystalline formation.

The raw material used in its production is Bauxite, the purest form of aluminum oxide found in nature.

In chemical composition, Alundum is similar to the ruby and sapphire—the hardest natural minerals, except the diamond.

Until the invention of the Alundum electric furnace process, Bauxite was considered infusible. The transformation of this soft clay-like substance into Alundum, a hard, sharp product with remarkable cutting qualities, is equal to similar transformations which are believed to have occured in nature, forming some of the most beautiful and valuable gems.

The physical formation of the grain of Alundum is such that when it is broken or fractured it leaves sharp cutting corners or edges.

Besides possessing that peculiar combination of hardness, sharpness and temper or character of fracture which makes it a highly efficient cutting material, Alundum has a high melting point, high thermal conductivity, a low co-efficient of expansion and is a non-conductor of electricity. These properties make Alundum valuable in the manufacture of all kinds of refractories for general laboratory use, electric furnace parts, etc.

Each ingot of Alundum formed in the electric furnace weighs about two and one-half tons. Its rate of cooling and crystallization is under control which results in a superior temper or structure or physical formation of grain.

The equipment for preparing it for commercial use consists of powerful crushing and grinding machinery, rolls, washers and sieves for crushing and grading into grains of standard sizes.

Three Processes of Manufacture

Vitrified

In this process the materials constituting the formula—grit, bonding clays, water—are mixed in power mixing kettles. The mixture is drawn from the kettles into forming rings or molds of the required sizes. After dry enough to handle they are shaped and then subjected to a high temperature in large ovens or kilns at which the bond vitrifies. The time required in the kilns is from six to twenty days, depending on their size.

The majority of Alundum Grinding Wheels are made by this process. They are considered superior for most grinding operations.

Silicate

In the manufacture of these Wheels, the bond and grain are mixed by special machinery and while in a plastic state tamped in iron moulds. They are then baked at low temperature.

On some classes of work, such as tool and knife sharpening, Silicate Wheels give very satisfactory results.

Most Alundum Wheels over 30 inches in diameter are made by this process.

Silicate Wheels can be furnished with or without wire web.

Elastic

These Wheels are also made in molds and baked at low temperature. Elasticity is an important property. Wheels made by this process possess a high degree of safety, making them particularly valuable for operations requiring thin wheels. They are made as thin as $\frac{1}{32}$-inch up to 4 inches in diameter, $\frac{1}{16}$-inch up to 8 inches, and $\frac{1}{8}$-inch up to 12 inches in diameter. Very fine wheels of small diameter have been made as thin as $\frac{1}{64}$-inch.

They are used to a great extent for saw gumming, grinding between the teeth of gears, sharpening molding cutters, woodworking tools, etc. For cutting off small stock, such as thin strips, tubing and wire, and for slotting they are very successful.

Elastic Wheels are also especially adapted for roll grinding.

Explanation of Grain and Grade

Grinding Wheels are made in many combinations of coarseness and hardness to meet the variety of conditions under which they are used.

Grain. The size, or number, of the abrasive grain used determines the wheels degree of coarseness.

The cutting material must be crushed and graded to many sizes. The numbers employed to designate the sizes of grain in Alundum Wheels are 10, 12, 14, 16, 20, 24, 30, 36, 46, 50, 60, 70, 80, 90, 100, 120, 150, 180 and 200.

Finer grades known as Flours and designated as F, FF, FFF and XF are also used, although not so much in the manufacture of wheels as for rubbing and sharpening stones.

By No. 10 grain is meant a size that will pass through a grading sieve having ten meshes to the linear inch; No. 30 grain, thirty meshes; No. 46 grain, forty-six meshes, etc.

Grade. Means degree of hardness of the wheel, or resistance of the cutting particles under grinding pressure.

A wheel from which the cutting particles are easily broken, causing it to wear away rapidly, is called soft; one which retains its particles longer is called hard. Wheels are graded from soft to hard, the grade being denoted by the letters of the alphabet.

Example: A 20–M Grinding Wheel is one in which No. 20 grain cutting material is used, and its degree of hardness is "M."

Grades of Vitrified and Silicate Wheels are designated as follows:

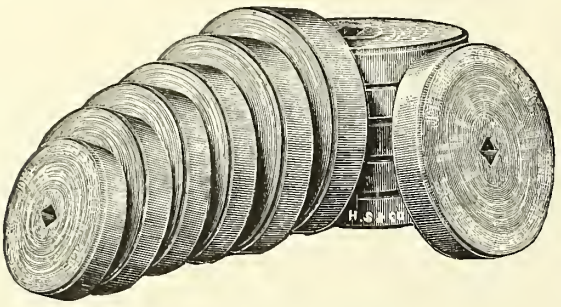
E.....Soft
F
G
H
I.....Medium Soft
J
K
L
MEDIUM.....M.....MEDIUM
N
O
P
Medium Hard.....Q
R
S
T
Hard.....U
V
W
X
Extremely Hard.....Y
Z

The intermediate letters between those designated as soft, medium soft, etc., indicate so many degrees harder or softer: e. g., L is one grade or degree softer than medium; O, two degrees harder than medium, but not quite medium hard.

Elastic Wheels are graded as follows: 1, 1½, 2, 2½, 3, 4, 5 and 6. Grade 1 is the softest and grade 6 the hardest.

For Price List of Grinding Wheels, see page 354

Grindstones

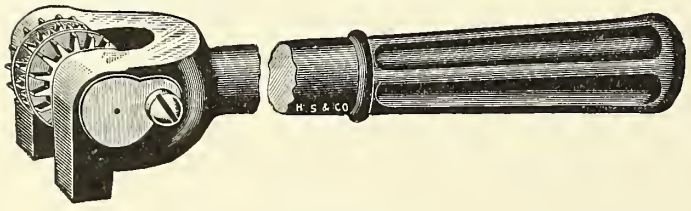


Without Frame

Per pound ..... $ .03¼

Rule for ascertaining approximate weight of grindstones. Square the diameter in inches, multiply by thickness in inches, and multiply by .06363. For instance. A wheel 12 inches in diameter by 3 inches in thickness:—12 x 12 = 144 x 3 = 432. 432 x .06363 = 27.48816 pounds. Practically 27½ pounds.

Grinding Wheel Dressers



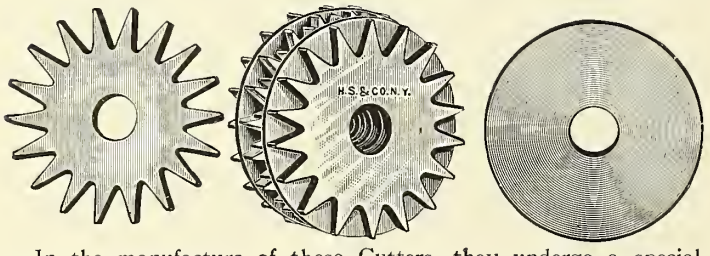
H. S. & Co.

Huntington Pattern

Users of Grinding Wheels will find this Dresser a great help in shaping wheels, and in many instances a practical substitute for the more expensive and delicate diamond tool.

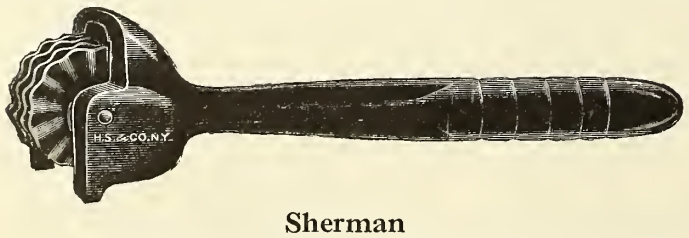
Including two sets of Cutters, 1 3/16 inches in diameter, each $1.30

Extra Cutters



In the manufacture of these Cutters, they undergo a special tempering process which renders them capable of resisting great wear and insures safety when used on emery wheels at full speed.

Huntington (not bushed), per dozen sets $2.40
Paragon (bushed), per dozen sets 2.40



Sherman

Each Cutter having a different corrugation which prevents them from nesting and gives it a different cutting edge. The cutters always remain sharp, as the corrugated face remains the same until worn down almost to the spindle, thus giving far greater cutting surface to the dresser than is possibly obtainable with the notched cutter such as the Huntington type. The washers between which these cutters revolve prevent the sides of the handle from wearing.

	Each
No. 1	$1.50
Cutters, 3 in set, 1½ inches in diameter	.15
No. 2	2.00
Cutters, 4 in set, 2⅜ inches in diameter	.25



Solid Set Diamond Hand Tools

Set with best quality, carefully selected black diamonds.

Diamond tools are not guaranteed and only experienced mechanics should use them.

Take light cuts, and allow only the diamond to touch wheel.

Deep cuts will grind away the steel, and destroy the setting.

Small stones will not last for heavy work. A large stone is cheaper in the end.

Keep the tool cool by dipping in water.

Avoid shock or blows on the tool.

Tools must be held firmly and fed gradually to the wheel.

	Each
No. 1	$ 5.00
No. 2	7.50
No. 3	10.00
No. 4	15.00
No. 5	20.00

Diamond lathe grinding tools of all kinds will be furnished in accordance with sketch or sample. Prices quoted promptly on receipt of necessary information.



Diamo-Carbo

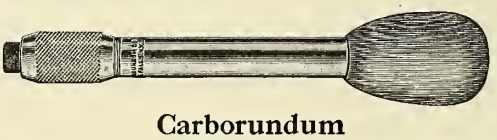
Is a steel tube filled its entire length with an abrasive mixture hard enough to dress grinding wheels. An adjustable brass collar is so placed as to form a back stop over the tool rest.

The dresser is extremely hard, wears away slowly, and with proper care will last indefinitely.

Delicate wheels can be formed in any shape desired without breaking the edges.

No. 3 Dresser, 10 inches long, ⅝ inch diameter $3.50
No. 5 Dresser, 12 inches long, ⅝ inch diameter 4.00

Can be supplied with the Huntington or Sherman Dresser on the handle end, thus supplying the Diamo-Carbo and Roughing Dresser on the same tool. The price of this combination tool is 50 cents additional to the regular dresser.



Carborundum

Consists of a steel tube enclosing or holding a stick of Carborundum one-half inch in diameter and six inches long. The stick can be adjusted or fed out as desired by simply turning the collet nut which contracts the split end of the tube.

Recommended for dressing and truing grinding wheels of all makes in fine and medium grits and grades generally used in the tool room for grinding reamers, cutters, drills, and also for universal and cylindrical grinding wheels.

Complete with one Carborundum Stick 6 inches long, ½ inch diameter, each $2.50
Extra sticks, each ..... .30

Polishing Wheels

Felt

Are made from 6 to 18 inches in diameter, and ½ to 2½ inches in thickness, and are used with emery glued on as a substitute for solid Emery Wheels; also with oil and emery, crocus, rouge, whiting, etc. The edges can be turned to any shape, and the wheel will stand high speed with perfect safety to the workman. When ordering, state size of hole, or the wheels will be sent with solid center; also whether hard or soft is required.

Spanish White Felt, per pound $2.00
Mexican Gray Felt, per pound 1.80

Approximate Weights of Felt Wheels

These weights vary to such an extent that they cannot be greatly depended upon. For illustration, 12x2-inch wheels vary from 3¾ to 5 pounds each, according to the hardness of felt.

Thickness Inches	Diameter, Inches 6	7	8	9	10	12	14	15	18
½	4 ounces	6 ounces	8 ounces	10 ounces	14 ounces	1 pound			
¾	6 ounces	9 ounces	11 ounces	14 ounces	1 pound	1½ pounds			
1	8 ounces	12 ounces	14 ounces	1⅛ pounds	1⅜ pounds	2⅛ pounds	2¾ pounds	3⅝ pounds	4¾ pounds
1¼	10 ounces	14 ounces	1⅛ pounds	1⅜ pounds	1⅞ pounds	2⅝ pounds	3⅝ pounds	4½ pounds	6 pounds
1½	12 ounces	1 pound	1⅜ pounds	1⅝ pounds	2⅛ pounds	3⅛ pounds	4½ pounds	5 pounds	7¼ pounds
1¾	14 ounces	1¼ pounds	1½ pounds	1⅞ pounds	2½ pounds	3⅝ pounds	5 pounds	5¾ pounds	8⅜ pounds
2	1 pound	1½ pounds	1¾ pounds	2⅛ pounds	2⅞ pounds	4⅛ pounds	5½ pounds	6¾ pounds	10 pounds
2½	1¼ pounds	1⅞ pounds	2⅛ pounds	2⅝ pounds	3⅝ pounds	4¾ pounds	6¾ pounds	8 pounds	12 pounds

Unbleached Muslin Buffs. (Hand Sewed)

Diameter, inches	2	2½	3	4	5	6	7	8	9	10	12	14
Ply	30	30	35	42	45	50	50	55	60	65	70	75
Dozen	$1.25	1.50	2.00	2.25	3.60	4.25	5.50	7.50	9.50	13.50	19.00	31.00

Canton Flannel Buffs. (Hand Sewed)

Diameter, inches	2	2½	3	4	5	6	7	8	9	10	12	14
Ply	25	30	30	30	30	30	30	30	30	35	40	45
Dozen	$1.25	1.50	2.00	2.25	3.60	4.25	5.50	7.50	9.50	13.50	19.00	31.00

Cloth Buffs. (Hand Sewed)

Diameter, inches	2	3	4	5	6	7	8	9	10	12
Thickness, inches	⅝	¾	¾	¾	1	1	1	1	1¼	1¼
Dozen	$1.25	2.00	2.25	3.60	4.50	6.50	8.50	11.50	16.00	24.00

Unbleached Muslin Section Buffs

18 Ply

Diameter, inches	4	5	6	7	8	9	10
100 Sections	$3.15	4.45	5.35	7.00	9.00	11.00	13.50
Section	.03½	.05	.06	.08	.10	.12	.15
Diameter, inches	12	13	14	15	16	18	
100 Sections	$20.00	22.75	25.50	29.25	33.25	41.75	
Section	.22	.25	.28	.32	.37	.45	

20 Ply

Diameter, inches	4	5	6	7	8	9	10
100 Sections	$3.50	5.00	6.00	7.75	10.00	12.25	15.00
Section	.04	.06	.07	.09	.11	.13	.16
Diameter, inches	12	13	14	15	16	18	
100 Sections	$21.00	25.25	28.50	32.50	36.80	45.25	
Section	.24	.27	.30	.34	.40	.48	

Canton Flannel Section Buffs

18 Ply

Diameter, inches	6	7	8	9	10	11	12
100 Sections	$10.50	14.85	17.85	22.00	27.85	33.15	37.25
Section	.12	.16	.19	.24	.30	.35	.40
Diameter, inches	13	14	15	16	18		
100 Sections	$40.65	49.40	60.65	68.75	82.50		
Section	.44	.53	.65	.73	.87		

Printers Ink Section Buffs

20 Ply

Diameter, inches	4	5	6	7	8	9	10	12	13	14	15	16	18
100 Sections	$2.00	3.50	4.50	6.50	8.50	10.50	13.50	19.00	23.50	26.00	30.00	34.50	43.50
Section	.03	.05	.06	.08	.10	.12	.15	.22	.26	.28	.32	.38	.46

Piece Sewed Buffs

Diameter, inches	8	9	10	12	14	15	16
100 Sections	$6.10	7.90	10.00	14.50	19.50	22.50	25.75
Section	.07	.09	.11	.16	.22	.25	.27

Sheepskin Buffs

Diameter Inches	Thickness, Inches, Each 1	1½	2	2½
4	$1.15	$1.60	$2.25	$2.75
5	1.35	2.00	2.60	3.10
6	1.50	2.30	3.10	3.80
7	1.75	2.60	3.50	4.50
8	2.00	3.00	4.00	5.00

Diameter Inches	Thickness, Inches, Each 1	1½	2	2½
9	$2.50	$3.75	$5.00	$6.25
10	3.00	4.50	6.00	7.50
12	4.00	6.00	8.00	10.00
14	5.00	7.50	10.00	12.50
16	6.50	9.75	13.00	16.25

SEE DISCOUNT SHEET PAGE 361

Oil Stones

Artificial

Carborundum

Carborundum stones are made from Carborundum, the manufacture and characteristics of which are fully explained on page 358.

They are superior to any other stones for rapid cutting qualities, may be used dry, or with water or oil; are quite porous, and may be tempered in their cutting by filling with wax or vaseline.

They are always sharp, clean and bright, never fill or glaze, and are made in three grades as follows:

Fine (FF) For procuring a very smooth, keen edge on tools of hard steel, etc.

Medium (180) For sharpening tools quickly, where an extremely keen edge is not necessary.

Coarse (120) To sharpen very dull and large tools, which may later be finished with a fine stone, or in cases where a fine finish is not required.

India

India Sharpening Stones are made from Alundum, the manufacture of which is fully explained on page 359.

They possess the characteristics of hardness, sharpness and toughness, as well as absolute uniformity. They cut rapidly, and are especially adaptable to the quick sharpening of all kinds of machinists tools, made of modern tool steels, such as scrapers, taps, reamers, milling cutters, lathe and planer tools.

On account of its ability to hold its shape, the India Stone is almost indispensable in shoe shops for sharpening channel knives, heel and various other special machine and hand tools. It is also most efficient and economical for use in engraving plants and for die workers and instrument makers.

All India Stones are oil filled by a patented process. This feature insures a moist, oily sharpening surface with the use of only a small quantity of oil. It also insures a good cutting surface by preventing the stone from filling with particles of steel.

India Stones are made in three grades or grits as follows:

Coarse: For sharpening large and very dull or nicked tools, machine knives, and for general use where fast cutting is required without regard to fine finish.

Medium: For ordinary sharpening of mechanics tools not requiring finishing edge. Especially recommended for tools used in working soft woods, cloth, leather, and rubber.

Fine: For machinists and engravers, die workers, instrument workers, cabinet makers and all users of tools requiring a very fine, keen edge.

Natural

Washita

Washita stone is found in the Ozark Mountains in Arkansas, and is composed of nearly pure silica, very similar to the Arkansas, but much more porous. It is known throughout the world as the best natural stone for sharpening carpenters and general woodworkers tools.

Its sharpening qualities are due to small, sharp pointed grains or crystals, hexagonal in shape and much harder than steel. It is found in various grades, from perfectly crystallized and porous grit to vitreous flint and hard sandstone. The sharpeness of grit depends entirely upon its crystallization. The best oilstones are made from very porous crystals.

Those listed on the succeeding pages were correctly quarried and carefully graded and are fully warranted.

Lily White Washita is the best selection or grading of natural Washita, perfectly white in color, uniform in texture and nicely finished.

Rosy Red Washita has an even porous grit somewhat coarser than the Lily White grading and is therefore, faster cutting.

No 1 Washita is a good oilstone for general use, where a medium-priced stone is wanted. It is far superior to the many cheap so-called "oil stones" on the market that are only sandstones with a polished face, but it is not as uniform as the Lily White.

Arkansas

Due to its capacity of imparting the highest perfection to the cutting edge, the Arkansas Oilstone is the abrasive used for sharpening instruments of surgeons, histologists, vivisectionists, students of anatomy and biology, and all others who perform the most delicate operations or prepare minute specimens for microscopic work.

The skilled engraver of gold, silver, copper and other metals, the watchmaker, the dentist, the cutler, and all other users and makers of fine tools, use this natural stone, exclusively for sharpening.

Genuine Arkansas Stone is composed of pure silica crystals, microscopic in size, and silica is among the hardest of known minerals. So hard and perfectly crystallized is the Arkansas Stone that it is nearly sixteen times harder to cut than marble, as the hardest of steel tools with the finest points or blades may be sharpened on the Arkansas Stone without grooving.

Arkansas Stone is prepared for commercial purposes in two grades, hard and soft.

Hard Arkansas is much harder than steel and will therefore cut away and sharpen steel tools. The extreme fineness of texture makes it a slow cutter, but a perfect sharpener.

Soft Arkansas is not quite so fine grained and hard as the Hard Arkansas, but it cuts faster and is better for carvers, file makers, pattern makers and of all workers in hard wood.

Oil Stones and Boxes

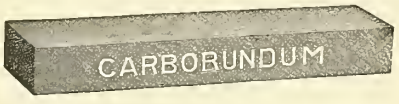
Carborundum Stones

Superior to any other stones for rapid-cutting qualities. Used dry or with water or oil. Are quite porous, and may be tempered in their cutting by filling with vaseline.



Regular

Number	Length Inches	Width	Thickness	Number of Carborundum	Each
115	8	2	1	F F (fine)	$1.00
116	8	2	1	180 (medium)	1.00
117	8	2	1	120 (coarse)	1.00
118	8	2	¾	F F (fine)	.80
119	8	2	¾	180 (medium)	.80
120	8	2	¾	120 (coarse)	.80
121	6	2	1	F F (fine)	.75
122	6	2	1	180 (medium)	.75
123	6	2	1	120 (coarse)	.75
124	6	2	⅝	F F (fine)	.60
125	6	2	⅝	180 (medium)	.60
126	6	2	⅝	120 (coarse)	.60
133	7	2	1	F F (fine)	.90
134	7	2	1	180 (medium)	.90
135	7	2	1	120 (coarse	.90
136	5	2	⅝	F F (fine)	.50
137	5	2	⅝	180 (medium)	.50
138	5	2	⅝	120 (coarse)	.50
142	4	1¾	½	F F (fine)	.40
143	4	1¾	½	180 (medium)	.40
144	4	1¾	½	120 (coarse)	.40
145	4	1	¼	F F (fine)	.25
146	4	1	¼	180 (medium)	.25
147	4	1	¼	120 (coarse)	.25



Extra Hard, Extra Fine

This stone is made for all tools that require an extra fine, delicate edge. It is made of the finest of the Carborundum grain and is graded extra hard. Woodworkers and wood carvers, etc., will find this stone especially adapted to sharpening their tools. Made in four sizes.

No. 157, 8 x 2 x ¾ inches. Each ..... $ .80
No. 159, 6 x 2 x ⅝ inches. Each ..... .60
No. 154 Slip, 4½ x 2⅛ x ⅝–$\frac{5}{16}$ inches. Each ..... .60
No. 155 Slip, 4½ x 1¾ x ½–$\frac{3}{16}$ inches. Each ..... .50

Machinists Special

The grit and grade of hardness of this stone is adapted to sharpening lathe and planer tools, milling cutters, reamers, and drills.

No. 292, 4 x 1 x ½ inches, F F (fine). Each ..... $ .30



Combination

These stones are designed especially for carpenters and mechanics. They are made with one face of coarse and one face of very fine grit. The coarse side can be used for sharpening dull tools; the fine side to bring the required keen, sharp edge.

Made in Five Sizes

No. 108, 8 x 2 x 1-inch. Each $1.25
No. 109, 6 x 2 x 1-inch. Each 1.00
No. 110, 7 x 2 x 1-inch. Each 1.15
No. 111, 5 x 2 x ¾ inch. Each ..... .75
No. 112, 4 x 1¾ x ⅝-inch. Each ..... .50



Combination Round Bench

The round Combination Bench Stone No. 107 is made to meet the sharpening needs of the carpenter and general mechanic. It is a novel as well as a decidedly practical addition to the tool box. The stone is made in the round form so as to allow for the circular motion required in sharpening chisels and similar tools.

The stone is made with one side coarse grit for taking out nicks and bringing the tool to an edge and the other side of a very fine grit for giving the keen finished edge.

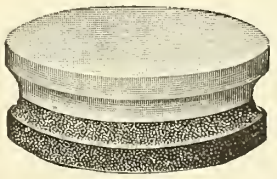
No. 107, 4 inches diameter, 1-inch thick. Each $1.00
Quartered-oak box for No. 107. Each ..... .50

Combination Round Axe

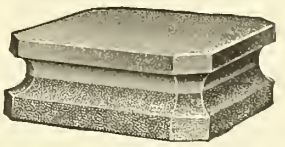
The Carborundum Round Axe Stone has several decided advantages. It is a combination stone having one side coarse grit and the other fine grit; the same stone takes out the nicks and gives the finished edge quickly; and it is of such convenient size and shape as to be easily carried in the workmans pocket.

Number 196, 3 inches diameter by ⅝-inch thick. Each ..... $ .35

Combination for Machine Knives



No. 289



No. 332

A combination stone specially designed to sharpen planer knives, paper knives, and cloth-cutting knives, without taking the blades from the machine. The groove protects the fingers from the knife edge. Has one side coarse grit, the other fine.

No. 289, size 4 inches diameter, 1½ inches thick. Each $1.50
No. 332, size 3½ inches square, 1½ inches thick. Each 1.50

Boxes for Carborundum Stones

Wooden

Made of well seasoned quartered oak with lock corners. Base is made with a shoulder so that cover will set down tight. Boxes are highly polished and well made in every respect. Four sizes.

No. 1, for stones 8 x 2 x 1 inches, box without stone. Each ..... $ .25
No. 2, for stones 6 x 2 x 1 inches, box without stone. Each ..... .25
No. 3, for stones 4 x 1½ x 1 inches, box without stone. Each ..... .25
No. 107, round, for stone No. 107, box without stone. Each ..... .50

Iron

Perfectly plain gray iron castings. Fine dull black finish. Base has shoulder so that cover will set down tight. Felt oil retaining pad furnished with each box.

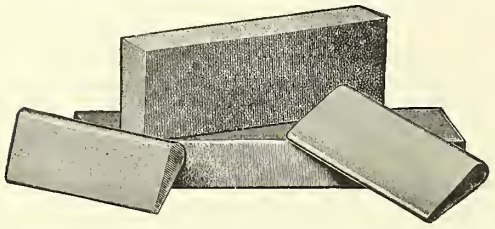
6 x 2 x 1 inches. Each ..... $ .50
7 x 2 x 1 inches. Each ..... .50
8 x 2 x 1 inches. Each ..... .50

Oil Stones

Carborundum

(Miscellaneous Shapes)

Special for Manual Training School



These carborundum stones are particularly adapted to sharpening tools used in the manual training schools. The manual training school stones include the rectangular sharpening stones for chisels, plane bits, etc., and two sizes of slip stones for touching up gouges, chisels, etc. Each stone cuts fast and clean; doesn't fill or glaze, and it will show long life.

No. 343	8 x 2 x 1 inch. Each	$1.00
No. 344	8 x 2 x ¾ inch. Each	.80
No. 345	6 x 2 x 1 inch. Each	.75
No. 346	6 x 2 x ⅝ inch. Each	.60
No. 349	Slip, 4½ x 2⅛ x ⅝—$\frac{5}{16}$-inch. Each	.60
No. 350	Slip, 4½ x 1¾ x ½—$\frac{3}{16}$-inch. Each	.50
No. 351	8 x 2 x 1 Combination. Each	1.25
No. 352	7 x 2 x 1 Combination. Each	1.15
No. 353	6 x 2 x 1 Combination. Each	1.00

For boxes, see page 363



Slips

Are made in four sizes and three different grits of each size. These slip stones cut rapidly and retain their shape perfectly.

No. 174	6 x 2¼ x ¾–⅜-inch, F F (fine). Each	$ .75
No. 175	6 x 2¼ x ¾–⅜-inch 180 (medium). Each	.75
No. 176	6 x 2¼ x ¾–⅜-inch 120 (coarse. Each	.75
No. 177	4½ x 1¾ x ¼–$\frac{1}{16}$-inch F F (fine). Each	.50
No. 178	4½ x 1¾ x ¼–$\frac{1}{16}$-180 (medium). Each	.50
No. 179	4½ x 1¾ x ¼–$\frac{1}{16}$-inch 120 (coarse). Each	.50
No. 180	4½ x 2⅛ x ⅝–$\frac{5}{16}$-inch F F (fine). Each	.60
No. 181	4½ x 2⅛ x ⅝–$\frac{5}{16}$-inch 180 (medium). Each	.60
No. 182	4½ x 2⅛ x ⅝–$\frac{5}{16}$-inch 120 (coarse). Each	.60
No. 183	4½ x 1¾ x ½–$\frac{3}{16}$-inch F F (fine). Each	.50
No. 184	4½ x 1¾ x ½–$\frac{3}{16}$-inch 180 (medium)	.50
No. 185	4½ x 1¾ x ½–$\frac{3}{16}$-inch 120 (coarse). Each	.50

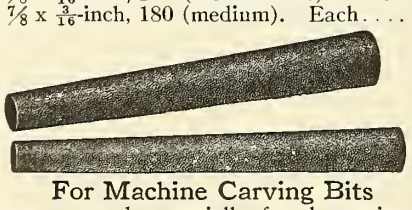


Drawings Half Size

Carvers Slips

Shape Nos. 80, 81, 82	Shape Nos. 83, 84, 85	Shape Nos. 86, 87, 88	Shape Nos. 89, 90, 91

No. 80	2¼ x ⅞ x $\frac{3}{16}$-inch, F F (fine). Each	$ .30
No. 81	2¼ x ⅞ x $\frac{3}{16}$-inch, F (medium fine). Each	.30
No. 82	2¼ x ⅞ x $\frac{3}{16}$-inch, 180 (medium). Each	.30
No. 83	2¼ x ⅞ x $\frac{3}{16}$-inch, F F (fine). Each	.30
No. 84	2¼ x ⅞ x $\frac{3}{16}$-inch, F (medium fine). Each	.30
No. 85	2¼ x ⅞ x $\frac{3}{16}$-inch, 180 (medium). Each	.30
No. 86	2¼ x ⅞ x $\frac{3}{16}$-inch, F F (fine). Each	.30
No. 87	2¼ x ⅞ x $\frac{3}{16}$-inch, F (medium fine). Each	.30
No. 88	2¼ x ⅞ x $\frac{3}{16}$-inch, 180 (medium). Each	.30
No. 89	2¼ x ⅞ x $\frac{3}{16}$-inch, F F (fine). Each	.30
No. 90	2¼ x ⅞ x $\frac{3}{16}$-inch, F (medium fine). Each	.30
No. 91	2¼ x ⅞ x $\frac{3}{16}$-inch, 180 (medium). Each	.30



For Machine Carving Bits

These stones are made especially for sharpening carving bits or knives used on wood-carving machines in furniture factories.

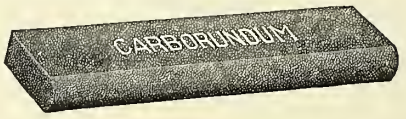
No. 290	4 x $\frac{7}{16}$ x ¼-inch, fine. Each	$ .50
No. 291	4 x $\frac{7}{16}$ x ¼-inch, coarse. Each	.50



Knife Edge Slip

For sharpening welt awls on McKay stitching machine and for sharpening channel knives used in shoe factories.

No. 293	5 x 1 x $\frac{5}{16}$–$\frac{3}{32}$ inch, FF (fine). Each	$ .40



Round Edge Gouge

Made in Three Grits

These stones are rapid cutters. Because of their uniform hardness, they do not wear out of shape.

No. 160	8 x 2 x ¾-inch, F F (fine). Each	$ .90
No. 161	8 x 2 x ¾-inch, 180 (medium). Each	.90
No. 162	8 x 2 x ¾-inch, 120 coarse). Each	.90
No. 163	5 x 1½ x ½-inch, F F (fine). Each	.60
No. 164	5 x 1½ x ½-inch, 180 (medium). Each	.60
No. 165	5 x 1½ x ½-inch, 120 (coarse). Each	.60
No. 166	4 x 1½ x ½-inch, F F (fine). Each	.50
No. 167	4 x 1½ x ½-inch, 180 (medium). Each	.50
No. 168	4 x 1½ x ½-inch, 120 (coarse). Each	.50
No. 169	4 x 1 x ¼-inch, F F (fine). Each	.35
No. 170	4 x 1 x ¼-inch, 180 (medium). Each	.35
No. 171	4 x 1 x ¼-inch, 120 (coarse). Each	.35



With Beveled Edge and Side

Medium grit for sharpening the trimming knives on a Gem Insole Machine in shoe factories. The short beveled edge is for sharpening the circular knife with a short bevel. The beveled side is used for sharpening the long beveled knife or trimmer.

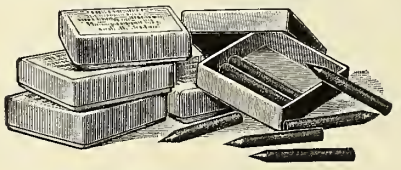
No. 295	3½ x ¾ x $\frac{3}{16}$–⅛-inch, FF (fine). Each	$ .40



Amazeen

Used to sharpen the knives of the Amazeen skiving machine, and produce a sharp, keen edge.

No. 296	Size 4 x 1 x ¼-inch, (medium). Each	$ .35
No. 298	Size 4 x ½ x ¼-inch, (medium). Each	.25

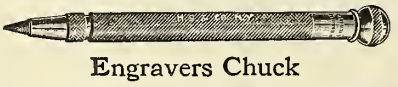


Engravers Pencil Points

For engravers, die sinkers, mould makers, and metal chasers.

The points are one-eighth of an inch in diameter, one inch in length; of three grits—coarse, medium, and fine; boxes contain twelve points of one grit or assorted grits, as desired.

Dozen	$ .75



Engravers Chuck

A very convenient tool for holding pencil points. Made from steel tubing, knurled and nickel-plated.

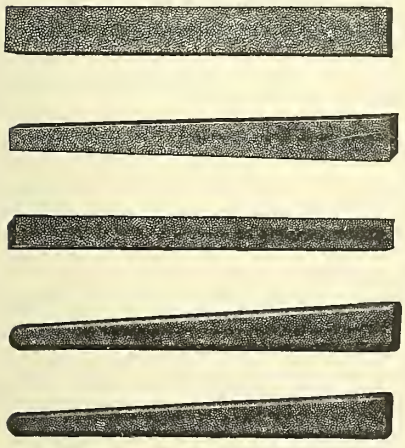
Each, with one dozen points	$1.25

Oil Stones

Carborundum (Miscellaneous Shapes)

Silversmiths

Special Sizes and Shapes for Silversmith, Watchmakers, and General Die Work



Each

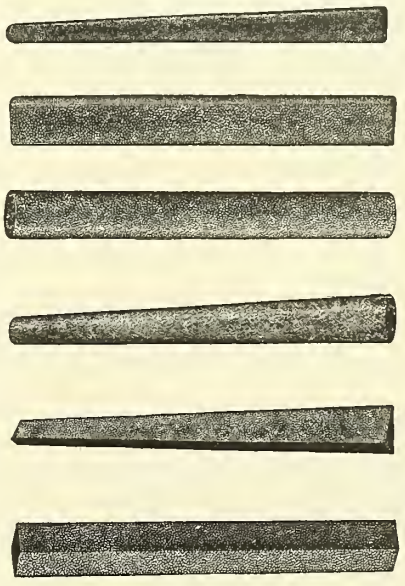
Size, 4x½x$\frac{1}{16}$-inch
No. 300, FF (fine) .....$ .50
No. 301, 220 (medium fine).50
No. 302, 150 (medium)... .50

Size, 4x½–¼x$\frac{7}{32}$-$\frac{5}{64}$-inch
No. 303, F F (fine)..... 50
No. 304,220 (medium fine)..50
No. 305, 150 (medium).. .50

Size, 4x$\frac{5}{16}$x$\frac{3}{32}$–$\frac{1}{16}$-inch
No. 306, F F (fine)..... .50
No. 307, 220 (medium fine) .50
No. 308, 150 (medium).. .50

Size, 4x½–$\frac{9}{32}$x¼–⅛-inch
No. 309, F F (fine)..... .50
No. 310, 220 (medium fine). .50
No. 311, 150 (medium).... 50

Size, 4x$\frac{7}{16}$–$\frac{3}{16}$x$\frac{3}{16}$–$\frac{1}{16}$-inch
No. 312, FF (fine)..... .50
No. 313, 220 (medium fine) .50
No. 314, 150 (medium)... .50



Size, 4x$\frac{3}{8}$-$\frac{1}{8}$x$\frac{3}{16}$-$\frac{1}{16}$-inch
No. 315, FF (fine) .....$ .50
No. 316, 220 (medium fine). 50
No. 317, 150 (medium) .. .50

Size, 4x½x$\frac{3}{16}$–$\frac{3}{32}$-inch
No. 318, FF (fine) ..... .50
No. 319, 220 (medium fine) .50
No. 320, 150 (medium) .... .50

Size, 3½x$\frac{9}{16}$x$\frac{7}{32}$-inch
No. 321, FF (fine) ..... .50
No. 322, 220(medium fine) .50
No. 323, 150 (medium) .. .50

Size, 4 inches long, diameter tapering ½ to ¼-inch
No. 334 (fine) 50
No. 335 (medium) 50
No. 336 (coarse) 50

Size, 4 inches long, triangle taper ½ to ¼-inch
No. 337 (fine) 50
No. 338 (medium) 50
No. 339 (coarse) 50

Size, 4 inches long diamond x$\frac{9}{16}$x$\frac{3}{16}$-inch
No. 340 (fine) 50
No. 341 (medium) 50
No. 342 (coarse) 50

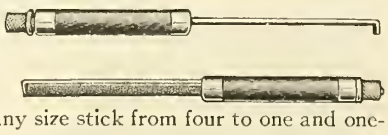


Sticks

Length			4 Inch		6 Inch		8 Inch		10 Inch		12 Inch	
Symbol for Length and Grit			AB	C	DE	F	GH	I	JK	L	MN	O
Number	Shape	Size Inches	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each	Coarse Medium Each	Fine Each
1	Sq.	¼	$ .25	$ .35	$ .40	$ .50						
2	Tri.	¼	.25	.35	.40	.50						
3	½ Rd.	¼	.25	.35	.40	.50						
4	Rd.	¼	.25	.35	.40	.50						
5	Sq.	⅜	.25	.35	.40	.50						
6	Tri.	⅜	.25	.35	.40	.50						
7	½ Rd.	⅜	.25	.35	.40	.50						
8	Rd.	⅜	.25	.35	.40	.50						
9	Sq.	½	.25	.35	.40	.50	$ .55	$ .75				
10	Tri.	½	.25	.35	.40	.50	.55	.75				
11	½Rd.	½	.25	.35	.40	.50	.55	.75				
12	Rd.	½	.25	.35	.40	.50	.55	.75				
13	Sq.	⅝	.30	.40	.40	.55	.65	.85	$ .85	$1.15	$1.05	$1.40
14	Tri.	⅝	.30	.40	.40	.55	.65	.85	.85	1.15	1.05	1.40
15	½ Rd.	⅝	.30	.40	.40	.55	.65	.85	.85	1.15	1.05	1.40
16	Rd.	⅝	.30	.40	.40	.55	.65	.85	.85	1.15	1.05	1.40
17	Sq.	¾	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
18	Tri.	¾	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
19	½ Rd.	¾	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
20	Rd.	¾	.35	.45	.45	.55	.65	.85	.80	1.10	.95	1.30
21	Sq.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
22	Tri.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
23	½ Rd.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
24	Rd.	1	.35	.50	.45	.60	.70	.90	.80	1.05	.90	1.20
25	Sq.	1¼	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
26	Tri.	1¼	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
27	½ Rd.	1¼	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
28	Rd.	1¼	.40	.55	.55	.75	.75	.95	.95	1.25	1.15	1.55
29	Sq.	1½	.55	.75	.75	.95	.85	1.15	1.20	1.60	1.55	2.10
30	Tri.	1½	.55	.75	.75	.95	.85	1.15	1.20	1.60	1.55	2.10
31	½ Rd.	1½	.50	.65	.60	.80	.75	1.00	1.00	1.35	1.35	1.70
32	Rd.	1½	.50	.65	.60	.80	.75	1.00	1.00	1.35	1.35	1.70

Note.—In ordering sticks order by stick number and symbol for the length and grit, viz.: 12 No. 1-A sticks means 12 sticks, 4 inches long, ¼-inch square, coarse grit.

Stick Holder



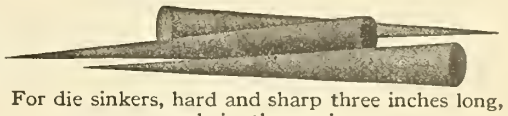
The Carborundum Stick Holder is a convenient device for holding Carborundum Sticks, square, round, half-round, or triangular. The holder can be adjusted to take any size stick from four to one and one-quarter inches in length.

No. 54 Each..... $ .50

Points

Each

No. 97, F F (fine).....$ .50
No. 98, 180 (medium).. .50
No. 99, 120 (coarse)..... .50



For die sinkers, hard and sharp three inches long, made in three grits

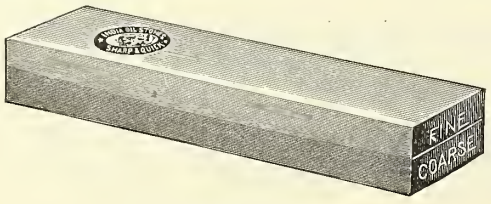
SEE DISCOUNT SHEET

Oil Stones and Boxes



India
Coarse, Medium or Fine

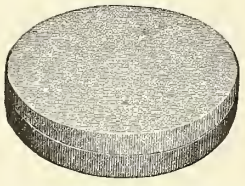
Number	Dimensions Inches	Each
0	8 x2x1	$1.00
1	8 x1¾x1¼	1.00
1½	7 x2x1	.75
2	6 x1⅝x¾	.50
3	4 x1x½	.30
24	4½x1½x⅝	.40
29	6 x2x1	.60



Combination

Possess the advantage of having two stones in one, the coarse side being used for grinding down very dull or badly nicked tools and the fine side for putting on a finishing edge. India Combination Stones are not two separate stones glued together but are in reality single stones, the two grits being vitrified together, so that no amount of throwing about or ill usage will cause them to come apart.

Number	Dimensions Inches	Each
0	8 x2 x1	$1.25
1	8 x1¾x1¼	1.25
1½	7 x2 x1	1.00
2	6 x1⅝x¾	.60
24	4½x1½x⅝	.50
29	6 x2 x1	.75



Combination Circular

A practical and economical shape for mechanics who require tools with perfectly straight edges. Especially desirable for those who prefer that broad rotary stroke as the danger of hollowing out is entirely eliminated.

No. 63 4 inches diameter, each $1.00

Boxes for India Stones
Wooden

Made of highly finished quartered oak.

For Stones

8x2 x1 inches	6x1⅝x ¾ inches
8x1¾x1¼ inches	4x1 x ½ inches
7x2 x1 inches	6x2 x1 inches

All sizes, each ..... $ .25

Iron

Fitted with four cork feet which will prevent sliding on the bench. The stone rests on a piece of felt which absorbs surplus oil, and keeps the stone moist and ready for instant use.

For Stones

8x2x1 inches	6x1⅝x ¾ inches
7x2x1 inches	6x2 x1 inches

All sizes, each ..... $ .50

Steel

For Round Stones

4 inches diameter, 1-inch thick, each ..... $ .50



Arkansas, No. 1 Quality
Unmounted

	Each
6x1¾x ¾-inch, Regular	$3.95
6x1¾x ¾-inch, Soft	1.80
8x2 x1-inch, Regular	7.35
8x2 x1-inch, Soft	3.40

In Mahogany Case

	Each
6x2-inch, Regular	$3.15
6x2-inch, Soft	1.60
8x2-inch, Regular	4.40
8x2-inch, Soft	2.50

Washita
Rosy Red—Unmounted

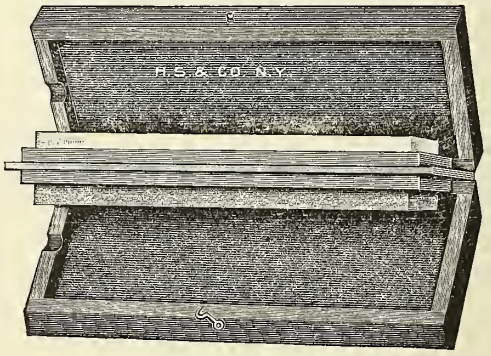
	Dozen
6x1¾x ¾-inch	$6.70
8x2 x1-inch	12.00

Rosy Red—In Cherry Cases

	Dozen
6x2-inch	$12.00
8x2-inch	15.00

Lily White—Unmounted

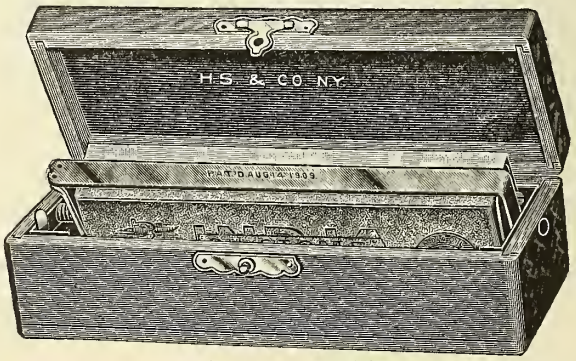
	Dozen
Medium Hard, 8x2x1-inch	$7.50
Soft, 8x2x1-inch	12.00



Pike Reversible

Two stones in one splendid mounting. This mounting insures the proper care of the two stones, keeping them out of dirt and dust and properly oil-moistened by a felt pad in each cover. Stones, 7x2x⅝ inches are held in place by a patented device which provides for replacing stones when desired.

	Each
India and Lily White Washita	$2.00
Soft Arkansas and Coarse India	3.00
Hard Arkansas and Coarse India	4.50



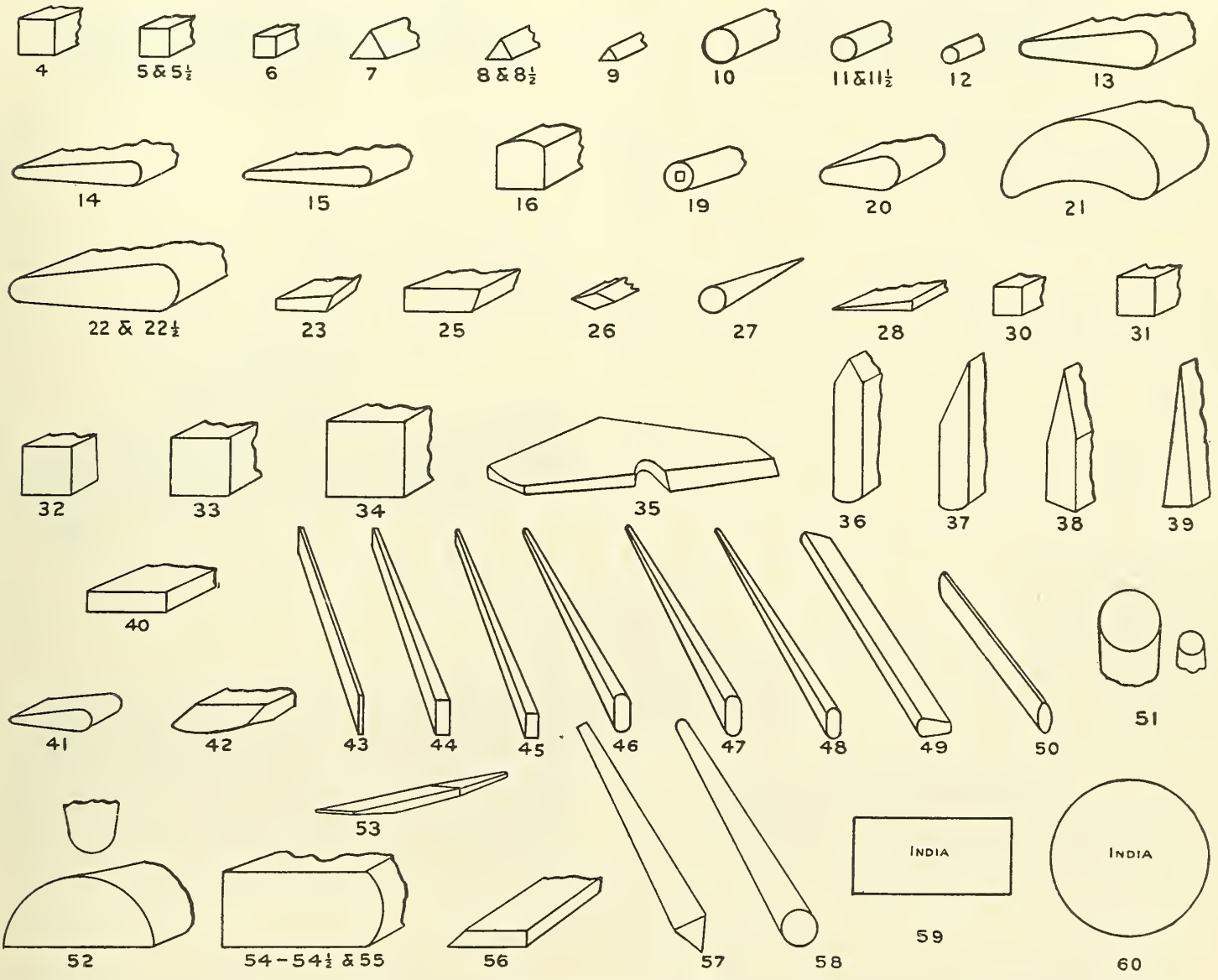
Pike Revolvable

Similar to Reversible in general appearance except that box has regulation hinged cover. The stones, which are fastened firmly into a steel frame revolving on center pins at each end, are held in position by a strong spring catch.

	Each
India and Lily White Washita	$2.00
Soft Arkansas and Coarse India	3.00
Hard Arkansas and Coarse India	4.50

Oil Stones

India (Miscellaneous Shapes)



Coarse, Medium or Fine

Shape	Dimensions Inches	Each
4	4 x ½ x ½	.30
5	4 x ⅜ x ⅜	.30
5½	4 x 5/16 x 5/16	.30
6	4 x ¼ x ¼	.30
7	4 x ½ x ½	.40
8	4 x ⅜ x ⅜	.40
8½	4 x 5/16 x 5/16	.40
9	4 x ¼ x ¼	.40
10	4 x ½	.45
11	4 x ⅜	.45
11½	4 x 5/16	.45
12	4 x ¼	.45
13	4½ x 1¾ x ½ x 3/16	.35
14	4½ x 1¾ x ⅜ x ⅛	.35
15	4½ x 1¾ x ¼ x 1/16	.35
16	8 x ⅝ x ⅝	.50
19	Engravers Pencils, Fine one end, medium the other	.40
20	4 x 1 x 7/16 x 3/16	.30
21	6 x 2 x 1 x ⅜ x 3/16	.75
22	4½ x 2⅛ x ⅝ x 5/16	.50

Shape	Dimensions Inches	Each
22½	6 x 2¼ x ¾ x ⅜	.60
23	3½ x ¾ x 3/16 x ⅛	.30
25	4½ x 1 x 5/16 Reamer Stone	.30
26	4 x 9/16 x 3/16	.50
27	Points 3 x 5/16	.50
28	4 x 1 x ⅛	.50
30	6 x ⅜ x ⅜	.45
31	6 x ½ x ½	.45
32	6 x ⅝ x ⅝	.45
33	6 x ¾ x ¾	.55
34	6 x 1 x 1	.55
35	Bath Universal Slip	1.75
36, 37, 38, 39	1 set (4) Carvers Slips 2¼ x ⅞ x 3/16	1.00
40	2 x 1 x ¼	.30
41	5 x 1 x 5/16 x 3/32	.35
42	4 x 1 x ¼	.35
43	4 x ½ x 1/16	.50

Shape	Dimensions Inches	Each
44	4 x ½ x ¼ x 5/16 x ⅛	.50
45	4 x 5/16 x 3/16 x 5/16 x 1/16	.50
46	4 x ½ x ¼ x 5/16 x ⅛	.50
47	4 x ½ x 3/16 x 3/16 x 1/16	.50
48	4 x ⅜ x 3/16 x ⅛ x 1/16	.50
49	4 x 7/16 x 3/16 x ⅛	.50
50	3½ x 7/16 x 3/16	.50
51	Oval Plug 6 x ⅞ x 5/16	.60
52	Heel Breasting Stone	.50
53	Automobile Stone	.35
	Automobile Stone in Case	.60
54	8 x 2 x ¾ High	.90
54½	5 x 1½ x ½ Rounds	.60
55	4 x 1½ x ½	.50
56	5 x 1 x 3/16 (Reamer Stone)	.40
56½	6 x 1 x ¼ (Reamer Stone)	.60
57	4 x ½ x ¼	.50
58	4 x ½ x ¼	.50
59	3 x 1½ x ½ (Axe Stone)	.25
60	Circular Axe Stone, 3 x ⅝	.35

SEE DISCOUNT SHEET

Oil Stones

Round Edge Slips



Arkansas (Regular)

		Dozen
No. 1	3½x1x$\frac{3}{16}$ to $\frac{1}{16}$-inch	$7.00
No. 2	3½x1⅜x¼ to $\frac{3}{32}$-inch	10.50
No. 3	3½x1½x$\frac{5}{16}$ to ⅛-inch	12.60
No. 4	4x2x$\frac{7}{16}$ to $\frac{3}{16}$-inch	21.70
No. 5	4½x2x$\frac{9}{16}$ to ¼-inch	28.00

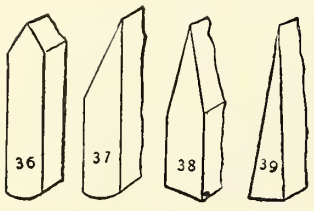
Soft Arkansas

		Dozen
No. 6	3½x1x$\frac{3}{16}$ to $\frac{1}{16}$-inch	$3.50
No. 7	3½x1⅜x¼ to $\frac{3}{32}$-inch	6.60
No. 8	3½x1½x$\frac{5}{16}$ to ⅛-inch	9.00
No. 9	4x2x$\frac{7}{16}$ to $\frac{3}{16}$-inch	9.80
No. 10	4½x2x$\frac{9}{16}$ to ¼-inch	14.00

Rosy Red Washita

		Dozen
No. 11	3½x1½x$\frac{5}{16}$ to ⅛-inch	$2.80
No. 12	4x2x$\frac{7}{16}$ to $\frac{3}{16}$-inch	3.50
No. 13	4½x2x$\frac{9}{16}$ to ¼-inch	4.90
No. 14	5x2½x¾ to $\frac{5}{16}$-inch	9.00

Carving Tool Sets



Arkansas, set of 4 ..... $1.50

Soft or hard. Soft sent unless otherwise specified.

Special Carving Tool Slip



Soft Arkansas

No. 15 2$\frac{7}{16}$x1x¼ inch, dozen $4.20

Penknife Pieces



Arkansas

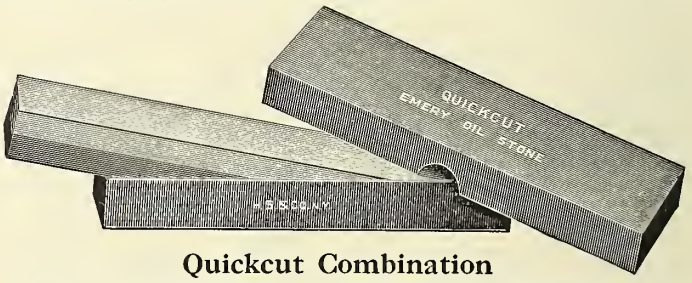
		Dozen
No. 16	3½x¾x⅜-inch	$7.75
No. 17	4x1x½-inch	13.35
No. 18	5x1x½-inch	15.50

Washita		India	
No. 26	3⅞x1x½ inch... $3.20	No. 61	3½x1x⅜ 1.80

Pocket Hones—Carborundum

Very useful for sharpening the penknife or ink scratcher. Complete in neat leather case.

		Each
No. 145	4x1x¼ inches (fine)	$ .40
No. 146	4x1x¼ inches (medium)	.35
No. 149	3x⅞x⅜-inch (fine), without case	.15



Quickcut Combination

Made of Naxos Emery. Combination of coarse and fine grits, packed in neat individual telescope box.

6x2x¾ inches, each ..... $ .25
8x2x1 inch, each ..... .35

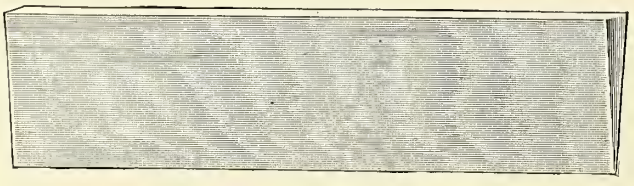
Genuine Queer Creek—Oil or Water



A hard, medium, coarse-grained stone, adapted for grinding down dull tools or sharpening those intended for coarse work.

8x2x1 inch, each ..... $ .40

Miscellaneous Arkansas Sticks



No. 19 Knife Blade, 4 inches long, dozen $6.00



No. 22 Points, 2¾ inches long, dozen $4.00



No. 20 Triangular, 4½ inches long, dozen $5.00



No. 21 Square, 4 inches long, dozen $3.50

Directions for Use

Use only a thin, clear oil and wipe the stone clean after using. Then moisten with clean oil.

To Repair a Broken Oil Stone

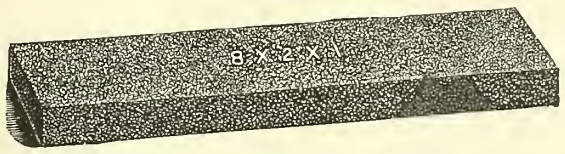
Heat the pieces thoroughly on a hot plate, so as to remove all oil, then clean in regular way. Dust the broken edges thickly with powdered shellac, which melt by reheating on the hot plate. Place the pieces together and clamp tightly until cold. If the joining is carefully done, the stone will give as good service as when new and may be used until worn out.

To Clean

Wash India or Carborundum Stones in kerosene, which will remove the gummed surface oil. This may be more easily and thoroughly done by heating on a hot plate, or sticking in the fire, which latter will not damage the stones.

A natural stone may also be heated on a hot plate to remove the surplus or gummed oil, after which a good cleaning with gasolene or ammonia will usually restore its cutting qualities, but if it does not, then scour the stone with loose emery or sandpaper fastened to a perfectly smooth board.

Sharpening Stones



Emery

For dry rubbing or sharpening. Furnished in either Nos. 60. 70, 80, 90, 100 or 120 Emery.

8x2x1-inch, dozen..... $4.50

Sand

This stone is very coarse and has a sharp grit. Is used largely for sharpening shoemakers and fishermens knives. It is the best stone known for sharpening tools requiring a very harsh, coarse edge.

8x1½x1½ inches, Dozen..... $2.50



Carborundum File

For general shop work; can be used to advantage in place of the steel file for certain operations, such as touching up case-hardened parts and removing scale from metals that cannot be touched by the steel file.

		Each
No. 59	Carborundum File, 13 inches long, wood handle.....	$ .75
No. 53	Carborundum File, 18 inches long, wood handle.....	1.50

Scythe



Carborundum Niagara

These Stones must not be classed with the ordinary scythe stones. The old style stones are merely sandstone and are of very little use They simply rub the edge into shape while Carborundum cuts it fast and clean. The advantage is obvious.

No. 191 12 inches long, each..... $ .25

Lectro

The material from which the Lectro stone is made is the product of the electric furnace. The process of manufacture leaves it strong, though porous, exposing myriads of hard, tough, sharp-pointed crystals making the cutting properties of this stone unexcelled. Every stone guaranteed not to glaue.

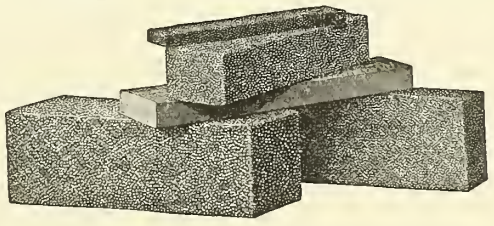
Dozen..... $2.00

Willoughby Lake

Bluish gray in color; round oval in shape. Has very sharp grit but gives fine edge.

Dozen..... $1.60

Rubbing Bricks and Stones



Carborundum

Under the head of Rubbing Bricks and Stones are manufactured a great variety of different shapes and sizes of stones for dressing and smoothing granite and marble, also for scouring castings, chilled iron and steel rolls used in tin-plate mills, rolling mills, etc. These stones are not squared up and dressed, but are packed as they come from the kilns. There is practically no limit to the possibility of manufacture in this line, and while we list a few sizes most commonly used and carried in stock, we are prepared to furnish, when called upon, any size or shape of any grit, from the coarsest to the very finest powder. We shall be pleased to quote special prices on any plain or irregular shapes. These stones are all made by the vitrified process, and can be used dry or with water or oil.

Number	Size Inches	Dozen	Number	Size Inches	Dozen
210	8x4x4	$40.00	217	5x2½x1	$5.75
209	8x4x3	30.50	218	5x1½x1	4.15
208	8x4x2	21.00	219	5x1½x ½	2.95
207	8x3x3	23.40	220	4x4 x4	21.00
206	8x3x2	16.30	221	4x3 x3	12.70
211	8x2x2	11.40	228	4x3 x2	9.00
212	8x2x1	6.70	222	4x2 x2	6.70
213	6x3x3	18.00	223	4x2 x1	4.30
205	6x3x2	12.70	224	4x2 x ½	3.00
214	6x2x2	9.00	226	4x1 x ½	2.35
215	6x2x1	5.60	227	4x1 x ¼	2.00
216	6x2x½	3.70			

For Concrete

The Carborundum Rubbing Bricks are the fastest cutting mediums known for removing form marks and for dressing down concrete work.



The slip is used for cleaning up moldings and curved surfaces. Supplied in 20 grit only.

	Dozen
8x3x3 inches, fluted.....	$23.40
8x2x2 inches, fluted.....	11.40
6x2x2 inches, fluted.....	9.00
4x2x2 inches, fluted.....	6.70
4½ inches diameter, fluted, 2 inches thick.....	11.40
Slip, 8 inches long, 4 inches wide, tapered from 1¾-inch to ½-inch	12.70

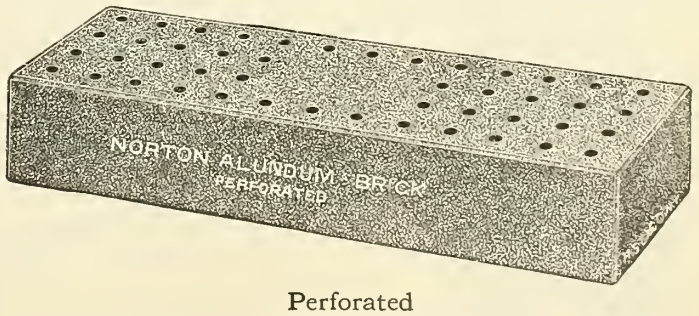
Alundum

Manufactured in a variety of shapes, sizes and grits.

Used principally for scouring castings, general foundry and machine snop work, dressing and smoothing granite and markle, scouring chilled iron rolls and work of like nature. While the list below includes only the sizes commonly used, we are prepared to furnish special shapes and sizes in any grit desired.

Can be used dry, or with water or oil.

Number	Size	Dozen	Number	Size	Dozen
101	8x4x2	$15.00	104	8x2x1	$4.50
102	8x3x3	16.50	105	6x3x3	13.50
103	8x3x2	12.00	107	6x3x2	9.00
209	8x2x2	8.00	108	4x2x2	4.50



Perforated

A valuable brick for rubbing down castings after filling, also rubbing down varnish on patent leather.

These bricks can be made in different sizes and grits.

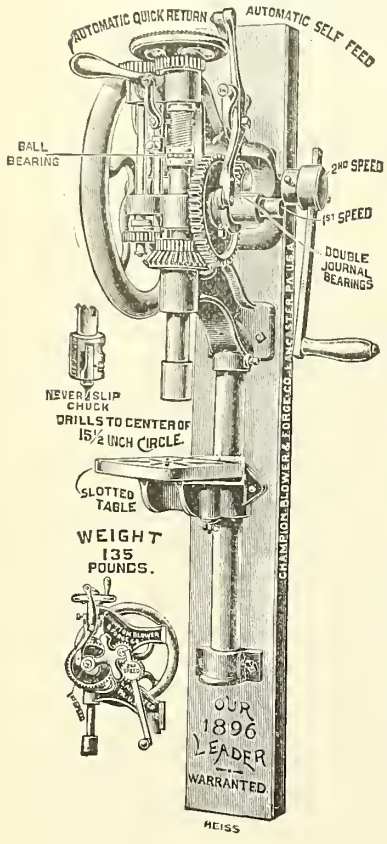
No. 109 6x2x1, dozen..... $4.50

For Grain or Grit, see pages 358 and 359.

Blacksmiths Post Drills

Champion

No. 96 Self-Feed with Automatic Quick Return



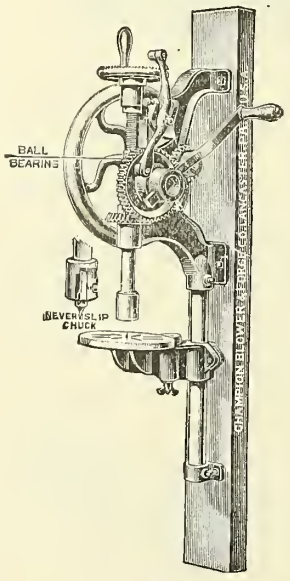
The quick return lever is thrown into place while the drill continues in motion, where it remains until the bit is raised out of the work, when it automatically stops, requiring no attention from the operator, and is ready to start the next hole.

It is back-geared with improved third-gear principle. The crank has a forward motion on both 1st and 2d speed, the third gear being part of the handle hub and only in use as a gear when on the 2d speed, thus saving the continuous labor of pulling along an intermediate or third gear while working the first speed.

Drills to the center of 15½-inch circle. All gears are protected with double journal bearings. All bearings are ground to a working fit out of the solid metal, precisely like all drills costing from $100 to $500. It has two speeds. Will drill from $\frac{1}{64}$ to 1½-inch hole. Spindle bored regularly to take ½-inch straight shank drills, furnished to take $\frac{41}{64}$-inch if specially ordered.

Weight, 135 pounds. Each $12.50
Extra for power..... 3.00

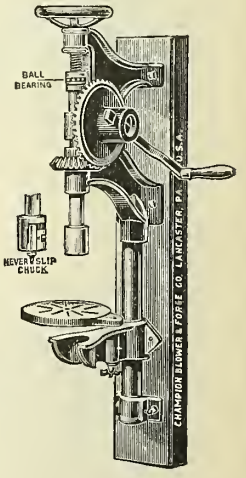
No. 101 Self-Feed



Built to furnish an automatic self-feed drill at the lowest price possible. Has back gears and slotted lathe-turned table. It will drill to the center of a 12-inch circle. It has one speed for the crank. The spindle is ⅞-inch in diameter. It drills holes up to ¾-inch and has an up-and-down run of 3 inches. The spindle is bored for ½-inch straight shank drills. When specially ordered will be bored for ⅝ or $\frac{41}{64}$-inch.

Weight, 80 pounds. Each.... $7.00

No. 92 Hand Feed



Will drill holes from $\frac{1}{64}$ to ¾-inch and to the center of a 12-inch circle.

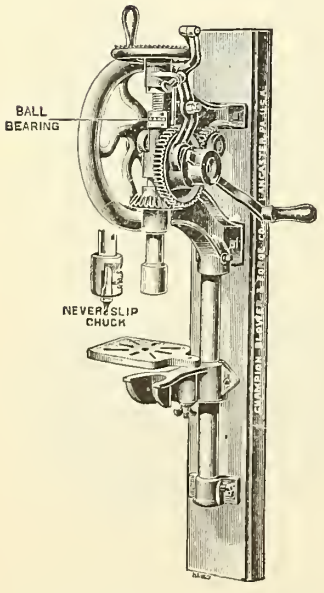
It has a slotted table planed off on its top side. The spindle is made of ⅞-inch steel and has an up-and-down run of 3 inches. The end thrust ball bearings save power and no babbitt metal is used in machine. All drills are machined-jigged, therefore, parts are standard and interchangeable. Spindle bored for ½-inch straight shank drills. When specially ordered will be bored for ⅝ or $\frac{41}{64}$-inch.

Weight, 65 pounds. Each..... $6.00

No. 92½ Exactly the same as Number 92, except that it has fly wheel.

Weight, 70 pounds. Each..... $6.50

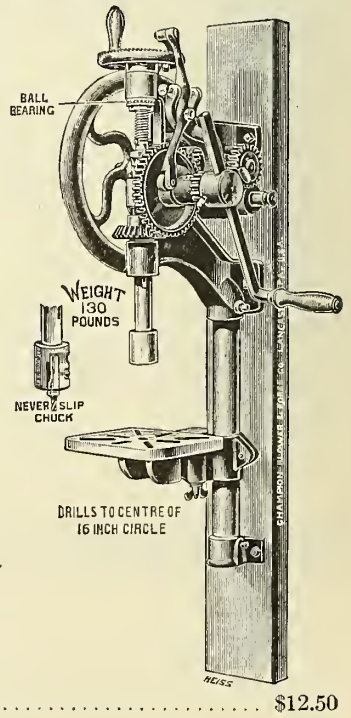
No. 90 Self-Feed



Has a slotted square table lathe-turned. It is a strong and stoutly proportioned drill. Has full back gear with one speed. Drills to the center of a 14½-inch circle. The bearings are all ground from solid metal. Will bore holes up to 1 inch. Has spindle 1⅛-inch in diameter with an up-and-down run of 3 inches. Spindle bored to take ½-inch straight shank drills. If specially ordered will be bored to take ⅝-inch or $\frac{41}{64}$-inch.

Weight, 100 pounds. Each $8.50
Extra for Power..... 3.00

Ball Bearing Self-Feed

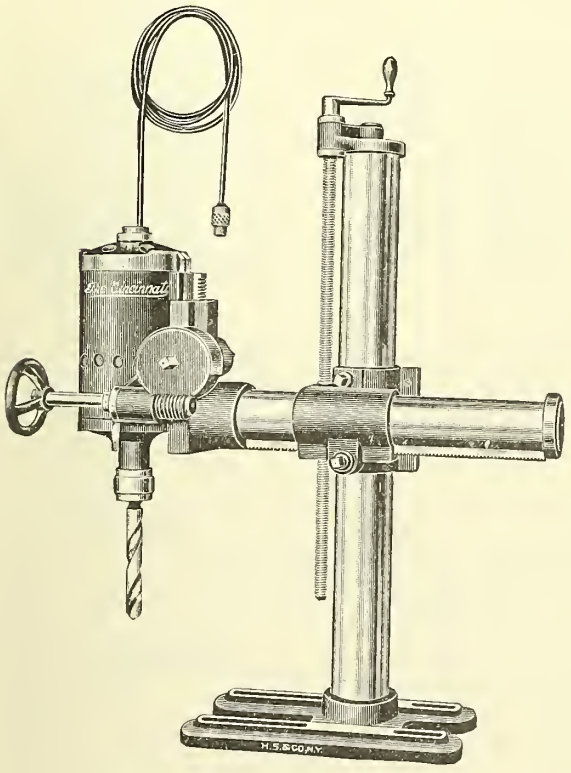


Has three gears to give the second speed the same turning direction of the crank that the first speed has It drills to the center of a 16-inch circle, making it a very useful and valuable drill, and giving it a greater range of work than any other drill sold at this price. The ball-bearings are first-class, the cup and cone both made from die steel and will save power, as the ball-bearing takes up the end thrust of the high-speed drill. It has full automatic self-feed and lathe-turned square-slotted table. Has spindle 1¼ inches in diameter. Has an up-and-down run of 3 inches. Spindle bored to take ½-inch straight shank drills. If specially ordered, bored to take in ⅝ or $\frac{41}{64}$. Will drill holes up to 1¼ inches. It has double-journal bearings all through, and all bearings are ground out of the solid metal to a working fit.

Weight, 130 pounds. Each..... $12.50
Extra for power..... 3.00

Upright Bench Drills

Cincinnati Portable Radial



Direct and Alternating Current

This Scotch Radial Drill is made in several sizes. The stand has a horizontal adjustment by means of a rack and pinion on the cross arm, and a vertical adjustment through the 34-inch lead screw, attached to the upright column. The Drill Motor can be set at any angle and has a circle radius of 24 inches in any direction. It has a 10-inch hand-wheel feed with quick return.

The hand-wheel and worm box are adjustable to drill in either horizontal or vertical position, allowing the operator to get into close corners. All adjustments are positive and under immediate control. The columns are of Shelby steel tubing and ground. This Drill can be set anywhere, as any length cord can be used. The motor is of our Heavy Duty Type and guaranteed in very way.

Order by Type, Current and Volts
If Alternating, give Cycles and Phase

Each	Type Direct Current	Capacity in Steel Inches	Taper Socket	Weight Pounds	Speed R. P. M.	Type Alternating Current	Each
115.00	MS (2 speed)	7/8	No. 2	160	220-400	MSA	125.00
140.00	MO (2 speed)	1	No. 3	190	175-350	MOA	152.00
165.00	MM (2 speed)	1¼	No. 3	225	145-300	MMA	175.00
166.00	MR	2	No. 4	270	95	*MRA	185.00
178.00	MY	2½	No. 5	290	85	*MYA	190.00

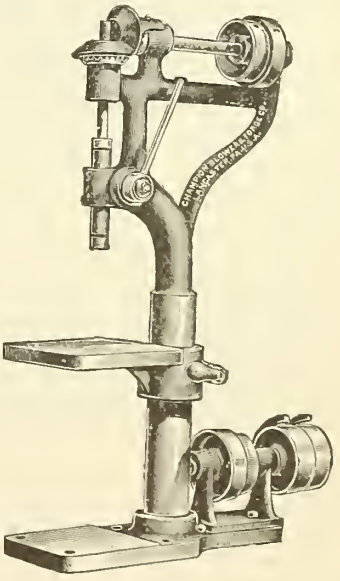
*Made in two and three phase only.

Champion Power No. 0

For Light and Rapid Drilling

The top of the drill base is planed off to use as a table when the regular drill table is turned to one side, thus giving a space of 16 inches between the chuck and base-table. The upper cone pulley is between two bearings, thus equalizing the strain and making the drill more powerful. The countershaft is supplied with a belt shift on the tight and loose pulley and the feed lever is manipulated with a spring arrangement to automatically keep the lever and bit out of the work.

This Drill is particularly adapted for garages, pattern makers and machine shops where light, accurate and rapid drilling is done.



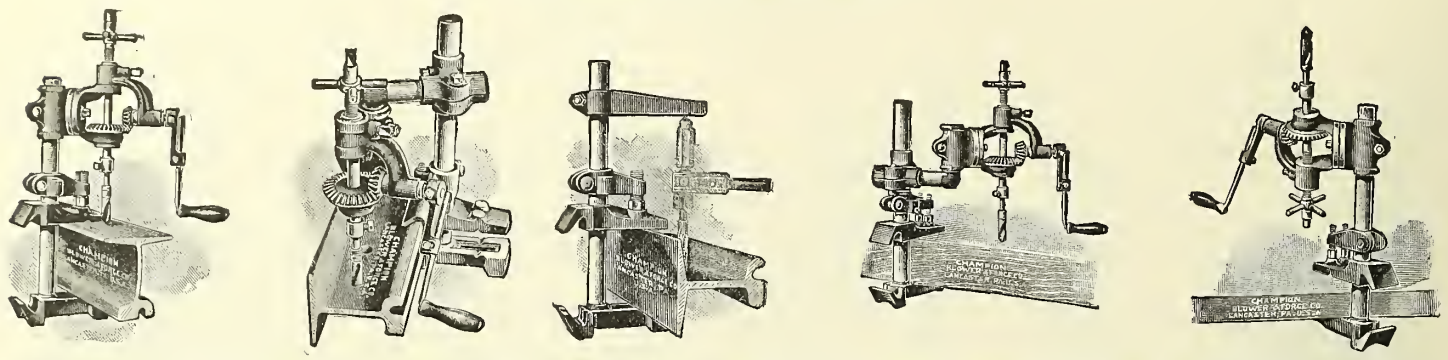
Dimensions

Drills to center of a 9-inch circle.
Bores holes up to 9/16-inch in diameter.
Up and down run of spindle 3¼ inches.
Up and down run of table 9 inches.
Greatest distance from table to spindle 10 inches.
Greatest distance from planed base to spindle 16 inches.
Diameter of column 2½ inches.
Size tight and loose pulleys 4x1¾ inches.
Size of large cone pulley 4½x1½ inches.
Size of small cone pulley 3x1½ inches.
Spindle is bored with No. 1 Morse taper hole.
Height, 32 inches.
Weight, 100 pounds.

Each $30.00

Hand Drills

Champion Universal Radial

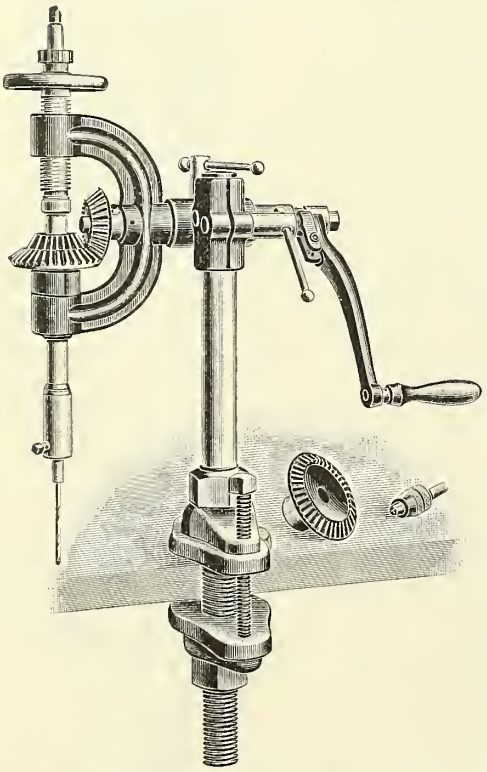


Ball-bearing Drill, designed and constructed to drill holes in practically all positions, angles or locations where an ordinary drill cannot reach. By the various illustrations the drill explains itself and the purposes for which it has been designed. It is a convenient, practical and profitable tool for contractors, steam railroads, electric railroads, bridge builders, structural steel workers, machine shops, repair shops, bridge builders and is a particularly good drill for municipal corporations owning their own water works, etc. While the Drill can be radiated in practically any position, it also makes a very convenient regular standard drill for straight boring. Spindle bored to take in ½-inch straight shank drills.

No. 1 Capacity 1¼-inch hole, weight, 42 pounds each $30.00
No. 2 Capacity 1½-inch hole, weight 70 pounds, each 45.00

Angular and Ratchet Drilling Machine

M. F. Co.



Steel standards shafts, and spindles; iron frame, crank and bench clamp; malleable iron gears.

Attachable either to bench or to object to be drilled.

Drills vertically or at any angle desired, above or below bench.

Extensible from standard outward. No. 1 machine, 4½ to 5¾ inches; No. 2, 6 to 8 inches; and No. 3, 7 to 10½ inches.

Hand feed.

Ratchet attachment.

Socket hole in spindle for ½-inch round shanks but bored to order for ⅝-inch without extra charge.

One ¼-inch drill to fit socket and star chuck to hold round shanks from 0 to ½-inch in diameter supplied with each machine, without extra charge; omitted when machine is made to order with taper socket.

No. 1 Speeded; ball bearing. Drills hole up to ⅜-inch.

No. 2 With two sets of gears making either speeded or geared back; hardened anti-friction bearings. Drills hole up to 1-inch.

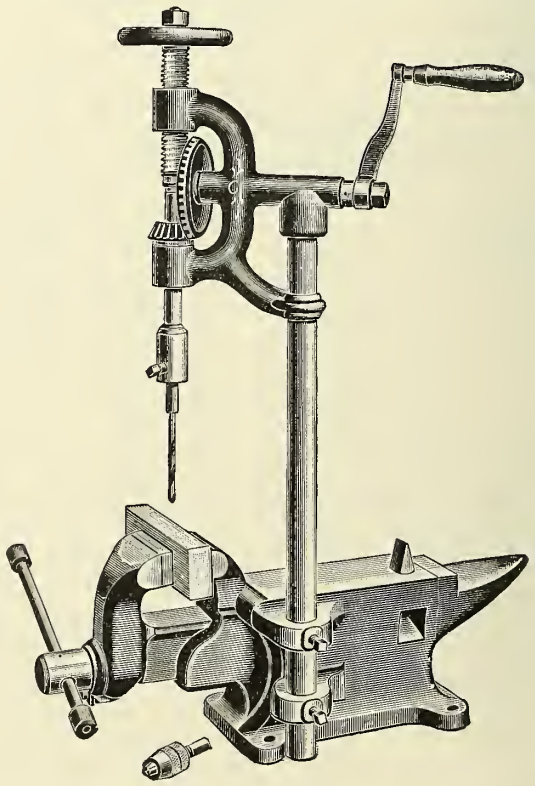
No. 3 Geared back; hardened anti-friction bearings. Drills hole up to 1½ inches.

Numbers	1	2	3
Height of standard	25½ inches	25½ inches	28½ inches
Weight, net	34 pounds	68 pounds	108 pounds
Each	$16.00	20.00	30.00

To order with hole for taper socket, extra, net $1.50

Note—When ordering state size of taper wanted.

Anvil, Vise and Drill



(1) Drilling Attachment: Steel standards and spindle; hand feed; socket hole ½-inch in diameter; provided with one ¼-inch drill to fit socket hole and extra chuck to hold round shanks from 0 to ½-inch in diameter; attachment may be swung away from vise and work done below the bench; height of standard, 24 inches.

(2) Vise: Of best material and construction; jaws 3½ inches wide with inserted steel faces.

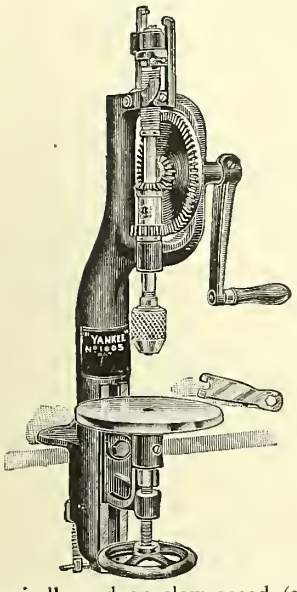
(3) Anvil: Steel face 4x8 inches; hardie provided.

Anvil, Vise, and Drill	Anvil and Vise	Drilling Attachment
Weight, net, 80 pounds,	60 lbs.	20 lbs.
Each $30.00	12.80	17.20

Packed one in a wooden box.

Bench Drills

Yankee, With Automatic Friction and Ratchet Feeds



No. 1005

For Drills up to ½-inch, inclusive.

Made with two speeds and quickly changed from one to the other by simply moving the shifter on spindle to top notch (S) for slow or bottom notch (F) for fast speed. When the shifter is placed in center notch, the spindle is locked fast, to open or close chuck. On the fast speed (geared 64 to 18) one revolution of crank gives 3½ to spindle and on slow speed (geared 14 to 14) one revolution of crank gives 1 to spindle. The spindle is $\frac{9}{16}$-inch diameter, of steel; all gears have teeth of extra strength and are cut from solid to run smoothly and accurately, the pinon of slow speed being of steel. The chuck is of steel 2¾ inches long, $1\frac{9}{16}$-inch diameter, polished and nickel plated, has three jaws of tool steel, hardened and holds round shank drills up to ½-inch diameter, inclusive. The traverse of spindle (automatic feed) is 2 inches. The friction feed brings drill to and from work quickly and ratchet feeds automatically all drills from No. 45 up to ½-inch without risk of breaking. Provision is made by bracket with arms to throw off ratchet feed at extreme up or down movement, to prevent parts being jammed. The feed screw is of steel, has square thread to insure durability, and fitted with ball bearing at lower end. All steel parts subject to wear are hardened. The crank is 6 inches between centers.

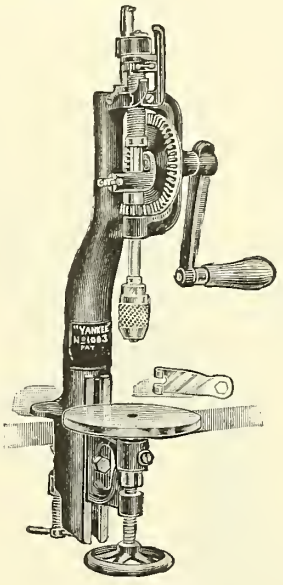
The bracket at base of column has a vertical adjustment of 5 inches, the slide being 9¼ inches and bracket 4¼ inches long. The table on bracket has an independent movement of 1¼ inches by means of a 4¼-inch hand wheel and screw, and can be used for feeding in emergencies, in addition to automatic feed. The table is 6¾ inches diameter, its center 3½ inches from fall of side. The lower end of bracket slide on column is 6 inches below base resting on bench; from bench the top of column is 18 inches, and from there to top of guide is 4 inches.

Total height of drill above bench is 22 inches, below 6 inches, making extreme height of drill 28 inches. The distance from end of base on bench to front of table is 13½ inches. With table bracket flush with end of column, table all the way down and spindle up, the distance between table and end of chuck is 7½ inches, quite a large capacity for a drill of this kind.

A steel wrench is furnished for nut holding table bracket and to tighten clamp screw for bench. The frame isfinished in dead black color. In design, capacity, construction and efficiency, the "Yankee" Bench Drill excels any similar tool and stands in a class by itself.

Packed one in wooden box, 28x13½x8 inches outside; net weight, 29 pounds, gross weight, 57 pounds.

Each $12.50



No. 1003

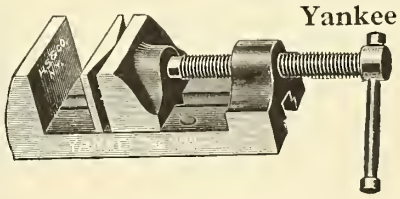
For Drills up to ¼-inch, inclusive.

Made with one speed only (geared 49 to 14) and one turn of crank gives 3½ revolutions to spindle. The spindle is steel, ⅜-inch diameter, all gears have teeth of extra strength and are cut from solid to run smoothly and accurately, the pinon being of steel. A small lever on arm to left of spindle locks spindle fast to open and close chuck. The chuck is of steel 1¾ inches long, 1-inch diameter, polished and nickel-plated, has 3 jaws of tool steel, hardened and holds round shank drills up to ¼-inch diameter, inclusive. The traverse of spindle (automatic feed) is 1½ inches. The friction feed brings to and from work quickly and ratchet feeds automatically all drills from No. 54 up to ¼-inch without risk of breakage. Provision is made by a bracket with arms to throw off ratchet feed at extreme up or down movement to prevent parts being jammed. The feed screw is of steel, has V-thread and fitted with ball bearing at lower end. All steel parts subject to wear are hardened. The crank is 4 inches between centers. The bracket at base of column has a vertical adjustment of 2¾ inches, the slide being 5¾ inches, and bracket 3 inches long. The table on bracket has an independent movement of 1¼ inches by means of a 3-inch hand wheel and screw, and can be used for feeding in emergencies, in addition to automatic feed. The table is 4¾ inches diameter, its center 2½ inches from face of slide. The lower end of bracket slide on column is 4¼ inches below base resting on bench; from bench the top of column is 11½ inches and from there to top of guide 3 inches. Total height of Drill above bench is 14½ inches, below 4¼ inches, making extreme height of Drill 18¾ inches. The distance from end of base on bench to front of table is 9¾ inches with table bracket flush with end of column, table all way down and spindle up, the distance between table and end of chuck is 5 inches, a quite large capacity for a Drill of this kind. A steel wrench is furnished for nut holding table bracket and to tighten clamp screw for bench. The frame is finished in dead black color. In design, capacity, construction and efficiency, the "Yankee" Bench Drill excels any similar tool and stands in a class by itself.

Packed one in wooden box, 19x9¾x6½ inches outside; net weight, 10¼ pounds, gross weight, 20 pounds.

Each $7.50

Yankee No. 990 Vise for Above Drills



Designed for use on Yankee Bench Drills, or separately attached to bench.

The body and sliding jaw are of cast-iron, accurately machined to hold work square, when used either flat or on sides. The sliding jaw has a T-shaped block screwed to its underside, sliding in a T-shaped slot $\frac{9}{16}$-inch wide, insuring parallel movement of jaw.

A removable swivel jaw is provided to hold taper work, and is made of steel, case hardened. The stem has a friction spring to hold jaw in position. The adjusting screw is of steel ½-inch diameter with ¾-inch head to receive sliding bar. The boss on end of body in which screw works is ⅞-inch long. Two countersunk holes are provided in base to screw vise to bench if desired.

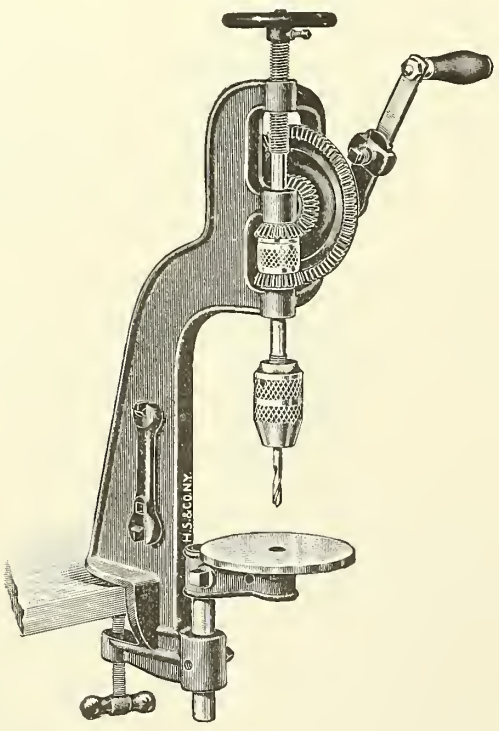
The base of vise is 6 inches long and 2⅜ inches wide. Extreme height 2 inches. The opening of jaws, without swivel jaw, is 3 inches, with swivel jaw 2⅝ inches. Depth of jaws 1⅜ inches. Weight of vise 3¾ pounds.

Packed one in paper box, measuring 7⅜x3⅛x2⅛. Net weight, 4 pounds, gross weight, 4 pounds, 3 ounces.

Each $1.40

Bench Drills

M. F. Co.



No. 210

Frame finished in French gray with red trimmings; large gear enameled black with red stripe.

Strong cast-iron standard.

Hand feed.

Instantly changeable speed, 1½ to 1 and 4 to 1.

Adjustable crank, extensible from 3 to 6 inches in radius.

Table with swivel arm, may be raised within range of 2 inches.

Wrench to fit all nuts on the tool.

Chuck of star pattern, holding round shanks from 0 to ½-inch; and jaws operated by springs that are protected from injury and will not get out of order.

Height over all, 24 inches.

Maximum distance from chuck to table, 9 inches.

Weight, boxed, 27½ pounds; net, 22 pounds.

Packed in a wooden box.

No. 210 Each..... $8.00

No. 208 Same in general design as No 210. Without changeable speed.

Height over all, 18-inches.

Maximum distance from chuck to table, 4½ inches.

Capacity of chuck, 0 to ¼ inches.

Diameter of table, 3½ inches.

Speed of gears, 3½ to 1 inch.

Crank, 4½ inches long.

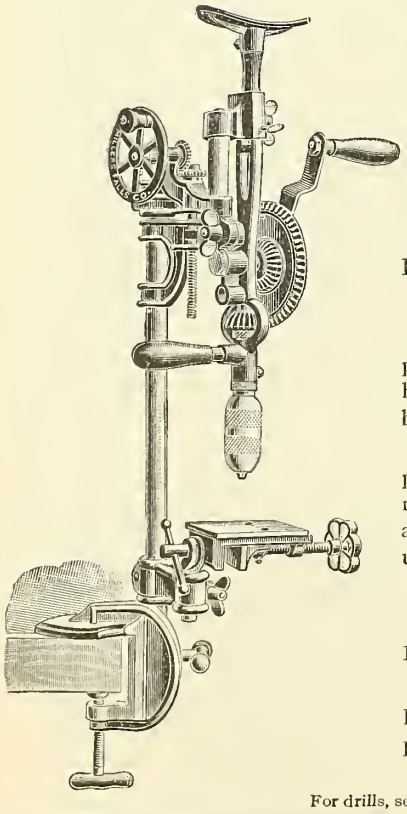
Ball thrust bearing.

Weight each, 7½ pounds.

Each..... $5.00

Bench Drill Presses

M. F. Co.



Universal

No. 20

For Breast Drills

A standard and fixtures to hold Breast Drills Nos. 12 and 118.

Sensitive hand feed.

Drill may be swiveled into many positions and clamped at varying heights, either above or below the bench.

Vise swung on pin off center, permitting its use in many positions; may be used horizontally, on an angle, or reversed and table turned uppermost.

Height of standard, 24 inches.

Weight, boxed, 28 pounds; net, 19 pounds.

Without breast drill.

Packed 1 in a case.

Each..... $5.00

For drills, see page 376

No. 22

For Hand Drills

A simply constructed standard and fixtures to hold hand drills Nos. 1, 2, 03, 5 and 105.

Steel and iron japanned.

Sensitive, compound lever feed.

Adjustable clamp to hold drill.

Height between chuck and table, when former is raised to its highest point, varying from 6½ to 7½ inches according to drill used.

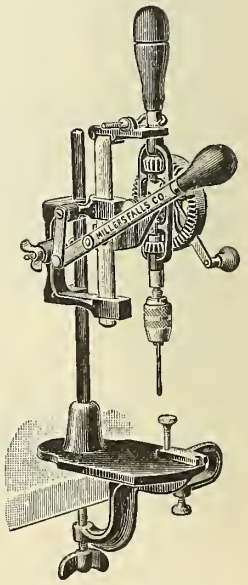
Height of standard above bench, 15½ inches.

Weight, with pasteboard box, 8 pounds.

Packed 1 in a pasteboard box.

Note—For prices of drills see Hand Drills.

Frame only..... $2.25

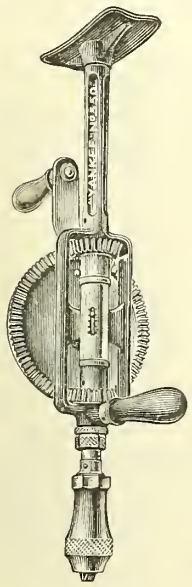


For drills, see page 387

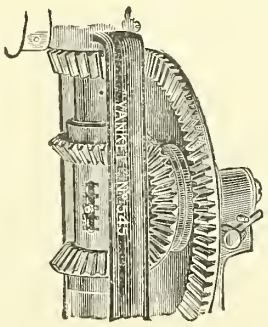
Breast Drills

Yankee Ratchet

With Right and Left-Hand and Continuous Ratchet Movements



No. 550



Differs from all others in what it will do and how it does it.

Note the little slide on Cylinder between Gears and the notches. With slide in first notch (at top), it is a Plain Drill, in second a Left-hand Ratchet, in third a Right-hand Ratchet, in fourth a Double Ratchet where any movement of Crank forward or backward causes the Drill to cut continuously, a time saver and convenience when working in corners where Crank cannot be turned. In fifth (at bottom) Gearing, etc., is locked to open or close Chuck.

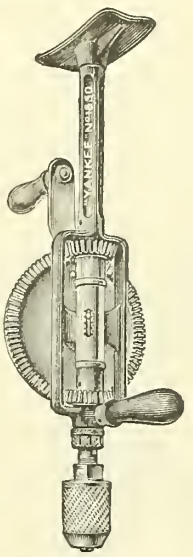
In double speed styles the change of speed, fast or slow, is made by simple movement of lever on hub or Gear and without removing Drill from work and with any of the movements named above.

Made with either two or three Jaw Chuck. The two Jaw Chuck holds accurately and securely both square or round Shanks, the three Jaw round Shanks only.

Adjustable Ball Bearings takes all strain or thrust.

The side handle can be unscrewed and has Screw-driver Bit to fit screws in Drill.

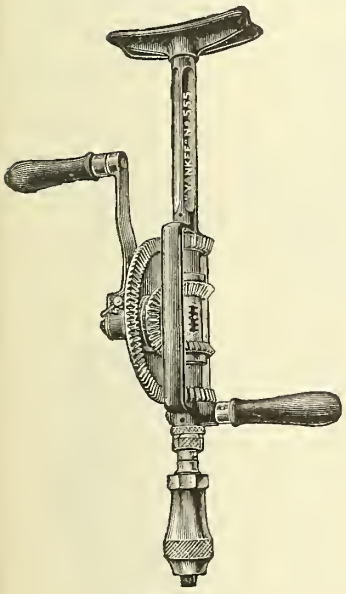
The Frame is malleable iron, finished in dead black Japan. The Chuck body is malleable iron, polished and nickel-plated. The Jaws of steel, drop forged and hardened. The Spindle is of steel and gears are cast iron with cut teeth.



No. 1550

No. 550. Single speed with two Jaw Chuck to hold round and square Shanks up to ½ inch.
Large Gear is 5¼ inches, small Gear 1⅞ inches diameter.
Entire length of Drill is 18 inches. Net weight 5½ pounds.
Packed one in heavy paper box. Price each $4.25

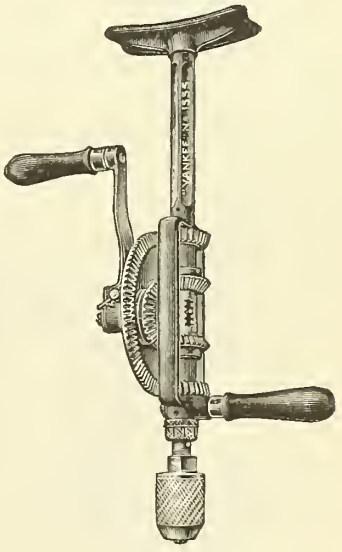
No. 1550. Single speed with three Jaw Chuck to hold round Shank only up to ½-inch diameter, inclusive.
Large Gear is 5¼ inches, small Gear 1⅞ inches diameter.
Entire length of Drill is 18 inches. Net weight 5½ pounds.
Packed one in heavy paper box. Price each $4.25



No. 555

No. 555 Double speed with two Jaw Chuck to hold round and square Shanks up to ½-inch.
Large Gear is 5¼ inches, small Gear 1⅞ inches diameter.
Entire length of Drill is 18 inches. Net weight 6½ pounds.
Packed one in heavy paper box. Price each $5.00

No. 1555. Double speed with three Jaw Chuck to hold round Shank only up to ½-inch diameter, inclusive.
Large Gear is 5¼ inches, small Gear 1⅞ inches diameter.
Entire length of Drill is 18 inches. Net weight 6½ pounds.
Packed one in heavy paper box. Price each $5.00

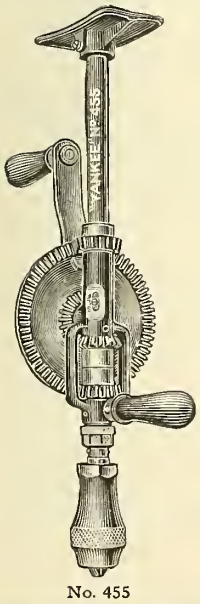


No. 1555

Yankee Plain

These are of the same superior and substantial construction as the "Yankee" Ratchet styles, but without the ratchet movements. They are made only with double speed. Special attention is called to the very quick and easy change in speed made by the small shifter on the main frame between small gears. With shifter at top notch S it is set for slow speed, at bottom notch F fast speed, in center notch L the spindle is locked so the chuck can be readily opened and closed. They are strong and substantially built for hard work and durability, have adjustable ball bearings on spindle to take up all strain or wear. The side handle can be unscrewed and has screw-driver bit to fit screws in Drill. The frame is of malleable iron, spindle of steel turned and fitted, all gears have cut teeth to run smoothly and accurately and of extra strength.

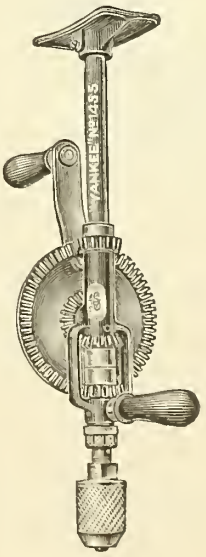
The Drills are finished in dead black color with bright parts polished.



No. 455

No. 455. Double speed with two Jaw Chuck. Jaws (alligator pattern) are drop-forged of steel, and hold square shank Drills up to ½-inch. Large Gear is 5 inches, small Gear is 1⅞ inches, and Gears on Spindle 1½ inches diameter, all have extra strong cut teeth.
Entire length of Drill is 17¼ inches. Net weight 5½ pounds.
Packed one in heavy paper box. Price each $3.25

No. 1455. Double speed with three Jaw Chuck. Jaws are of tool steel and hold round shank Drills only, up to ½-inch diameter, inclusive. Large Gear is 5 inches, small Gear 1⅞ inches, and Gears on Spindle 1½ inches diameter, all have extra strong cut teeth.
Entire length of Drill is 16½ inches. Net weight 5½ pounds.
Packed one in heavy paper box. Price each $3.25

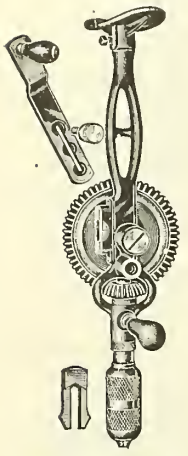


No. 1455

Breast Drills

M. F. Co.

Each of these drills has its distinctive operations, though all are constructed on the same general plan. They are so designed as to practically eliminate the loss of power by running each driving gear on its own independent bearing, thus adding largely to the power, and a careful comparison by way of actual test will demonstrate this fact.



No. 12 Improved

No. 12 Improved

Cocobolo handles, large gear and breast plate painted green and malleable iron main stock enameled black; chuck and crank nickeled. Breast plate adjustable to different positions and removable. Patent level attachment. Cut gears, large gear with idler roll to equalize bearings. Ball-thrust bearing. Extensible crank with radius from 4 to 6 inches adding to the power of the tool. Changeable speed from even to 3 to 1. Master chuck holding round shanks from ⅛ to ½-inch in diameter, all sizes of bit stock and No. 1 taper shanks. Length, 17½ inches.

Dozen $40.00

No. 118

Same as Number 12, except that chuck is star pattern (see below).

Dozen $47.00

No. 13

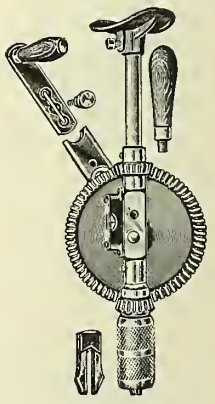
Cocobolo handles, solid steel main stock, large gear and under side of breast plate painted red; other metal parts polished and nickeled. Breast plate adjustable to different positions and removable. Extensible crank with radius of 5½ to 7 inches adding to powers of the tool. Cut gears, large gear 6 inches in diameter, giving speed of 4½ to 1, idler gear to equalize bearings. Patent level attachment. Ball thrust bearing. Master chuck holding round shanks from ⅛ to ½-inch in diameter, all sizes of bit stock and Number 1 taper shanks. Length, 15 inches.

Dozen $55.00

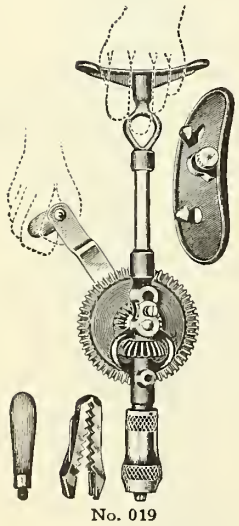
No. 130

Same as Number 13, except that chuck is star pattern (see below).

Dozen $63.00



No. 13



No. 019

No. 019

Breast plate adjustable to different positions and made to fit the hand; when grasped with middle finger through hole provided for it the tool can be held easily and steadied in awkward and out-of-the-way places when the breast plate must be held in the hand. Auxiliary breast plate, as shown in illustration, to add ease and comfort or for use in doing heavy work. Stained hardwood handles; black enameled cast-iron frame; rolled-steel main stock, detachable from frame; large gear painted French gray and red. Adjustable crank, enameled black, with radius of 4 to 7 inches adding power to the tool. Changeable speed from even to 3 to 1, changed by loosening a knurled nut, instantly shifting the gear without taking bit from the work. Cut gears. Ball-thrust bearing. Barber improved chuck with alligator jaws holding bit stock and many sizes of round shanks. Length, 18 inches.

Dozen $31.00

No. 029

Same as Number 019, except that chuck is star pattern (see below).

Dozen $39.00

No. 199

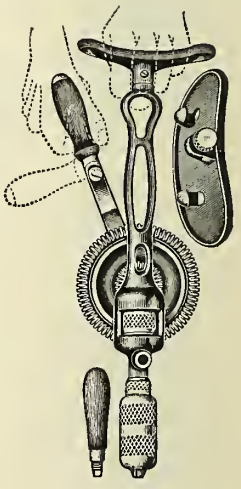
Selected hardwood handles, stained; malleable iron, black frame; large gear and breast plate dark gray with red trimmings. Crank handle adjustable to two positions; one at right angles to crank, the other in line with the crank, which is of advantage in cramped quarters and increases the power of the crank. Provided with simple and effective ratchet, operated by raising and turning the cap to the right or left. Instantly changeable speed from even to 3 to 1. Cut gears, small gears of steel. Ball-thrust bearing. Chuck of the master pattern, holding round shanks from ⅛ to ½-inch in diameter, No. 1 Morse taper and all sizes of bit stock shanks. Length, 18 inches.

Dozen $53.00

No. 200

Same as Number 199, except that chuck is star pattern (see below.

Dozen $59.00



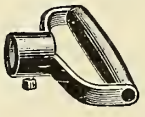
No. 199

Star Pattern Chuck



With three jaws for round shanks only from 0 to ½-inch diameter. Jaws are operated by protected springs that will not get out of order. Used on Drills Nos. 118, 130, 029 and 200.

D-Handle for Breast Drills



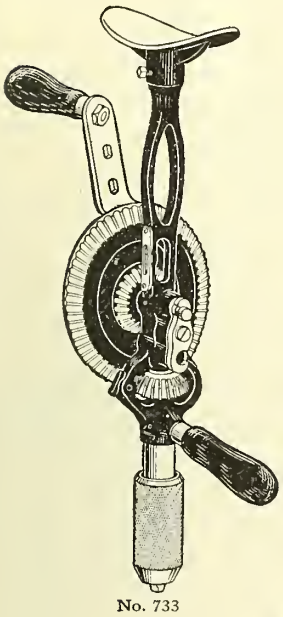
Fits Numbers 12, 13, 118, 130, 199, 200. May be substituted for breast plates at regular prices.

Dozen $4.00

SEE DISCOUNT SHEET

Breast Drills

Stanley Iron Frame



No. 733

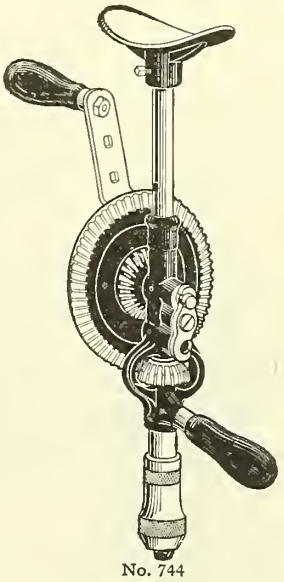
This line of Breast Drills is of the highest grade of workmanship, material and general finish. The frame is of one piece, made of malleable iron, giving strength with light weight. They are made in two speeds, 3 to 1 for small drills, and 1 to 1 for heavier work.

The chuck is heavily nickel plated: other bright parts polished; balance of tool finished in a dull-black enamel. A level is firmly set in the frame to assist the user to maintain a horizontal position of the drill while working. There is a ball thrust bearing between the pinion and frame. The breast plate may be adjusted to suit and is locked by a set screw. The spindle is kept from turning while changing drills by means of a latch mounted on the frame and readily engaged with the pinion. The crank is pierced in three places so that the handle can be set for three different sweeps, depending upon the character of the work.

Universal jaws adapted for round shanks ⅛-inch to ½-inch diameter as well as taper-shank bits. All jaws are forgings, machined, hardened and fit into machined sockets.

No. 733 Double Speed, weight, 5⅝ pounds, dozen $33.00

Victor Iron Frame



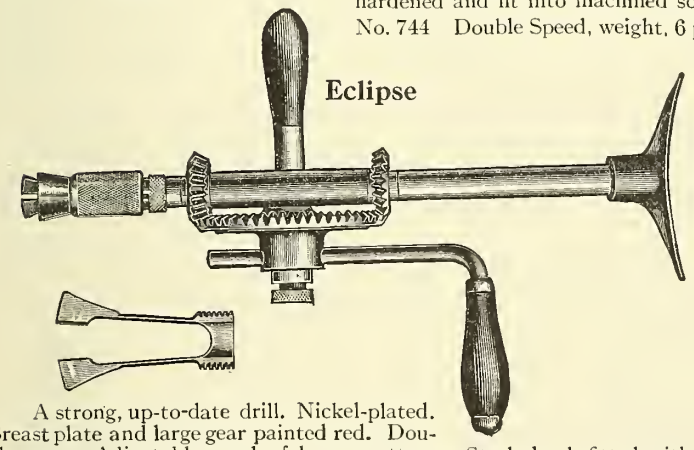
No. 744

All bright parts are polished, other parts are finished in a dull black enamel. The handles are ebonized. There is a ball thrust bearing between the pinion and frame. The breast plate may be adjusted to suit, and is locked by a set screw. The crank is pierced in three places, so that the handle can be set for three different sweeps.

Alligator jaws adapted for small and medium round shanks, as well as ordinary taper-shank bits. All jaws are forgings, machined, hardened and fit into machined sockets.

No. 744 Double Speed, weight, 6 pounds, dozen $24.00

Eclipse



A strong, up-to-date drill. Nickel-plated. Breast plate and large gear painted red. Double gear. Adjustable crank of heavy pattern. Steel chuck fitted with two hardened forged steel jaws that will center and firmly hold small size round shank drills or wood bits of all kinds. Furnished with ratchet attachment for right or left.

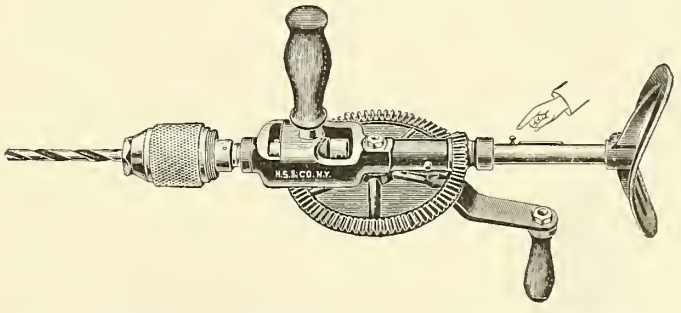
Gears are all mill-cut and turn true.

No. 352 Ratchet attachment, dozen $40.00

1 each in metal-edged box.

Approximate weight complete is 6 pounds each.

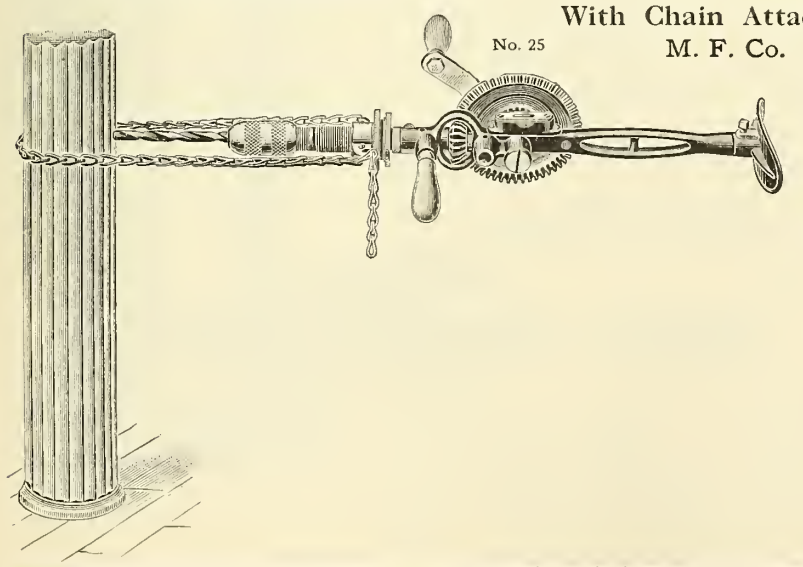
Wilkinson



The feature of this drill is the gear locking device enabling the operator to put all the power on the chuck when inserting the drill without having the gears revolve. The chuck is of the universal self-centering pattern, and will hold from ⅛ to ½-inch round shank drills. Gears and pinions have cut teeth.

Dozen $66.00

With Chain Attachment



No. 25 M. F. Co.

Cocobolo handles; black enameled, malleable iron frame; gear and breast plate painted green; other metal parts nickeled.

Breast plate adjustable to different positions and removable.

Patent level attachment.

Extensible crank with radius from 4 to 6 inches adding power to the tool.

Changeable speed from even to 3 to 1.

Cut gears, idler roll to equalize bearings.

Ball thrust bearing.

Master chuck, holding round shanks from ⅛ to ½-inch in diameter; bitstock and No. 1 Morse Taper shanks.

Automatic, adjustable feed.

Three feet of stout chain.

May be used as an ordinary breast drill without the chain.

Length, 20 inches.

Weight, per dozen (with pasteboard boxes), 98 pounds.

Price, per dozen, $60.00.

Packed 1 in a pasteboard box and 1 dozen in a case.

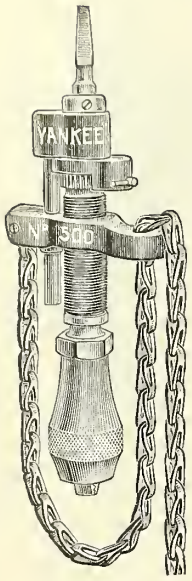
Chain Drills

Yankee

Its distinguishing feature is its convenience and rapidity of operation, and automatic friction and ratchet feed. The taking up and releasing of chain is done in a movement with a friction feed, by simply turning brace or Breast Drill by which Chain Drill is operated. When the chain is tight, the automatic feed operates by turning of small lever to horizontal position. When drill has reached desired depth the automatic feed is thrown off by turning lever to upright position. Reverse movement of brace and drill is withdrawn, chain slackened in a moment.

The automatic feed is positive, fixed and without adjustment for drills up to ½ inch, so that drills cannot be broken in use. There is no hand feed, nor any parts to fuss over, and nothing to catch or pinch the fingers in use. The feed screw is of steel, and has square thread to insure durability in chain holder. The screw is hardened at each end for ratchet and ball bearing. The friction feed in interior of tool is a novel device, doing away with the slow method of tightening chain by thumb and finger. A couple turns of brace tightens the chain and drill is at work.

The "Yankee" Chain Drills have been subjected to long and severe trial for durability and strength, and while excelling in these respects, they excel even more from a practical standpoint in convenience and rapidity with which they work and the fact that they do not break drills.

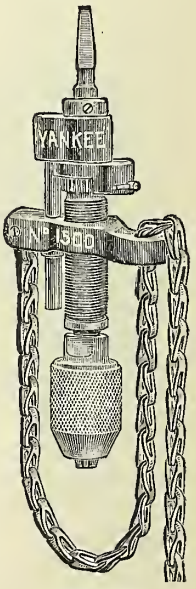


No. 500

No. 500 With Two-jaw Chuck, same as used on "Yankee" Plain Breast Drills, with alligator jaws.

Chuck body malleable iron, polished and nickel-plated; length, 3⅛ inches, with hexagon to use wrench in tightening large drills. Jaws (alligator pattern) are drop-forged steel. Chuck holds up to ½-inch Drills with square shanks.

Extreme length ..... 10¾ inches
Weight ..... 3½ pounds
Packed one in cardboard box.
Each $4.50

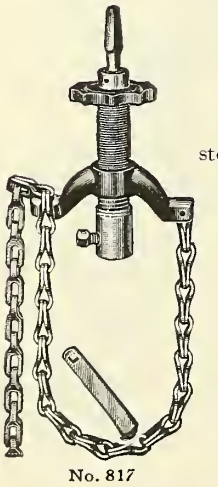


No. 1500

No. 1500 With Three-jaw Chuck, same as used on "Yankee" Breast Drill. The chuck body is of malleable iron, polished and nickel-plated, 2¾ inches long, 1⅝ inches diameter. The three jaws are of tool steel. Chuck holds round shanks only up to ½ inch diameter inclusive.

Extreme length ..... 9¾ inches
Weight ..... 3¼ pounds
Packed one in cardboard box.
Each $4.50

M. F. Co.


No. 817

No. 817

Yoke and nut japanned black; socket and bit stock polished.

Free-acting hand feed.
Four feet of stout chain.
Ball bearing.
Diameter of hole in socket, ½ inch.
Length of main spindle, 7¾ inches.
Weight, 3 pounds.
Each $1.70
Packed one in a pasteboard box.

No. 717

Yoke and nuts japanned; socket and bit shank nickeled.

Automatic, self-regulating feed or may be fed by hand.

Four feet of stout chain.
Ball-bearing.
Length of main spindle, 8½ inches.
Weight, 3½ pounds.
Each $2.00
Packed one in a pasteboard box.


No. 717

Extra Chucks for M. F. Co. Chain Drills


Master

Forged Steel Jaws, holding positively and securely, and centering with reasonable accuracy, round shanks from ⅛ to ½ inch in diameter,. No. 1 Morse Taper and all sizes of Bit Stock and Expansion bit shanks.
Each $1.40


Star

Holding round shanks from 0 to ½ inch in diameter.

Jaws are operated with springs that are protected from injury and will not get out of order.
Each $2.40

Breast Drills for Concrete Work

Star Spring Hammer

It has a hard punch and drills a straight, round hole because perfect clearance is obtained by the drill-point automatically turning in the hole after each blow. This does away with the necessity for moving the drill back and forth, and results in the operator concentrating his efforts upon turning the crank, which produces eight sharp blows with every revolution.

The best materials are used throughout—the drill being built for hard usage. There are no weak spots. Every part has been designed to do its work smoothly: the "S" crank-handle absorbs friction; the automatic "clearance-turning" insures a clean, accurate hole; the drill-points are flared to overcome binding; the arrangement of handle and breast-plate are adapted for drilling in walls, floors and ceilings.

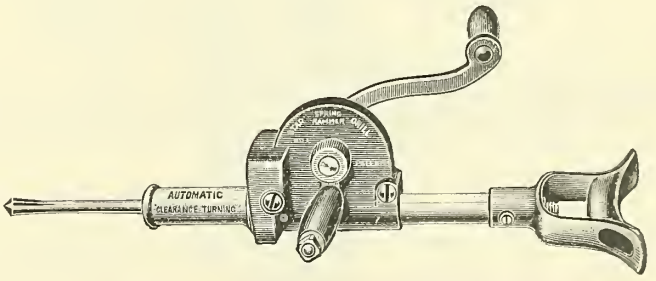
It not only makes the drilling of holes a comparatively easy and inexpensive operation, but also opens up the possibility of making fastenings to brick and stone which at the present time are not made on account of the labor and expense involved. Any size and depth of hole can be made, and the cost of drilling accurately estimated.

	Each
Without Holder or Points	$15.00
With Holder	16.50
Drill Holder only	2.00

S-H Drills for Above

A set of five—½, ⅝, ¾, ⅞ and 1 inch	$5.84
A set of five—¼, 5/16, ⅜, 7/16 and ½ inch	3.70
A complete set—¼, 5/16, ⅜, 7/16, ½, ⅝, ¾, ⅞ and 1 inch	8.72

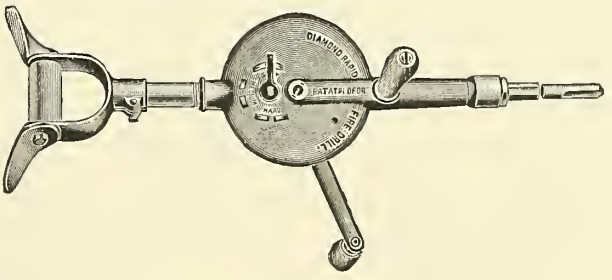
Diameter of hole drilled, inch	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Dozen	$8.50	8.50	8.50	9.00	10.00	12.00	14.00	16.00	18.00
Depth of hole, in.	2	3½	3½	4	4½	5	5	5	5

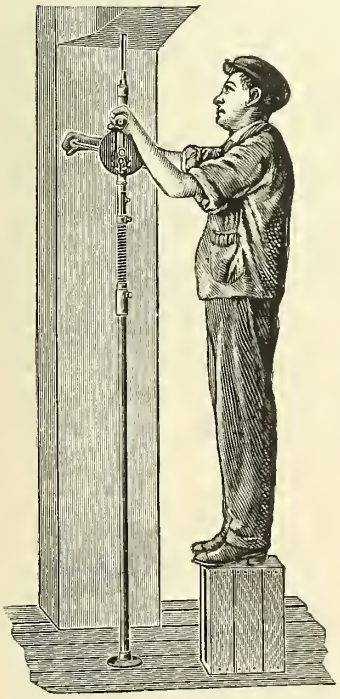


Drills Longer Than Ordinary for Above

Diameter, inch.	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Length, 12 ins., dozen	$8.50	8.50	8.50	9.00	10.00	12.00	14.00	16.00	18.00
Length, 18 ins., dozen	11.00	11.00	11.00	11.50	12.50	15.00	17.50	20.00	22.50
Length, 24 ins., dozen	13.50	13.50	13.50	14.00	15.00	17.50	20.00	22.50	25.00

Diamond Rapid-Fire Drill





Specially designed for drilling holes in concrete, brick and stone. Strikes blows like a hand hammer, with much greater speed. No vibration felt by operator. Simplifies the use of expansion bolts, each $32.00

Ceiling Stand for Above

As illustrated, this stand will greatly increase the efficiency of the drill for ceiling work. It is made of telescopic sections, which permit adjustment for any height of ceiling, from 7 to 20 feet, in two styles, as listed. They are very light and are convenient for use from the top of scaffolds.

		Each
Style A	For heights from 7 to 12 feet	$12.00
Style B	For heights from 8 to 20 feet	15.00

Drills for Above



Assorted Sets, Consisting of One Each

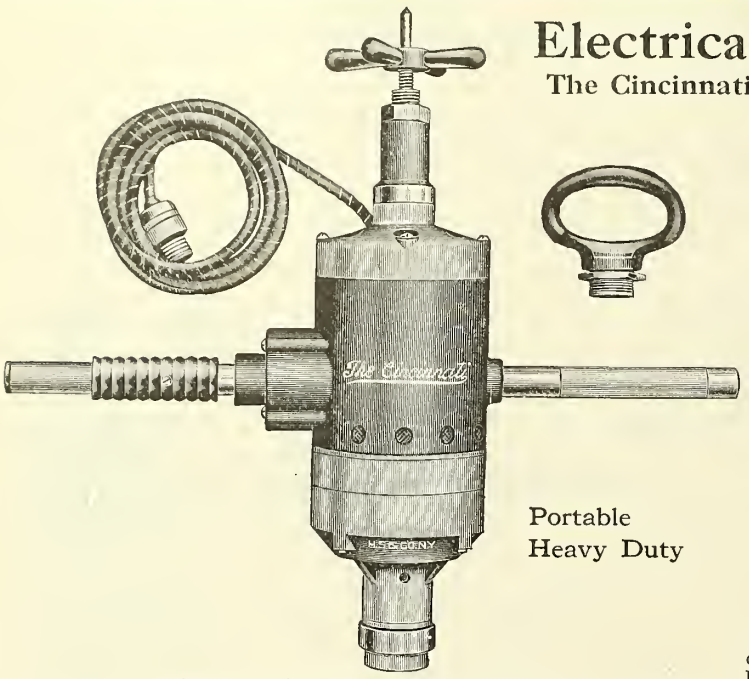
		Set
Set No. 1	¼, 5/16, ⅜, 7/16 and ½ inch	$3.70
Set No. 2	½, ⅝, ¾, ⅞ and 1 inch	5.84
Set No. 3	⅜, 7/16, ½, ⅝, and ¾ inch	4.46
Set No. 4	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾ and 1 inch	7.40

Diameter Inch	Length Over All Inches	Depth of Hole Drilled Inches	Dozen
¼	4¼	3	$8.50
5/16	4¼	3	8.50
⅜	4¼	3	8.50
7/16	4¼	3	9.00
½	6	4½	10.00
⅝	6	4½	12.00
¾	6	4½	14.00
⅞	6½	5	16.00
1	6½	5	18.00

For Regular Drills used by hand for drilling concrete, brick, stone, etc., see Index

Electrical Drills

The Cincinnati Air-Cooled



Portable
Heavy Duty

Direct and Alternating Current

Center drive. They are powerful, durable and compact. Simple in construction with no complicated parts to get out of order. Especially built to withstand hard work and rough usage of all kinds.

The gears and armature are mounted on ball bearings and the chuck spindle is fitted with end thrust bearings, insuring easy running, and practically obviating all friction. All working parts are hardened. Switch operated from one side handle, other detachable for close corner work. Sent out as illustrated.

Order by Type, Current and Volts
If alternating, give Cycles and Phase

Direct Current Type	Capacity In Steel Inches	Taper Socket	Weight Pounds	Speed R. P. M.	Dimensions Inches	Alternating Current Type
F	1	No. 3	52	200	6 x 18½	FA
G	1¼	No. 3	53	160	6 x 19	GA
H	1½	No. 4	80	120	7½ x 19½	HA
J	2	No. 4	88	95	7½ x 20	JA
K	2½	No. 5	90	85	7½ x 20½	KA

Direct Current Type	Each	Alternating Current Type	Each
F	$88.00	FA	$98.00
G	98.00	GA	108.00
H	115.00	*HA	125.00
J	125.00	*JA	135.00
K	135.00	*KA	145.00

*Made in two and three phase only

Side Drive

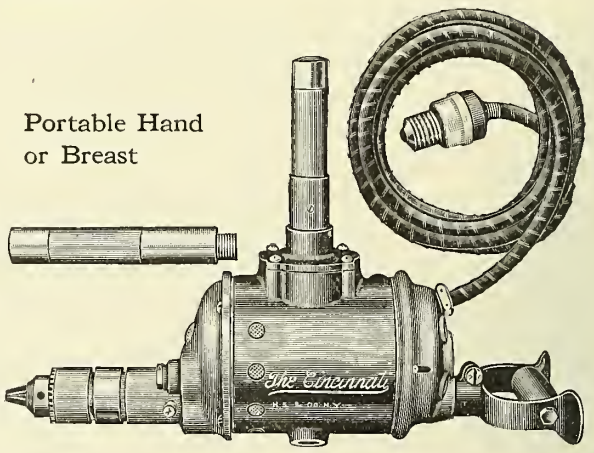
Same as above except smaller and side drive. Particularly adapted for hard usage. It is fitted with telescopic screw-feed and shovel handle. Carries No. 2 taper socket; ½-inch chuck for smaller bits furnished as an extra. Switch operated from one side handle other detachable.

This type drill has unusual power and efficiency. Equipped with ball and end thrust bearings. All working parts are hardend. Guaranteed to their given capacities with an overload allowance. Made for single and two speed. Furnished center drive if desired. Sent out as illustrated.

Order by Type, Current and Volts
If alternating, give Cycles and Phase

Direct Current Type	Capacity In Steel Inches	Weight Pounds	Speed R. P. M.	Motor Dimensions Inches	Alternating Current Type
D	¾	35	260	6 x 17	DA
DD	¾	37	260–450	6 x 17½	DDA
E	⅞	38	220	6 x 18	EA
EE	⅞	40	220–410	6 x 18½	EEA

Direct Current Type	Each	Alternating Current Type	Each
D	$78.00	DA	$86.00
DD (2 speed)	80.00	DDA	88.00
E	84.00	EA	94.00
EE (2 speed)	86.00	EEA	96.00



Portable Hand
or Breast

Direct and Alternating Current

Side drive with detachable handle for close corner work. Note the direct line drive from handle to chuck. Patent Switch in the handle. Under immediate control. Send out equipped as illustrated. Center drive drill furnished if desired, same price.

Order by Type, Current and Volts
If alternating, give Cycle and Phase

Direct Current Type	Capacity In Steel Inches	Weight D. C. Pounds	Speed R. P. M.	Motor Diameter and Length Over All	Alternating Current Type
A	¼	14	900	4½ x 14	AA
B	⅜	16	750	4¾ x 16	BA
C	½	18	450	5 x 16	CA
CC (2 speed)	½	19	450–750	5 x 16½	CX

Direct Current Type	Each	Alternating Current Type	Each
A	$40.00	AA	$45.00
B	50.00	BA	54.00
C	60.00	CA	64.00
CC (2 speed)	68.00	CX	72.00

Portable Universal

Made with an all-aluminum housing and end caps, giving lightness in weight with durability and power.

A drill wound for 110 volts can be used on either direct or alternating current of the same voltage; 60 cycles, single phase.

A drill wound for 220 volts can be used on either direct or alternating current of the same voltage; 60 cycles, single phase.

Where only one current is used, viz: Either direct or alternating, it is preferable to have a motor wound for that particular current.

One-quarter-inch drills furnished with one side handle, which operates the switch.

Three-eighths inch and ½-inch drills furnished with two side handles, one detachable for close corner work.

Order by Type, Current and Volts
If alternating, give Cycle and Phase

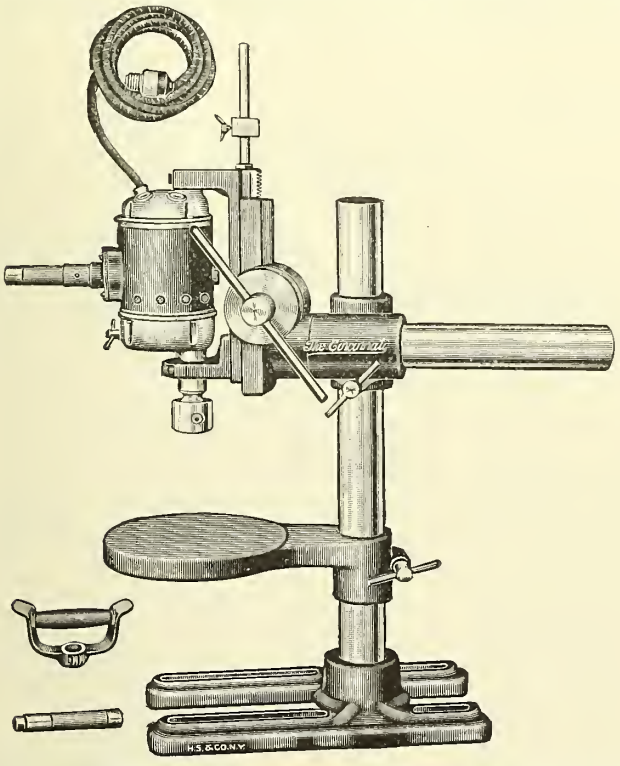
Type	Capacity In Steel Inches	Weight Pounds	Speed R. P. M.	Motor Diameter and Length Over All	Each
U	¼	7	1000	4 x 14	$40.00
UT	⅜	16	800	4¾ x 15	50.00
UH	½	18	500	5 x 16	60.00
UD (2 speed)	½	19	450–750	5 x 16½	65.00

All drills up to ½-inch capacity, inclusive, are fitted with chucks. Taper socket instead of chuck with ½-inch drills if desired. Screw-feed furnished as an extra. Special slow speed for drilling in marble, glass or slate. Capacities as given are for drilling in metal. Mention if intended for other work. Any drill will bore larger size holes in wood than to given capacity. Brace bit chuck to carry auger bits furnished if desired. Weights given are for direct current. Alternating current drills are slightly heavier.

SEE DISCOUNT SHEET

Portable Bench Stands with Drill Bracket and Table

For Use with Cincinnati Portable Electric Drills



Illustrated with Drill in Bracket. The Bracket has an 8-inch feed by means of rack and pinion, through hand lever with quick return. It is provided with a gauge to regulate the depth of hole to be drilled.

The cross arm of stand holding the Bracket has a horizontal and vertical adjustment and the Drill can be turned at any angle. The table is 12 inches diameter and is adjustable for height. It can be turned aside if not desired for all work.

The bracket has a hinged cap held in position with a thumb nut. Through this special arrangement a Drill can be instantly locked in the proper position by hand, without the use of tools, thus avoiding loss of any small parts.

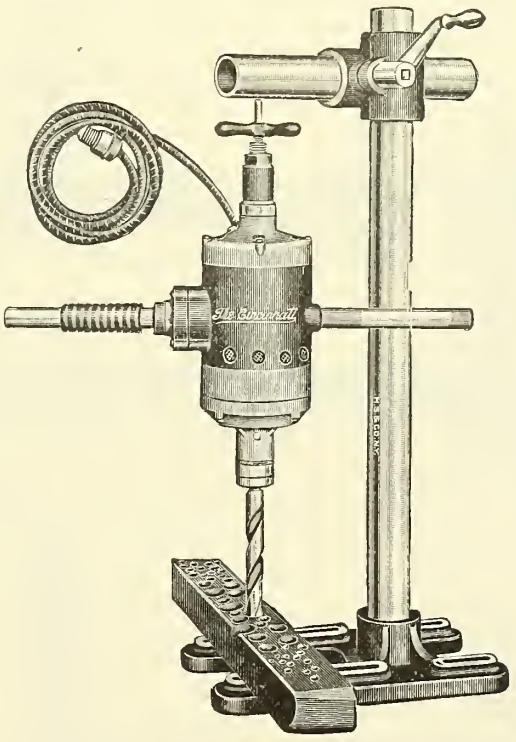
This machine as illustrated makes a particularly handy combination, as it gives two tools in one, namely, a Portable Hand or Screw-feed Drill and a Bench Drill. The Hand or Screw-feed Drill is standard tool complete, and can be used independent of the stand.

Order by Number of Bench Stand and Type of Drill

Type Number	To Hold Portable Drills Inch	Feed	Table Dimensions Inches	Net Weight without Portable Drill Pounds	Each
1	3/8 and 1/2	Lever	10	110	$32.00
2	3/4 and 7/8	Lever	12	125	36.00
3	7/8 to 1 1/4	Hand-wheel	12	135	48.00

Old Man Stand

For Use with Cincinnati Screw-Feed Drills



Above illustrates Old Man Stand, showing a Screw-Feed Drill set in position. Stand can be used with any type Drill over 1/2-inch capacity, and is particularly handy for in-door and out-door work.

The cross arm is adjustable to height on the vertical column, and horizontally through the knuckle. The columns are of Shelby steel tubing and ground.

Height, over all, inches..... 38
Cross arm, inches..... 12
Weight, pounds..... 80

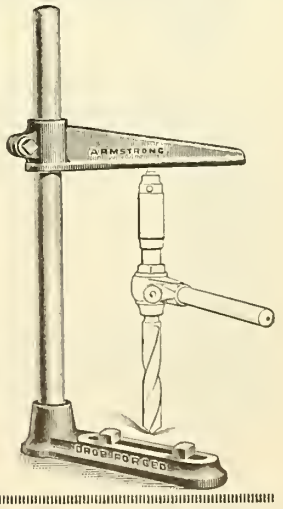
Each, $12.00

Drilling Posts

(Old Man)

Armstrong Drop-Forged

All Steel. For Use with Ratchet Drills



Foot and arm are drop-forged. The finished steel post is screwed into the foot and can be easily removed for packing in tool kit.

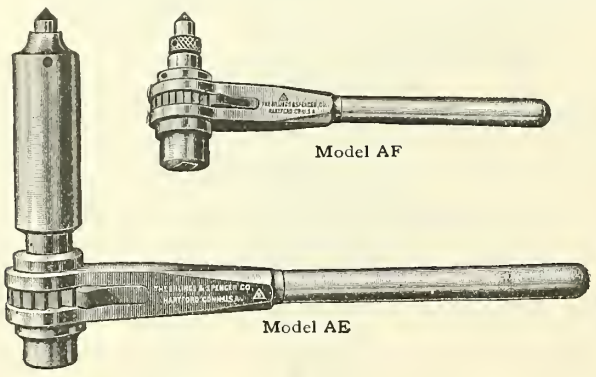
Number	Height of Post Inches	Arm Radius Inches	Weight Pounds	Each
8	16	8	9	$5.00
10	20	10	16	6.00
12	26	12	30	7.50

Ratchet Drills

Genuine Packer

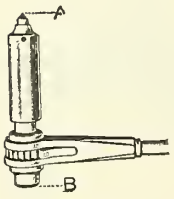
Drop-forged from the best bar steel for the purpose. These are the original Packer Ratchet Drills known to the public for the past forty years. They cannot be excelled for efficiency, durability, ease of action and economy. They are made of drop-forged steel, and carefully assembled and finished. All working parts are properly hardened. These ratchets are guaranteed to meet all requirements for which they are intended.

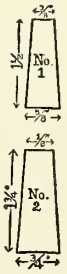
For Flat Drills and Square Shank Drills Only



Model AF

Model AE





Model AE

For number of Morse taper, see table below

Number	Length of Handles Inches	Length A to B Inches	Feed Inches	Weight Pounds	Each
1	10	7¾	2¼	5	$10.50
2	12	8½	2½	7	13.50
3	15	9½	3	9¾	16.00
4	17	10¼	3½	12	19.00
5	20	11¼	4	15¾	23.00

Boiler Ratchets

Model AF

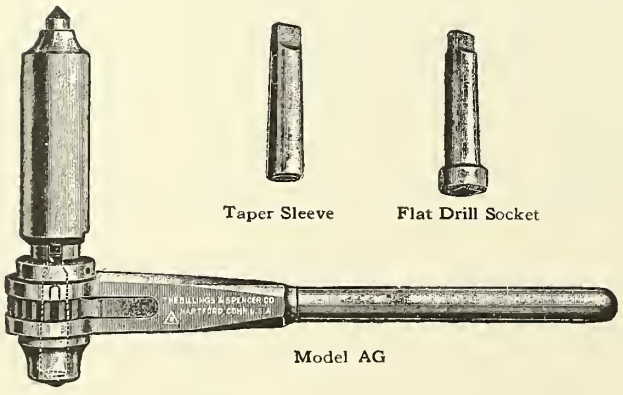
For number of Morse taper, see table below

Number	Length of Handles Inches	Length A to B Inches	Feed Inches	Weight Pounds	Each
1	10	4¾	1¼	3¾	$9.00
2	12	5	1⅜	5¼	10.50

List of Tapers

No. 1 Packer Ratchet, for Flat Drills, or Morse No. 1 Square Taper
No. 1B Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
No. 2 Packer Ratchet, for Flat Drills, or Morse No. 1 Square Taper
No. 2B Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
No. 3 Packer Ratchet, for Flat Drills, or Morse No. 1 Square Taper
No. 3B Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
No. 4 Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
No. 5 Packer Ratchet, for Flat Drills, or Morse No. 2 Square Taper
No. 1 Boiler Ratchet, for Flat Drills, or Morse No. 1 Square Taper
No. 2 Boiler Ratchet, for Flat Drills, or Morse No. 1 Square Taper
No. 2B Boiler Ratchet, for Flat Drills, or Morse No. 2 Square Taper

For Morse Taper Shank Drills



Taper Sleeve

Flat Drill Socket

Model AG

Model AG

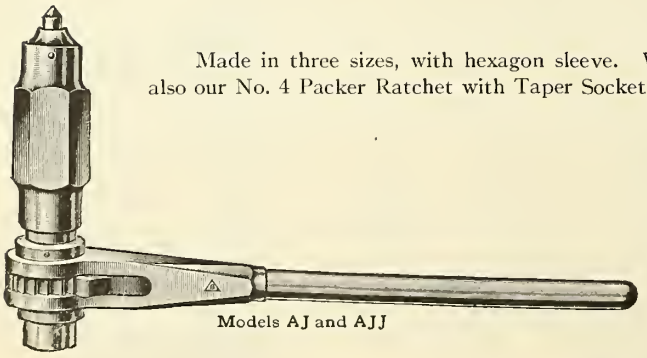
No. 1 Ratchet, 10-inch Handle, takes Morse Taper Shank Drill from $\frac{1}{16}$-inch to $\frac{19}{32}$-inch, inclusive. Feed, 1⅜-inch. Weight, 5 pounds. Each $13.00

No. 2 Ratchet, 12-inch Handle, takes Morse Taper Shank Drills from $\frac{39}{64}$-inch to $\frac{29}{32}$-inch, inclusive. Also No. 1 Morse Taper Sleeve and No. 1 B. & S. Flat Drill Socket. Feed, 1½ inches. Weight, 6½ pounds. Each 16.00

No. 3 Ratchet, 15-inch Handle, takes Morse Taper Shank Drills from $\frac{59}{64}$-inch to 1¼ inches, inclusive. Also No. 2 Morse Taper Sleeve and No. 2 B. & S. Flat Drill Socket. Feed, 2¾ inches. Weight, 9 pounds. Each 20.00

No. 4 Ratchet, 17-inch Handle, takes Morse Taper Shank Drills from $1\frac{17}{64}$-inch to 2 inches, inclusive. Also No. 3 Morse Taper Sleeve and No. 3 B. & S. Flat Drill Socket. Feed, $2\frac{5}{16}$ inches. Weight, 11 pounds. Each 25.00

Railroad



Models AJ and AJJ

Made in three sizes, with hexagon sleeve. We can furnish these sleeves to fit No. 4 and No. 5 Regular Packer Ratchet; also our No. 4 Packer Ratchet with Taper Socket. Model AJ with Square socket. Model AJJ with Taper Socket.

Model	Number	Length of Handles Inches	Feed Inches	Weight Pounds	Each
AJ	3	15	3	10	$16.00
AJ	4	17	3⅜	12½	19.00
AJ	5	20	3¾	15½	23.00
AJJ	3	15	3¼	10	20.00
AJJ	4	17	3¼	12½	25.00

For drill sockets and sleeves, see index

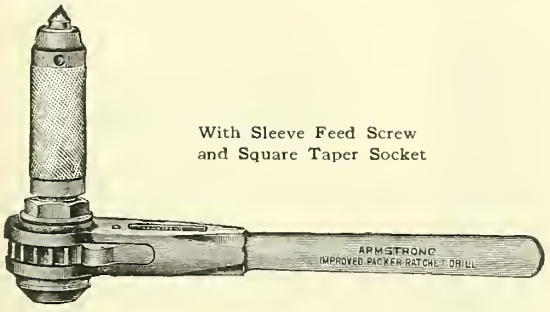
Ratchet Drills

Armstrong

Improved Packer

All Steel, Hardened All Over

No small screws; spindle bears on strong collar nut; extra strong teeth and pawl, large key and ample bearings. Have shorter head with full length feed. Each ratchet is packed in a cardboard box. Hardened all over, will outwear two of the soft kind. The pawl drives on drill shank, not above it.



With Sleeve Feed Screw and Square Taper Socket

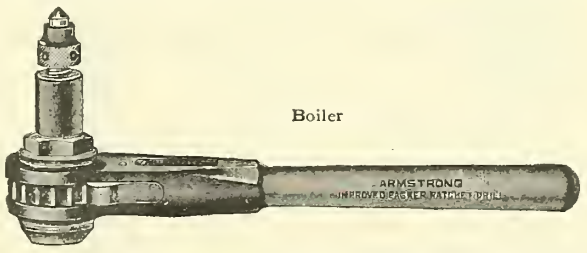
Number	Length Inches	Size of Drill Socket	Length of Head Inches	Feed Inches	Each
1	10	No. 1 Square Taper*	6	2¼	$4.75
2	12	No. 1 Square Taper	6¾	2½	6.00
3	15	No. 1 Square Taper	7¾	3	7.25
4	18	No. 2 Square Taper†	9	3½	8.50
5	21	No. 2 Square Taper	9¾	4	10.25

*Number 1 or small socket is ⅜-inch square at small end and ⅝-inch square at large end.
†Number 2 or large socket is ½-inch square at small end and ¾-inch square at large end.



With Sleeve Feed Screw and Morse Taper Socket

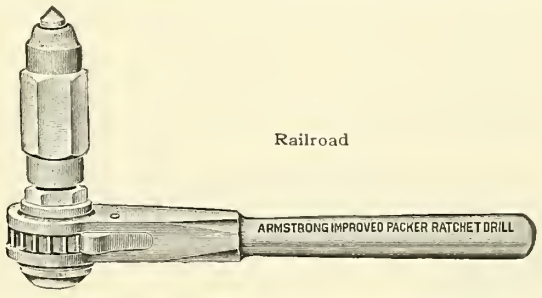
Number	Length Inches	Size of Drill Socket	Takes Morse Taper Drill Inches	Length of Head Inches	Feed Inches	Each
1-M	10	No. 2 Morse	39/64 to 29/32	6	2¼	$5.75
2-M	12	No. 3 Morse	59/64 to 1¼	6¾	2½	7.25
3-M	15	No. 3 Morse	59/64 to 1¼	7¾	3	9.00
4-M	18	No. 4 Morse	1 17/64 to 2	9	3½	11.25
5-M	21	No. 4 Morse	1 17/64 to 2	9¾	4	13.50
6-M	30	No. 5 Morse	2 1/64 to 3	12½	4½	20.00



Boiler

Number	Length Inches	Size of Drill Socket	Length of Head Inches	Feed Inches	Each
1-B	10	No. 1 Square Taper*	4⅜	1½	$4.00
2-B	12	No. 1 Square Taper	5	1¾	4.75
3-B	15	No. 1 Square Taper	5½	2	7.25
4-B	18	No. 2 Square Taper†	6	2¼	8.50
5-B	21	No. 2 Square Taper	6½	2½	10.25

*Number 1, or small drill socket is ⅜-inch square at small end and ⅝-inch square at large end.
†Number 2, or large drill socket is ½-inch square at small end and ¾-inch square at large end.



Railroad

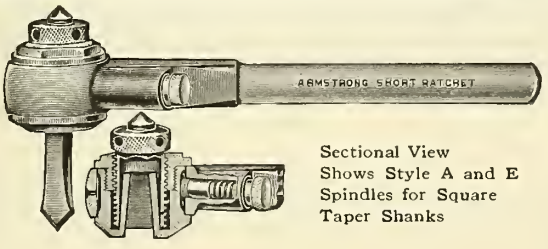
Number	Length Inches	Size of Drill Socket	Length of Head Inches	Feed Inches	Weight Pounds	Each
1-RR	10	No. 1 Square Taper*	6	2¼	4	$4.75
2-RR	12	No. 1 Square Taper	6¾	2½	6	6.00
3-RR	15	No. 1 Square Taper	7¾	3	8¾	7.25
4-RR	18	No. 2 Square Taper†	9	3½	12	8.50
5-RR	21	No. 2 Square Taper	9¾	4	16	10.25

*Number 1 or small socket is ⅜-inch square at small end and ⅝-inch square at large end.
†Number 2 or large socket is ½-inch square at small end and ¾-inch square at large end. Can be furnished at prices listed for the regular, as above, numbers 1-M to 6-M. When ordering same, use regular number, but specify "Railroad Pattern."

Railroad Pattern Packer Ratchets for Morse Taper Shank Drills

Short

The sectional view shows clearly the construction which is simple, compact and strong. All parts are made from drop forgings of bar steel. Pawl and center are tool steel, carefully tempered. It is self-discharging and can be reversed instantly. Each ratchet is packed in a cardboard box.

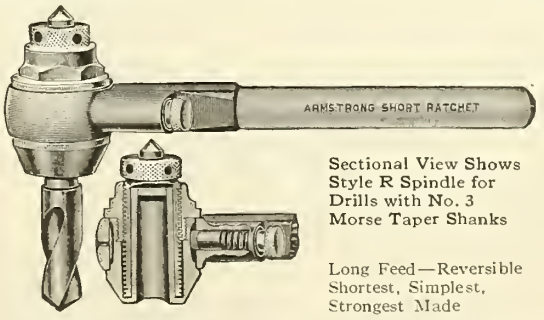


Sectional View Shows Style A and E Spindles for Square Taper Shanks

Styles A and E

Style A for drills with Number 1 Taper Square Shanks. Style E for drills with No. 2 Taper Square Shanks. Its short head, strength, compactness and quick reverse it a perfect boiler ratchet.

Number	Length Inches	Length Head Inches	Feed Inches	Each
2	12	2¾	1½	$8.00
3	18	2¾	1½	10.00



Sectional View Shows Style R Spindle for Drills with No. 3 Morse Taper Shanks

Long Feed—Reversible Shortest, Simplest, Strongest Made

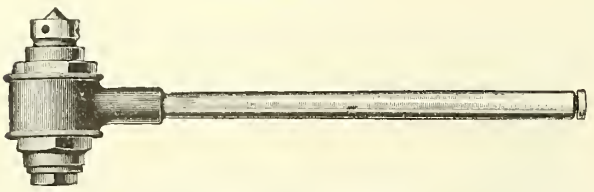
Style R for Drills with No. 3 Morse Taper Shanks

Number	Length Inches	Length of Head Inches	Feed Inches	Each
2	12	3¾	2½	$8.00
3	18	3¾	2½	10.00

For Drill Sockets and Sleeves, see Index

Ratchet Drills

Renshaw



These tools are made in two sizes: No. 1 taking drills to ½ inch, No. 3 taking drills to 1½ inches. All the parts are made from steel and hardened.

No. 1 has one collet for drills, with shank $\frac{11}{32}$ inch square at shoulder, and one collet for drills fitting No. 1 Morse standard taper socket.

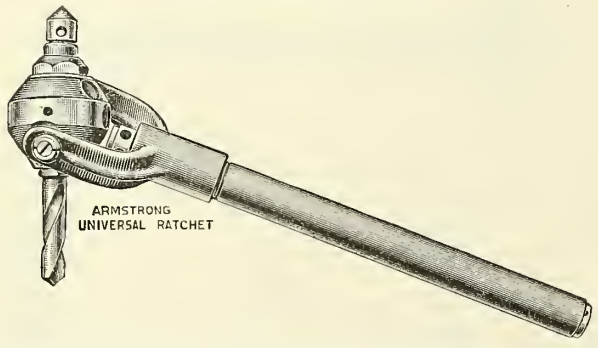
No. 3 has one collet, No. 5, for drills, with shank $\frac{11}{16}$ inch square at shoulder, of ½ to 1½ inches diameter, which are the extreme sizes that this ratchet is adapted to carry, and collets Nos. 1, 2 and 3, for Morse standard taper shanks. No. 3 and No. 5 collets are held in the spindle by screw thread. No. 1 and No. 2 collets are tapered externally to fit No. 3 socket.

	No. 1	No. 3
Length of handle over all, inches	9½	18
Depth from top feed screw to bottom of collet, inches	2½	5
Full depth of feed, inches	1½	2¾

No. 1 ratchet drill complete, with two collets	$11.00
No. 1 ratchet drill, with one collet	9.40
No. 1 collet, with square or taper hole, each	1.60
No. 3 ratchet drill complete, with four collets	15.00
No. 3 ratchet drill, with No. 3 or No. 5 collet only	11.05
No. 3 ratchet drill, with Nos. 1, 2 and 3 collets only	13.25
No. 1 or No. 2 collet for No. 3 ratchet, each	1.10
No. 3 or No. 5 collet for No. 3 ratchet, each	1.75

We will also supply collets for No. 3 Renshaw ratchet for taper square shank drills, ⅝ x ⅜ x 1½ inches long. Each $1.75

Armstrong Universal



Designed to operate successfully in difficult situations where obstructions might make the use of the ordinary ratchet impossible, and at the same time provision is made for its operation in the usual way, so that it may perform the work of a plain ratchet as well as the special service for which it is particularly adapted. The construction of the tool in every respect is good and substantial.

Pawls and center are tool steel hardened, all other parts (except handle of tubing) are made of steel drop-forged, or machined from bar.

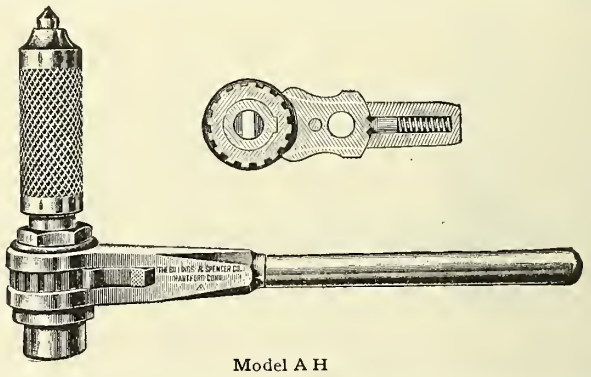
Number	Length Inches	Feed Inches	Complete with One Spindle Only	Extra Spindles Each
4	14	1½	$12.00	$2.40
5	16	1⅞	15.00	3.00
6	18	2¼	18.00	3.60

Spindles Furnished

Style	Fitting Ratchet	Taking Drills
M	No. 4	With No. 1 Square Taper Shanks
K	No. 4	With No. 2 Morse Taper Shanks
J	No. 5	With No. 1 Morse Taper Shanks
L	No. 5	With No. 2 Morse Taper Shanks
O	No. 5	With No. 3 Morse Taper Shanks
F	No. 6	With No. 2 Square Taper Shanks
N	No. 6	With No. 3 Morse Taper Shanks
S	No. 6	With No. 4 Morse Taper Shanks

Billings Double-Acting

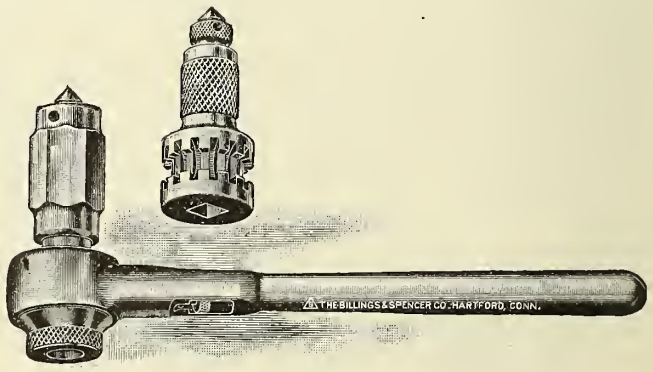
These Drills are drop-forged of the best bar iron and steel for the purpose, and are made to use Morse Taper Shank Twist Drill, also provided with socket with square hole for square shank drill.



Model A H

This Drill can be changed from right to left-hand drilling by simply moving the pawl to the right or left. The sockets furnished with the drill can be utilized in any drilling spindle that may be fitted to receive them.

	Each
No. 1 D. A. Ratchet, 10¾-inch handle, takes Morse Twist Drills from ⅝ inch to $\frac{29}{32}$-inch, inclusive. Feed, 1½ inch. Weight, 4¾ pounds	$11.00
No. 1 D. A. Ratchet, with Morse Taper Sleeve. No. 1 will take Morse Twist Drills from ¼ inch to $\frac{29}{32}$ inch, inclusive.	12.07
No. 1 D. A. Ratchet, with B. & S. Flat Drill Socket only	12.18
No. 1 D. A. Ratchet, with Morse Taper Sleeve No. 1 and B. & S. Flat Drill Socket No. 1	13.25
No. 2 D. A. Ratchet, 13¾-inch handle, taking Morse Twist Drills from $\frac{15}{16}$ inch to 1¼ inch, inclusive. Feed 1¾ inches. Weight, 7 pounds	14.00
No. 2 D. A. Ratchet, with No. 2 Morse Taper Sleeve, will take Morse Twist Drills from ⅝ inch to 1¼ inches, inclusive	15.40
No. 2 D. A. Ratchet, with Morse Taper Sleeves Nos. 1 and 2, will take drills from ¼ inch to 1¼ inches, inclusive	16.45
No. 2 D. A. Ratchet, with No. 2 B. & S. Flat Drill Socket, only	15.17
No. 2 D. A. Ratchet, with Morse No. 2 Taper Socket and B. & S. Flat Drill Socket	16.50
No. 2 D. A. Ratchet, with No. 1 and No. 2 Taper Socket and No. 2 Flat Drill Socket	17.60



Model AII

A high-grade combination tool for light work. Double-acting or reversible.

This Ratchet differs materially from those now on the market in that the change of sockets is quickly and easily made without the use of a wrench or other tool.

The tool includes two removable sockets for taper and square shank drills, as shown in cut. The taper socket is No. 1 Morse taper, taking all sizes of taper shank twist drills from $\frac{1}{16}$ to $\frac{15}{32}$ inch. The square socket takes bit stock, square shank twist drills.

The tool is drop-forged and properly finished. All working parts are hardened, and the tool is thoroughly high grade in all respects.

Model AII No. 0 Ratchet, 8-inch handle, including taper and square sockets, complete. Each $7.00

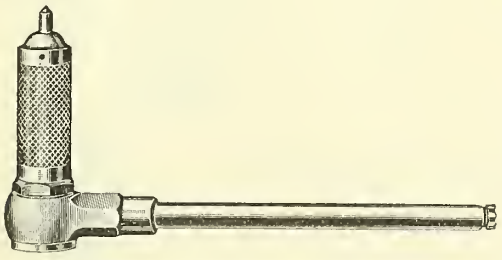
Boiler

Model AI, No. 0 Ratchet, for bit stock square shank drills, 8-inch handle, height of head, 3 inches. Each 4.50

For Drill Sockets and Sleeves, see Index

Ratchet Drills

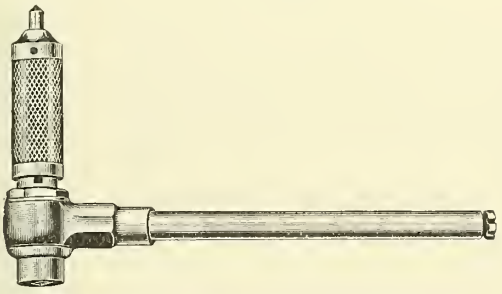
Keystone Reversible



For Square Shank Drills

Number	1	2	3	4	5	6	7
Length of Handle, inches	10	14	16	18	22	24	28
Height of Head, inches	5 5/8	7 7/8	7 7/8	8 3/4	8 3/4	8 3/4	8 3/4
Each	$5.00	5.75	6.50	7.25	7.50	7.75	8.25

No. 1 Standard Square Taper 5/8 x 3/8 x 1 1/2 inches long is on all ratchets up to and including 16 inches, and No. 2 Standard Square Taper, 3/4 x 1/2 x 1 3/4 inches long on all larger sizes.



For Morse Taper Shank Drills

Number	21	22	23	24	25	26	27
Length of Handle, inches	10	14	16	18	22	24	28
Morse Taper No.	2	3	3	4	4	4	4
Takes Drills to, inches	29/32	1 1/4	1 1/4	2	2	2	2
Takes Morse Taper Sleeve No.	1	2	2	3	3	3	3
Each	$5.25	6.00	6.75	7.50	7.75	8.00	8.50



Square Shank Drill Sleeve—Extra

	Each
No. 1 Sleeve fits No. 21 Ratchet	$1.00
No. 2 Sleeve fits Nos. 22 and 23 Ratchets	1.25
No. 4 Sleeve fits Nos. 24, 25, 26 and 27 Ratchets	1.50

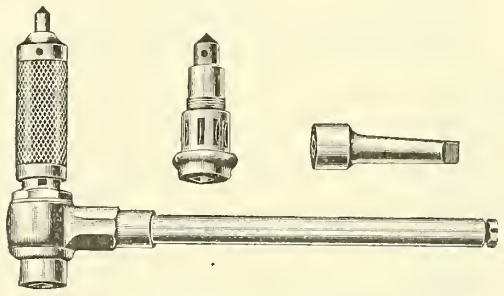
M. F. Co.



Handsomely nickeled. Distance from top of feed screw to mouth of socket, 4 inches only. Socket hole for shanks 5/8 x 3/8 x 1 1/2 inches. Extra socket to hold bit stock shanks provided with each drill.

Number	10
Length of lever inches	10
Weight, each, pounds	2 1/2
Each	$4.00

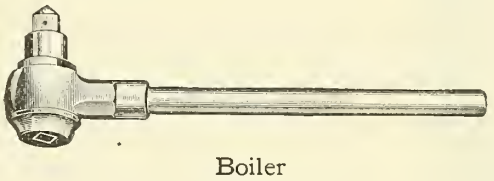
Packed one in a pasteboard box



Combination No. 200

Consists of ratchet for taper shank twist drills, sleeve for square shank drills, and short boiler socket for square shank drills (sockets interchangeable).

Number	51	52	53	54	55	56	57
Length of Handle, inches	10	14	16	18	22	24	28
Morse Taper No.	2	3	3	4	4	4	4
Takes Drills to, inches	29/32	1 1/4	1 1/4	2	2	2	2
Takes Morse Taper Sleeve No.	1	2	2	3	3	3	3
Each	$7.75	9.00	10.00	11.25	11.50	11.75	12.25



Boiler

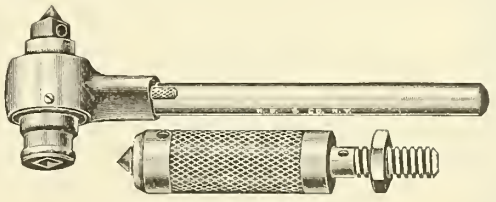
(Short Feed)

For Square Shank Drills Only

Number	31	32	33	34	35	36	37
Length of Handle, inches	10	14	16	18	22	24	28
Height of Head, inches	3 5/8	4 3/8	4 5/8	5 3/8	5 3/8	5 3/8	5 3/8
Each	$5.00	5.75	6.50	7.25	7.50	7.75	8.25

No. 1 Standard Square Taper 5/8 x 3/8 x 1 1/2 inches long is on all ratchets up to and including 16 inches, and No. 2 Standard Square Taper 3/4 x 1/2 x 1 3/4 inches long on all larger sizes.

Whitney



Combined Double Acting

This drill stock has a socket fitted to taper square shank drills, having Morse standard taper.

These Ratchet Drills combine the short boiler drill and the common ratchet in one by a larger range of adjustment of feeding screw than has been heretofore obtainable with the same length of drill stock.

The ratchets are encased, so that there is no chance for dirt to prevent the catch going to bottom of teeth at each movement of the lever.

The parts are duplicates, so that when worn out they can be replaced. Little space is occupied, each ratchet being complete in a substantial slide cover box.

Full polished, with nickel-plated head.

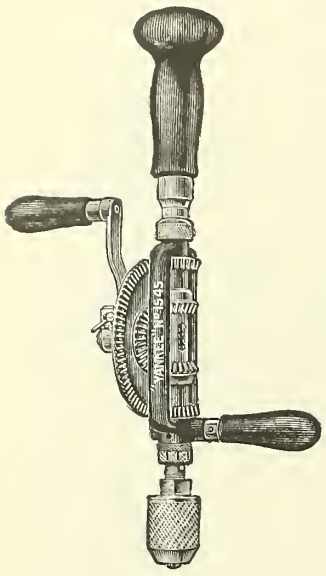
No. 00 8 inches. For Bit Stock Drills only. Each $9.25

For Drill Sockets and Sleeves see Index

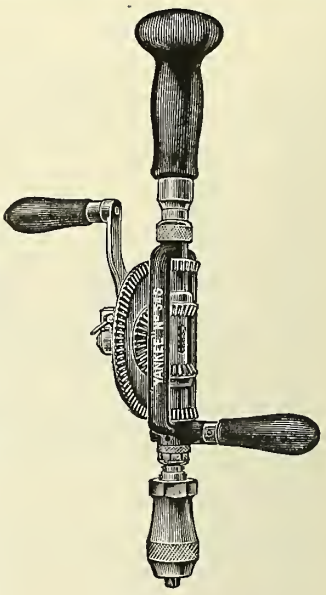
Hand Drills

Yankee Ratchet

With Right and Left-Hand and Continuous Ratchet Movements



No. 1545



No. 545

Differs from all others in what it will do and how it does it.

For enlarged cut of cylinder showing notches, see page 375.

Note the little slide on cylinder between gears and the notches. With slide in first notch (at top), it is a plain drill; in second a left-hand ratchet; in third a right-hand ratchet; in fourth a double ratchet where any movement of crank forward or backward causes the drill to cut continuously, a time saver and convenience when working in corners where crank cannot be turned; in fifth (at bottom), gearing, etc., is locked to open or close chuck.

In double speed styles the change of speed, fast or slow, is made by simple movement of lever on hub or gear and without removing drill from work, and with any of the movements named above.

Made with either two or three-jaw chuck. The two-jaw chuck holds accurately and securely both square or round shanks; the three-jaw, round shanks only.

Adjustable ball bearings take all strain or thrust.

The side handle can be unscrewed and has screw driver bit to fit screws in drill.

The frame is malleable iron, finished in dead black Japan. The chuck body is malleable iron, polished and nickel-plated. The jaws of steel, drop-forged and hardened. The spindle is of steel and gears are cast iron with cut teeth.

No. 1545. Double-speed with three-jaw chuck to hold round shank only up to $\frac{3}{8}$ inch diameter inclusive. Large gear is $4\frac{1}{2}$ inches, small gear $1\frac{1}{2}$ inches diameter.

The wood handle is $4\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill is $16\frac{1}{2}$ inches. Net weight, $4\frac{1}{4}$ pounds.

Packed one in heavy paper box. Each $6.75

No. 545. Double speed with two-jaw chuck to hold round and square shanks up to $\frac{3}{8}$ inch. Large gear is $4\frac{1}{2}$ inches, small gear, $1\frac{1}{2}$ inches diameter.

The wood handle is $4\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill is $16\frac{1}{2}$ inches. Net weight, $4\frac{1}{4}$ pounds.

Packed one in heavy paper box. Each $6.75



No. 1530

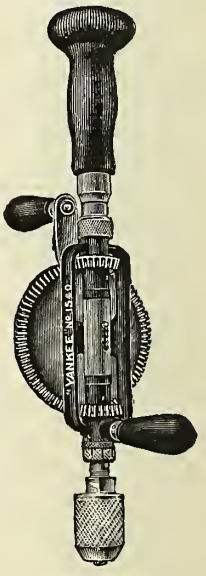
No. 1530. Single speed with three-jaw chuck to hold round shank only up to $\frac{3}{16}$ inch diameter inclusive. Large gear is 3 inches, small gear $\frac{7}{8}$ inch diameter.

The wood handle is 4 inches long, $1\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

The thrust on spindle is taken by hardened steel bearing in lower end of frame, in place of ball bearings, and so arranged that any wear can be readily taken up.

Entire length of drill is $10\frac{1}{2}$ inches. Net weight, $1\frac{1}{4}$ pounds.

Packed one in heavy paper box. Each $3.60



No. 1540

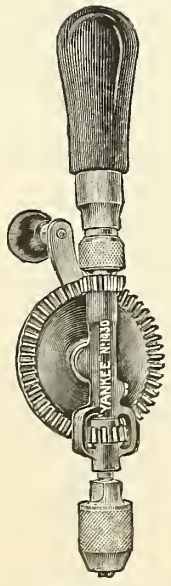
No. 1540. Single speed with three-jaw chuck to hold round shank only up to $\frac{3}{8}$ inch diameter inclusive. Large gear is $4\frac{1}{2}$ inches, small gear $1\frac{1}{2}$ inches diameter.

The wood handle is $4\frac{1}{2}$ inches long $2\frac{1}{2}$ inches diameter and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill is $16\frac{1}{2}$ inches. Net weight, $3\frac{7}{8}$ pounds.

Packed one in heavy paper box. Each $5.65

Yankee, Plain



No. 1430

These are of the same construction as the Ratchet styles, but without the ratchet movements. They are made only with double speed. Special attention is called to the very quick and easy change in speed made by the small shifter on the main frame between small gears—with shifter at top notch S it is set for slow speed, at bottom notch F fast speed, in center notch L the spindle is locked so the chuck can be readily opened and closed. They are strong and substantially built for hard work and durability, have adjustable ball bearings on spindle to take up all strain or wear. The side handle can be unscrewed and has screw driver bit to fit screws in drill. The frame is of malleable iron, spindle of steel turned and fitted, all gears have cut teeth to run smoothly and accurately and of extra strength.

The drills are finished in dead black color with bright parts polished.

No. 1445. Double speed with three-jaw chuck. Jaws are of tool steel and hold round shank drills only up to $\frac{3}{8}$ inch in diameter inclusive. Large gear is 4 inches small gear $1\frac{5}{8}$ inches, gears on spindle $1\frac{1}{4}$ inches diameter; all have extra strong cut teeth.

The wood handle is $4\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches in diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

Entire length of drill, 15 inches. Net weight, $3\frac{1}{2}$ pounds.

Packed one in heavy paper box. Each $4.50

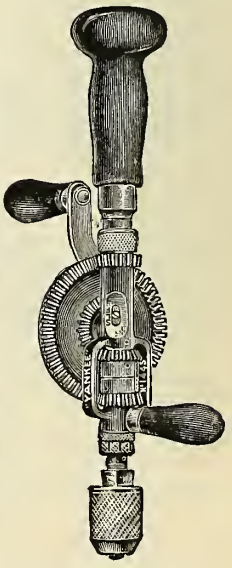
No. 1430. Single speed with three-jaw chuck to hold round shank drills only up to $\frac{3}{16}$ inch diameter inclusive. Large gear is $3\frac{1}{8}$ inches, small gears on spindle $1\frac{3}{16}$ inches, all have extra strong cut teeth.

The wood handle is 4 inches long, $1\frac{1}{2}$ inches diameter, and can be detached from frame by milled nut, to use interior of handle as a magazine for drills.

The thrust on spindle is taken by hardened steel bearing in lower end of frame, in place of ball bearings, and so arranged that any wear can be readily taken up.

Entire length of drill is $10\frac{1}{2}$ inches. Net weight, $1\frac{1}{4}$ pounds.

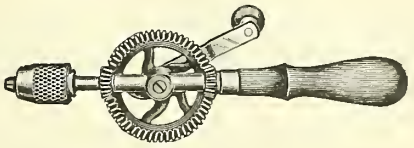
Packed one in heavy paper box. Each $2.65



No. 1445

Hand Drills

M. F. Co. Single Speed

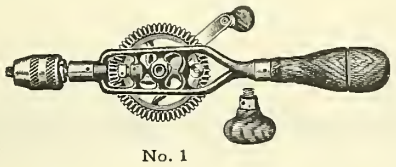


No. 313

Stained hardwood; solid steel frame. Large gear enameled black; all other metal parts nickeled. Cut gears. Three-jawed chuck holding round shanks from 0 to $\frac{3}{16}$ inch in diameter. Has idler gear to equalize bearings. Length, 11¼ inches.

Dozen $18.00

Packed one in a pasteboard box.

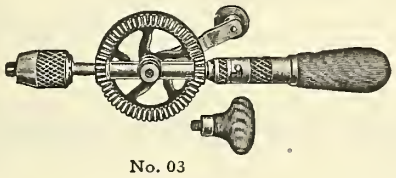


No. 1

Cocobolo wood; malleable iron frame; large gear and frame black enameled; other metal parts nickeled. Hollow end handle with screw cap, containing 8 wood boring points ranging in size from $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter. Removable side, grip handle. Cut gears with adjustable equalizing bearing. Ball thrust bearing. Three-jawed chuck holding and centering accurately, round shank drills from 0 to $\frac{3}{16}$ inch in diameter. Length, 12½ inches.

Dozen, including 8 fluted drill points $20.00

Packed one in a pasteboard box.

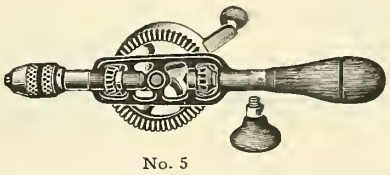


No. 03

Stained hardwood; solid steel frame. Large gear enameled French gray with red stripe; all other metal parts nickeled. Hollow end handle quickly detached and with receptacle large enough to hold any twist drills within the capacity of the tool. Detachable side, grip handle. Cut gears. Three-jawed chuck holding round shanks from 0 to $\frac{3}{16}$ inch in diameter. Length, 11 inches.

Dozen $20.00

Packed one in a pasteboard box.

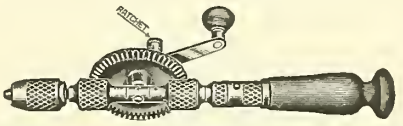


No. 5

Cocobolo wood; malleable iron frame; large gear red and frame black enameled; other metal parts nickeled. Hollow end handle, with screw cap, containing 8 wood boring points, ranging in size from $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter. Removable side, grip handle. Cut gears; large gear with wide rim to be grasped between thumb and fingers when delicate work is being done, and with idler gear to equalize bearings. Ball thrust bearing. Three-jawed chuck holding, and centering accurately, round shank drills from 0 to $\frac{3}{16}$ inch in diameter. Length, 12½ inches.

Dozen, including 8 fluted drill points with each drill $24.00

Packed one in a pasteboard box.



No. 306

Choice hardwood stained; solid steel frame. Large gear painted machine gray with red trimmings; other metal parts nickeled. Detachable hollow end handle of graceful design and with receptacle to hold twist drills up to the capacity of the chuck. Cut gears with a small steel working gear and a steel idler gear to equalize bearings, both gears being almost totally inclosed as protection against dust and dirt. Ball thrust bearings. Provided with simple and effective ratchet operated by raising and turning to the right or left the cap to a small boss on the crank handle. This is a convenience in cramped places or when doing delicate work. Chuck of star pattern with three jaws opening with springs, which are protected and do not get out of order, and closing evenly on, and centering accurately, round shanks from 0 to ¼ inch in diameter. Length, without handle, 8 inches. Length, with handle, 12½ inches.

Dozen $38.00

Packed one in a pasteboard box.

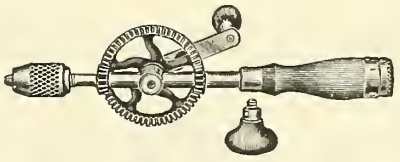


No. 105

Rare tropical hardwood handle; malleable iron frame; large gear and frame, black enameled; other metal parts nickeled. Hollow end handle with screw cap containing 8 wood boring points. Removable side grip handle. Cut gears with adjustable equalizing bearings. Ball thrust bearings. Three-jawed chuck of the Star pattern with jaws opening evenly by means of springs that will not get out of order. Chuck holds and centers accurately round shanks from 0 to ¼ inch in diameter. Length, 12½ inches.

Dozen, including 8 fluted drill points $24.00

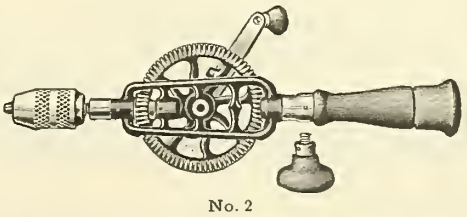
Packed one in a pasteboard box.



No. 307

Star pattern chuck holding round shank from 0 to ¼ inch. Jaws are actuated by springs that are protected from injury and will not get out of order. Rolled steel main stocks, nickeled. Cut gears, pinions of steel. Stained hardwood handle, main handle being hollow with eight separate cells, each for a wood-boring point which is put up with the drill. Any one drill may be released without disturbing the others.

Dozen $30.00



No. 2

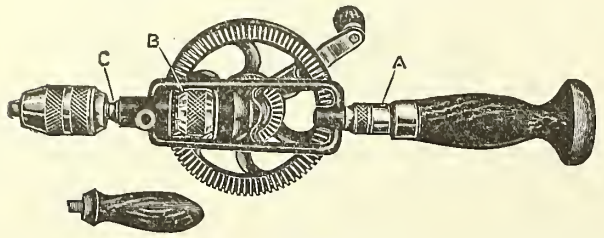
Cocobolo wood; malleable iron, black enameled frame; large gear painted red; other metal parts nickeled. Hollow end handle, with screw cap, shaped so tool may be used as a breast drill, and containing 8 wood boring points, ranging in size from $\frac{1}{16}$ to $\frac{11}{64}$ inch in diameter. Removable side, grip handle. Cut gears with adjustable friction roll to equalize bearings. Ball thrust bearing. Chuck of star pattern with 3 jaws opening with springs and closing evenly on, and centering accurately, round shanks from 0 to ⅜ inch in diameter. Length, 14½ inches.

Dozen, including 8 fluted drill points $35.00

Packed one in a pasteboard box.

Hand Drills

M. F. Co. Changeable Speed



No. 980

Choice stained hardwood. Hollow end handle with receptacle for holding twist drills, detached by loosening a knurled check nut and pressing on the plunger at A, shown in illustration, of shapely design with mushroom head, so tool may be used as a breast drill. Malleable iron frame; large gear painted French gray with red stripe; other parts nickeled. Removable side, grip handle.

Instantly changeable speed, 1½ to 1 and 4 to 1, operated by shifting knurl ring B under any conditions and without removing the bit from the work.

Pinion and shifting device of steel and inclosed for protection.

Cut gears with adjustable friction roll to equalize bearings.

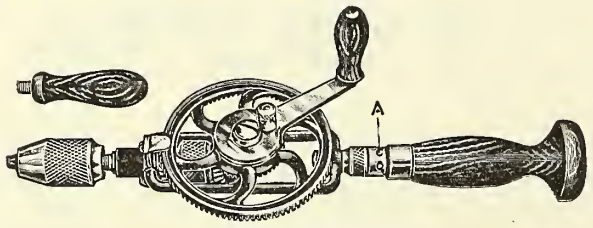
Ball thrust bearing at point marked C in illustration.

Chuck of Star pattern with 3 jaws opening with springs and closing evenly on, and centering accurately, round shanks from 0 to ⅜ inch in diameter.

Length, without handle, 10 inches; with handle, 15¼ inches.

Dozen $40.00

Packed one in a pasteboard box.



No 1980, with Ratchet

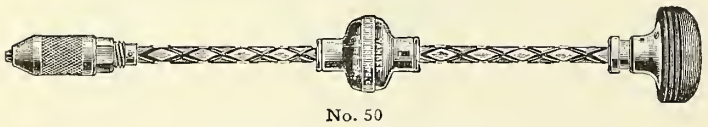
The same as Drill No. 980, shown above, except provided with simple and effective ratchet, operated by raising and turning to the right or left the cap to a small boss on the crank handle. This is a convenience in cramped places or in doing delicate work

Dozen $48.00

Packed one in a pasteboard box

Reciprocating Drill

Yankee



No. 50

For Drilling Wood and Metals

The movement or traverse of the driver is 8½ inches. Drill cuts continuously during both forward and backward movement of driver. The entire length of tool, without drill, is 16 inches. No drill points are furnished with this tool. Any style straight shank drill 5/16 inch diameter or less can be held in chuck.

Each $3.50

Packed one in box.

Push Brace

Yankee



No. 75

Right and Left Hand Ratchet, and Rigid

Holds all the small tools used in a bit brace, but is operated by pushing the handle to revolve the tools, in same manner as a "Yankee" Spiral Ratchet Screw Driver. It will drill holes, drive screws in or out; can be used for tapping holes, and with socket bit drive in small lag screws, run burrs, or nuts, on bolts, etc. Not only will it do this more rapidly and conveniently than a brace, but being straight and cylindrical and operated by pushing, it can reach into many places, in corners, holes back of obstructions where a brace cannot be operated.

All the working parts are protected by sleeves, so no parts are exposed to grit or dirt.

The Chuck is made of malleable iron, polished and nickel-plated. The jaws are of steel, drop forged and hardened. The Chuck will hold squares up to ½ inch wood bit.

The entire length of tool is 16¼ inches when closed, and 23½ inches when extended.

Each $3.75

Packed one in a box

Automatic Drills

Yankee

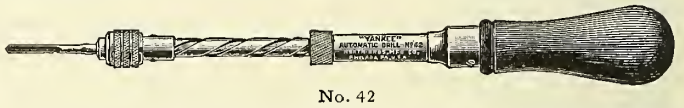


No. 41

Has eight drill points, 1/16 to 11/64 inches, which are in plain sight when magazine is open. During the return movement of handle the drill point revolves backward to clear chips, etc. The Chuck is of new and improved design, and will hold drill points tight and absolutely rigid. Entire length of tool, inclusive of drill point, 11⅜ inches.

Each $2.30

One in box.



No. 42

Same as No. 41, but without any magazine for drill points, and has a wood in place of metal handle, hence lower price. Drill points are in wood box. Entire length of tool, inclusive of drill point, 11⅜ inches.

Each $1.80

One in box.



No. 44

With adjustable tension. Of all the Automatic Drills there has never been one entirely satisfactory, because no one strength of spring in these tools would answer in both soft and hard woods, of for large and small drills furnished. A spring of average strength had to be used. The cap on top of Drill has a screw attached to it, by revolving which the spring is made longer or shorter, and as a result weaker or stronger. The spring is held at any desired tension by a small bolt engaging in cap and operated by the small knob on side of handle. The Drill has eight drill points, 1/16 to 11/64, in magazine in handle, arranged to show all in plain sight. Entire length of tool, inclusive of drill points, 11¼ inches.

Each $2.60

One in box.

Extra drill points for Nos. 41, 42 and 44.

Dozen 1.00

Set of 8 ..... .70

Sizes, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32 and 11/64 inch.

M. F. Co.



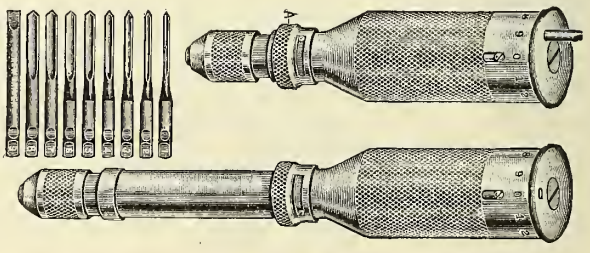
No, 45

Cocobolo handle; metal parts polished and nickeled. Chuck holding round shank drill bits from 0 to ¼ inch diameter.

A knurled chuck nut immediately back of the chuck prevents the latter from working loose. Length, 11¾ inches.

Dozen $20.00

Packed one in a pasteboard box.



Star No. 8

Handsomely knurled and nickeled steel.

May be compressed into convenient size for the pocket.

Magazine handle, containing 8 drill points, sizes, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32 and 11/64 inch in diameter, and a screwdriver bit.

Device for releasing a bit from handle without disturbing the others.

Screwdriver bit to be used when tool is compressed.

Chuck with positive grip.

Length, extended, 7¼ inches; compressed, 4⅞ inches.

Dozen $23.00

Packed one in a pasteboard box.

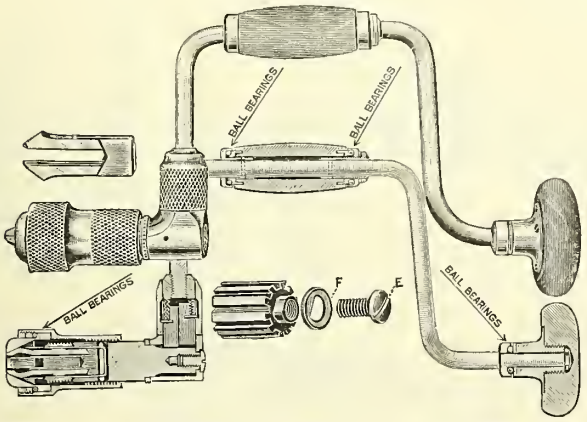
Extra drill points for Star No. 8. Dozen ..... .72

Set of 8 drills ..... .48

Bit Braces

M. F. Co.

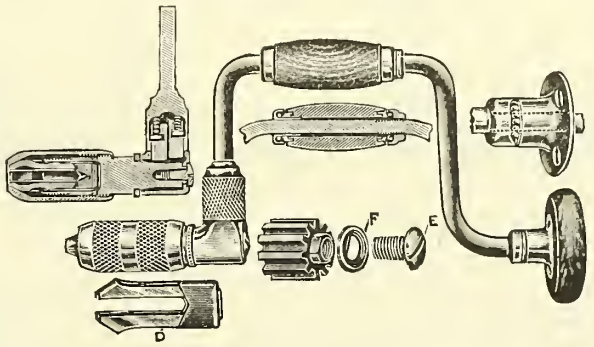
Lion Ratchet



Polished and nickeled steel; rare tropical wood. Ball-bearing head. Non-splitting, adjustable ball-bearing, always free acting sweep handle. The ball-bearing feature is of much importance in operation of the tool. Covered, dust-protected ratchet parts. Patent cup washer (F) and screw (E) to hold chuck to sweep without working loose. Unbreakable jaw socket made from bar steel. Chuck shell ball-bearing, with case-hardened hood and with powerful grip upon bit shanks and easily released when desired. Forged steel jaws, holding positively and securely, and centering with reasonable accuracy, round shanks from ⅛ to ½ inch in diameter, No. 1 Morse taper, and all sizes of bit stock and expansion bit shanks.

Number	870	871	872	873
Size of sweep, inches	14	12	10	8
Dozen	$41.00	$39.00	$37.00	$35.00

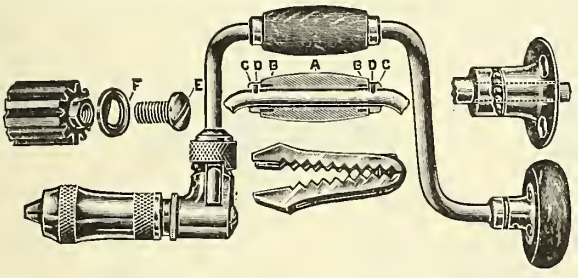
Master Ratchet



Polished and nickeled steel; cocobolo wood. Ball-bearing head. Non-splitting adjustable ball-bearing, always free acting sweep handle. Covered, dust-protected ratchet parts. Patent cup washer (F) and screw (E) to hold chuck to sweep without working loose. Unbreakable jaw socket made from bar steel. Chuck shell strengthened at the lip and of convenient shape to fit the hand. Forged steel jaws, holding positively and securely and centering with reasonable accuracy round shanks from ⅛ to ½ inch in diameter, No. 1 Morse taper, and all sizes of bit stock and expansion bit shanks.

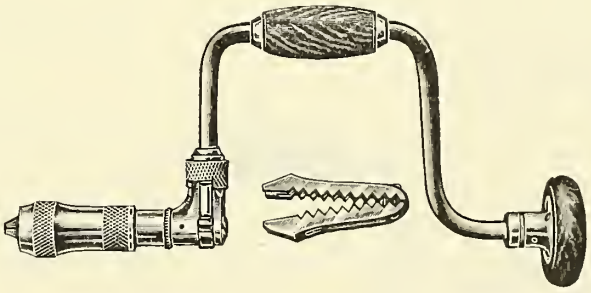
Number	830	831	832	833
Size of sweep, inches	14	12	10	8
Dozen	$38.00	$36.00	$34.00	$32.00

Barber Improved Ratchet



Polished and nickeled steel; cocobolo wood. Ball-bearing head. Non-splitting, always free acting sweep handle with inserted steel rings (B) and adjustable bearings (C) clamped with screws (D). Covered ratchet teeth with exposed ratchet dogs. Patent cup washer (F) and screw (E) to hold chuck to sweep without working loose. Forged steel alligator jaws holding bit stock and many sizes of round and irregular shanks. For nearly two generations the standard in the bit brace world.

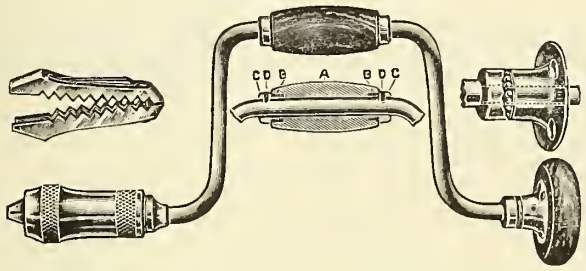
Number	30	31	32	33	34
Size of sweep, inches	14	12	10	8	6
Dozen	$29.00	$27.00	$25.00	$23.00	$21.00



Open ratchet, Ball-bearing head. Polished and nickeled steel; stained hardwood. Brass rings inserted in sweep handle. Forged steel alligator jaws.

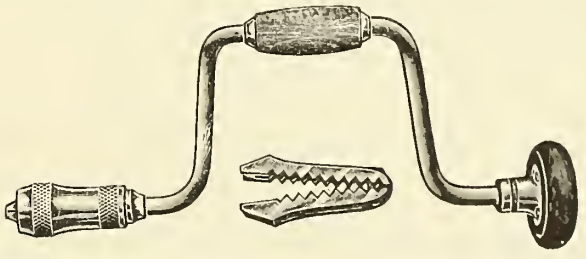
Number	320	321	322	323
Size of sweep, inches	14	12	10	8
Dozen	$19.50	$18.50	$17.50	$16.50

Barber Improved



Polished and nickeled steel; cocobolo wood. Ball-bearing head except on No. 15. Non-splitting, always free acting sweep handle with inserted steel rings (B) and adjustable bearings (C) clamped with screws (D). Forged steel alligator jaws holding bit stock and many sizes of round and irregular shanks.

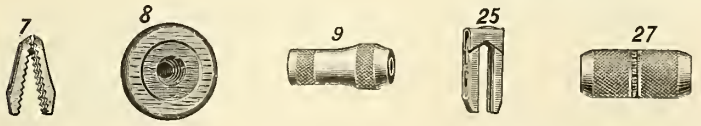
Number	10	11	12	13	14	15
Size of sweep, inches	14	12	10	8	6	4
Dozen	$23.00	$21.00	$19.00	$17.00	$15.00	$14.00



Polished and nickeled steel; stained hardwood. Brass rings inserted in sweep handle. Forged steel alligator jaws.

Number	220	221	222	223
Size of sweep, inches	14	12	10	8
Dozen	$11.25	$10.25	$9.25	$8.25

List of Parts of M. F. Co. Bit Braces

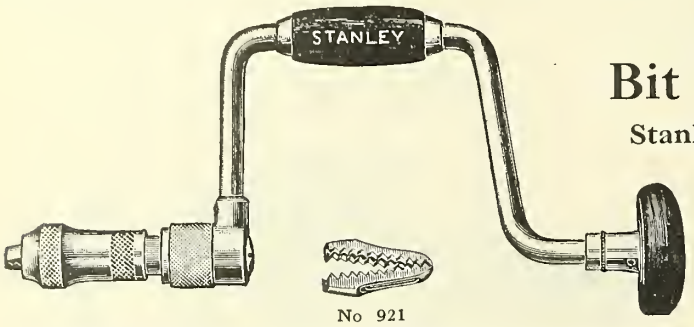


No. 7	Alligator jaws, per pair	$ .25
No. 8	Head, cocobolo wood, each	.20
No. 9	Shell, nickeled, each	.40
No. 25	Master jaws, per pair	.30
No. 27	Master shell, each	.45

For Genuine Russell Jennings Precision Braces see Index

Bit Braces

Stanley Ratchet

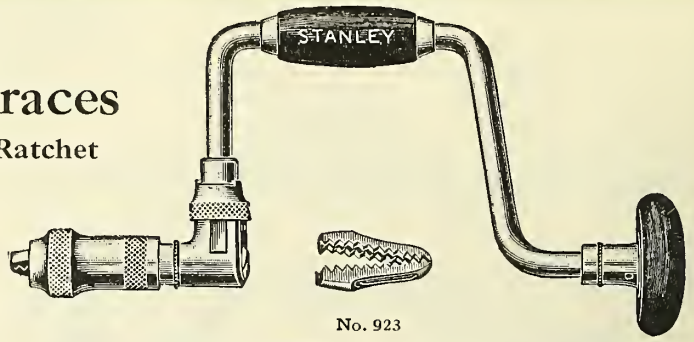


No 921

Heads and handles of cocobolo. Heavily nickel-plated. Ball-bearing heads, with the wood screwed on to the large spindle and three small screws preventing its working loose, and likewise containing a ball thrust. Hardened steel alligator jaws.

Concealed Ratchet in which the cam ring governs the ratchet, and, being in line with the bit, makes it more convenient in handling than when it is at right angles. The ratchet parts are entirely enclosed, thus keeping out moisture and dirt, retaining lubrication and protecting the user's hands. The ratchet mechanism is interchangeable, may be taken apart by removing one screw, and is readily put together again. The two-piece clutch, which is drop-forged, machined and hardened, is backed by a very strong spring, insuring a secure lock. When locked, ten teeth are in engagement, while five are employed when working as a ratchet.

Sweep, inches	6	8	10	12	14
Dozen	$23.40	$23.40	$25.20	$27.00	$28.80



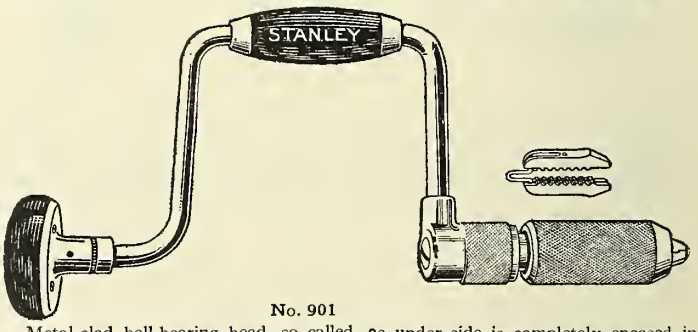
No. 923

Box Ring Ratchet is at right angle to the bit. Gear teeth cut on the extra heavy spindle and encased so that the user's hands are protected from the teeth, and dust or dirt prevented from clogging the working parts.

Sweep, inches	6	8	10	12	14
Dozen	$21.60	$21.60	$23.40	$25.20	$27.00

Parts

	Each
Shell for Nos. 921 and 923	$ .40
Jaws for Nos. 921 and 923	.30
Head for No. 901, 921 and 923	.35
Jaws for No. 901	.35
Shell for No. 901	.50



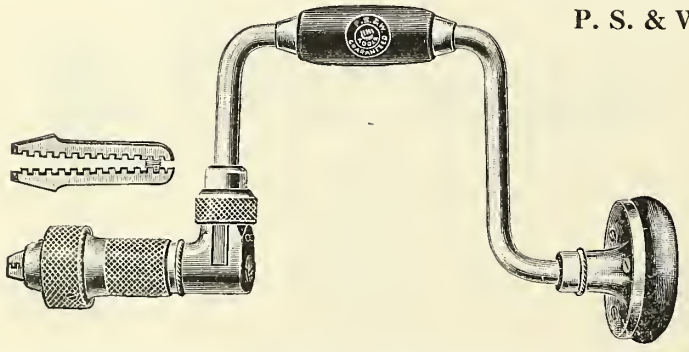
No. 901

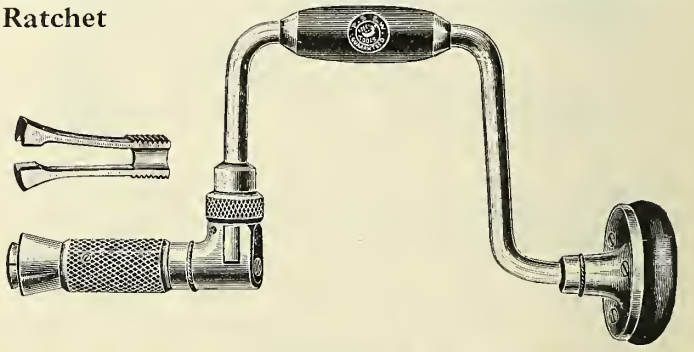
Metal-clad ball-bearing head, so called, as under side is completely encased in metal securely screwed to the wood and revolving against a ball thrust bearing.

Universal jaws, for both wood and metal workers, hold round shank bits and drills from 1/8 to 1/2 inch, and taper shanks as large as No. 2 Clark's Expansion Bit.

Sweep, inches	8	10	12	14	16
Dozen	$27.60	$29.40	$31.20	$33.00	$36.60

P. S. & W. Ratchet





The ball-bearing chuck will hold round, square or taper shank drills. Tenpenny nails held in this chuck have bored through solid oak. Five-sixteenths-inch rods with one end held in a vise, have been twisted to the breaking point.

Though you can tighten it by hand with greater ease and get a firmer grip than you can with any other chuck by aid of a vise, it can be released quickly and freely—even by the mechanic with a weak wrist.

The forged steel alligator jaw is properly tempered, interlocks accurately, adjusts itself perfectly to a parallel or taper position to suit the shape of the drill-shank, and has no complicated spring-connection to get out of order readily.

Ratchet: Box ring. At right angle to bit.

Sweep: Extra heavy, highly polished and nickel-plated.

Head: Cocobolo, full steel clad and screw fastened. Dustproof ball-bearings in retaining cup.

Center handle: Cocobolo. Extra jaws, pair $ .50.

Number	8006	8008	8010	8012	8014	8016
Sweep, inches	6	8	10	12	14	16
Dozen	$48.50	$48.50	$52.00	$55.50	$59.00	$62.50

Ratchet: Box ring. At right angle to bit.

Jaws: One piece, self centering, forged steel and spring tempered.

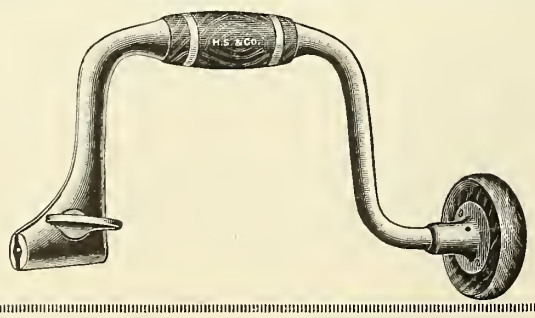
Sweep: Nickel-plated.

Chuck: Steel, extra knurled, machine cut thread

Head: Lignum-vitæ, full steel clad and screw fastened. Dustproof ball bearings in retaining cup.

Center Handle: Cocobolo. Extra jaws, pair $ .50.

Number	7006	7008	7010	7012	7014	7016
Sweep, inches	6	8	10	12	14	16
Dozen	$41.50	$41.50	$45.00	$48.50	$52.00	$55.50



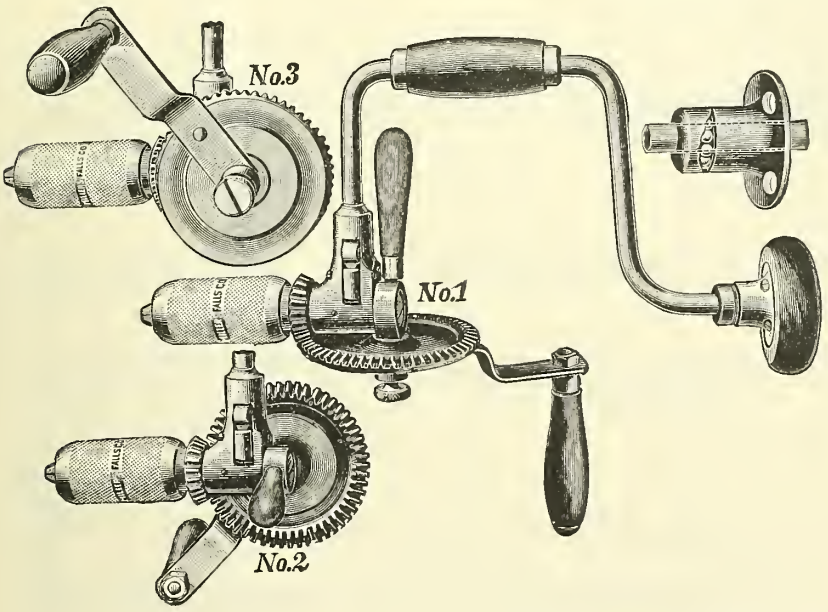
Spofford, Plain

Nickel-plated steel sweep, cocobolo head and handle.

Number	107	108	110	112	114
Sweep, inches	7	8	10	12	14
Each	$1.75	$2.00	$2.25	$2.50	$2.75

Combination Brace and Breast Drill

M. F. Co. No. 192



Best grade of ball-bearing ratchet brace with 10-inch sweep and master chuck. Improved ratchet; dogs may be thrown out of mesh simultaneously and permit tool to be used as a breast drill.

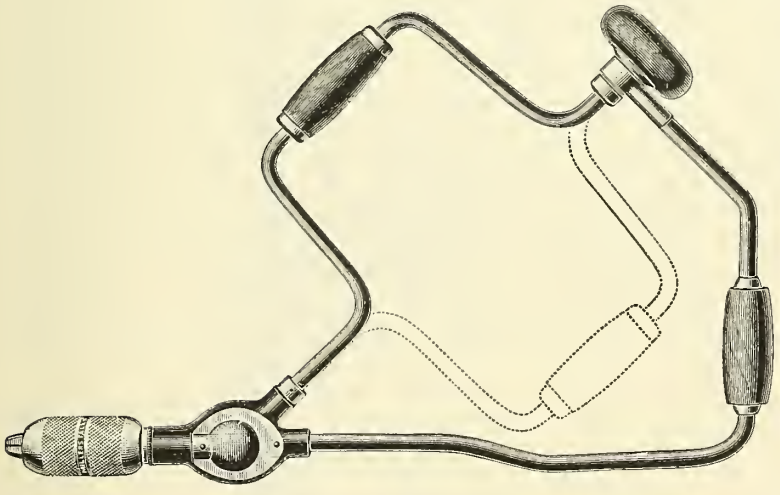
Drilling attachment affixed or detached quickly and with ease; may be swiveled into any one of three positions, Nos. 1, 2 and 3, as shown in illustration.

Dozen $50.00

Packed one in a pasteboard box.

Corner Bit Braces

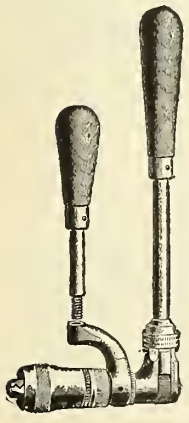
M. F. Co.



Cocobolo wood; metal parts polished and nickeled, except japanned hub casting. Ball-bearing head and adjustable, free acting sweep and steadying handles. Master chuck operated by inclosed gears, protected from dust and dirt. Gears case hardened and steel bushings in frame, practically eliminating wear at bearings.

Number	502	503
Size of sweep, inches	10	8
Length, inches	17½	17½
Dozen	$48.50	$46.50

Ratchet Corner Bit Braces



M. F. Co. No. 140

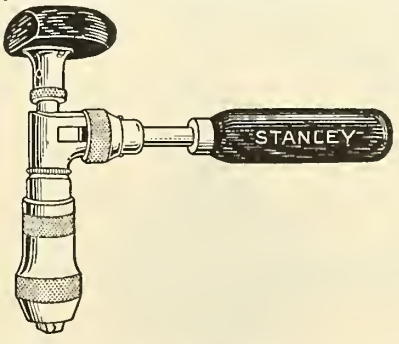
Stained hardwood; metal parts polished and nickeled. Steadying handle removable. Fine ratchet teeth to admit short bite. Barber chuck with alligator jaws. Length vertically (placed as cut), 13½ inches. Length horizontally, 5 inches.

Dozen $30.00

Packed one in a pasteboard box.

Stanley No. 984

This style of Ratchet Bit Brace is designed particularly for electricians, plumbers and gas fitters, but many other mechanics who have occasion to work close up into corners, or in other inaccessible places where there is no room for an ordinary corner brace, find it a very useful tool.



The knurled ring between the head and the ratchet mechanism, operated with the thumb and finger of the hand holding the head, is for the purpose of starting and holding the bit until it is far enough in the wood, so that it will not reverse when the handle is turned back.

The head is ball bearing and both head and handle are of cocobolo. The peculiar shape of the head enables the user to place the Brace close up to horizontal or perpendicular surfaces, a distinct advantage over the old form of head. All metal parts nickel-plated. Alligator jaws.

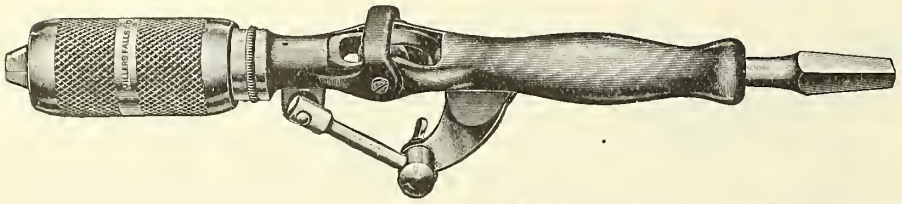
Dozen $18.00

For Genuine Russell Jennings Precision Braces, see Index

Universal Angular Bit Stock

M. F. Co. No. 108

With Master Chuck



To be used with a bit brace or a breast drill either as an extension or angular borer.

Adjustable arc varies angle from 180° to 125°. Length (when at 180°), 12½ inches.

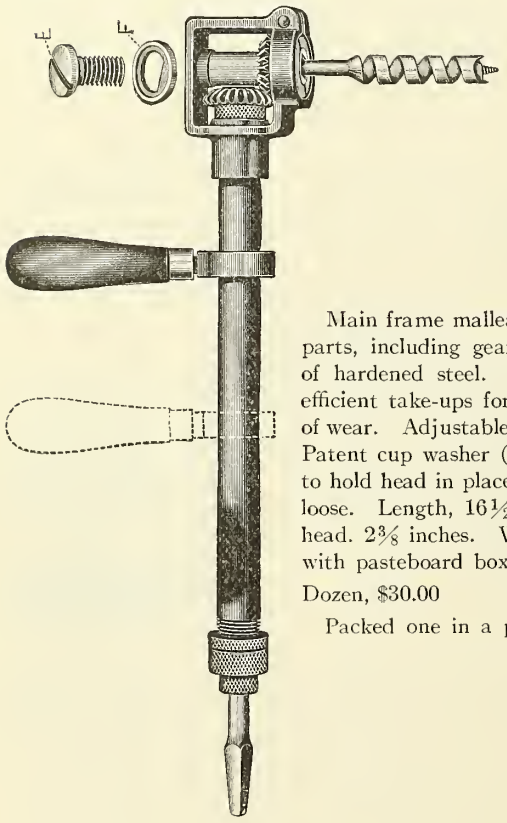
Dozen, $26.00

Packed one in a pasteboard box.

Sill Borers or Joist Tools

M. F. Co. No. 51

For use in connection with a bit brace or breast drill



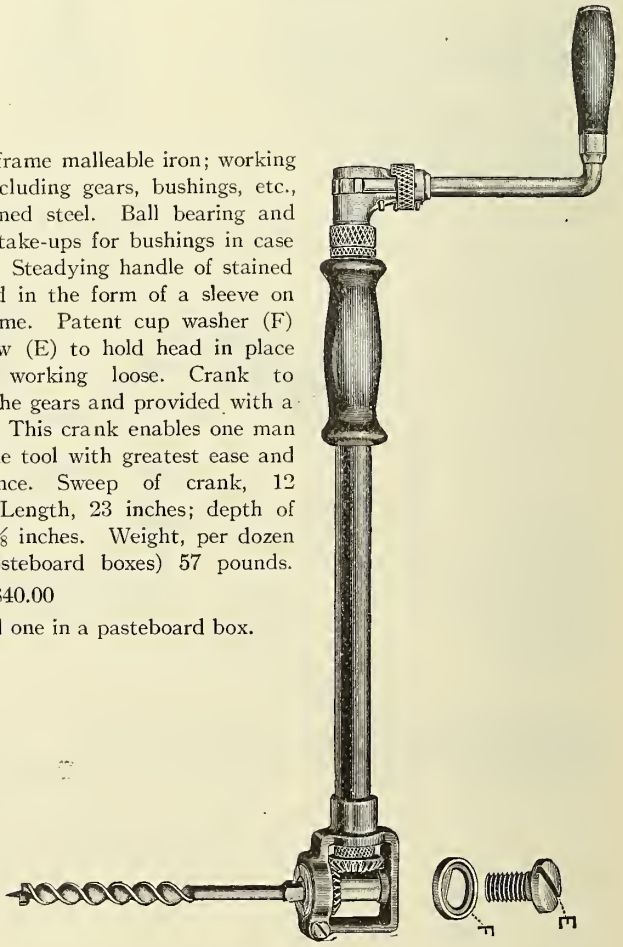
Main frame malleable iron; working parts, including gears, bushings, etc., of hardened steel. Ball bearing and efficient take-ups for bushings in case of wear. Adjustable steadying handle. Patent cup washer (F) and screw (E) to hold head in place without working loose. Length, 16½ inches; depth of head. 2⅜ inches. Weight, per dozen with pasteboard boxes), 34½ pounds.

Dozen, $30.00

Packed one in a pasteboard box.

M. F. Co. No. 52

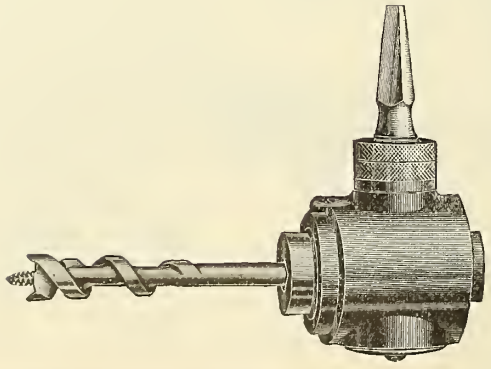
For use in cramped quarters where it is necessary to bore at a right angle and for electricians, car builders and wood workers in general



Main frame malleable iron; working parts, including gears, bushings, etc., of hardened steel. Ball bearing and efficient take-ups for bushings in case of wear. Steadying handle of stained hardwood in the form of a sleeve on main frame. Patent cup washer (F) and screw (E) to hold head in place without working loose. Crank to operate the gears and provided with a ratchet. This crank enables one man to use the tool with greatest ease and convenience. Sweep of crank, 12 inches. Length, 23 inches; depth of head, 2⅜ inches. Weight, per dozen (with pasteboard boxes) 57 pounds.

Dozen, $40.00

Packed one in a pasteboard box.



Angle Drills

H. S. & Co. No. 99

For Boring at Right Angles

This Tool is for boring with a brace at right angles in close quarters, and will be found valuable not only to Electricians and Carpenters, but to Car builders.

The Electrician finds many places in wiring old buildings where this tool will be indispensable.

The steel gears are encased for safety and to protect them from dust and chips.

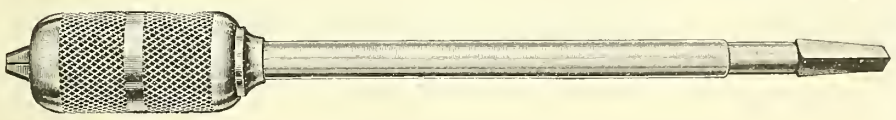
Is so small and light that it can be carried in the pocket.

Dozen..... $27.00

Extension Bit Holders

M. F. Co.

No. 1 With Master Chuck

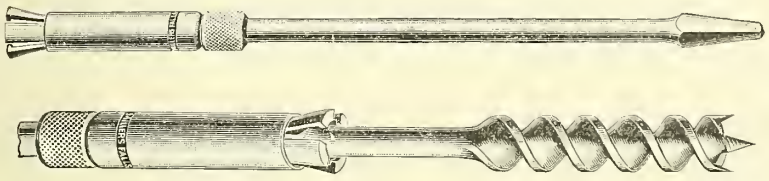


To be used in connection with a bit brace or breast drill. Nickeled. Bit shanks tapered exactly to gauge. Master chuck holding round shanks from ⅛ to ½ inch in diameter, bit stock, expansion and No. 1 Morse taper shanks.

Length, inches.	12	15	18	21	24
Dozen	$12.60	12.80	13.00	13.20	13.40

Packed one in a pasteboard box.

No. 5



Polished and nickel-plated steel. Follows bits ⅝ inch in diameter and larger into their bores. Four reliably strong, steel jaws, made in one piece, grip firmly over shoulders of bit stock shanks. Bit inserted or released instantly when desired. An unsurpassed tool for the purpose intended.

Length, inches	12	15	18	21	24	30
Dozen	$14.60	14.80	15.00	15.20	15.40	15. 80

Packed one in a pasteboard box.

No. 6 Telescope



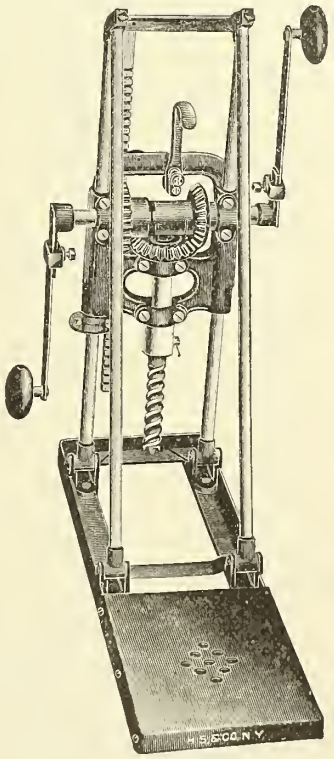
Polished and nickel-plated steel. Outer sleeve, telescoping over, and engaging at 1½ inch intervals upon inner spindle, combining lightness with strength. For description of chuck see extension bit holders No. 5, shown above. Length, collapsed, 16½ inches. Length, extended to the extreme, 24 inches.

Dozen $24.00

Packed one in a pasteboard box.

Hand Boring Machines

M. F. Co. No. 146

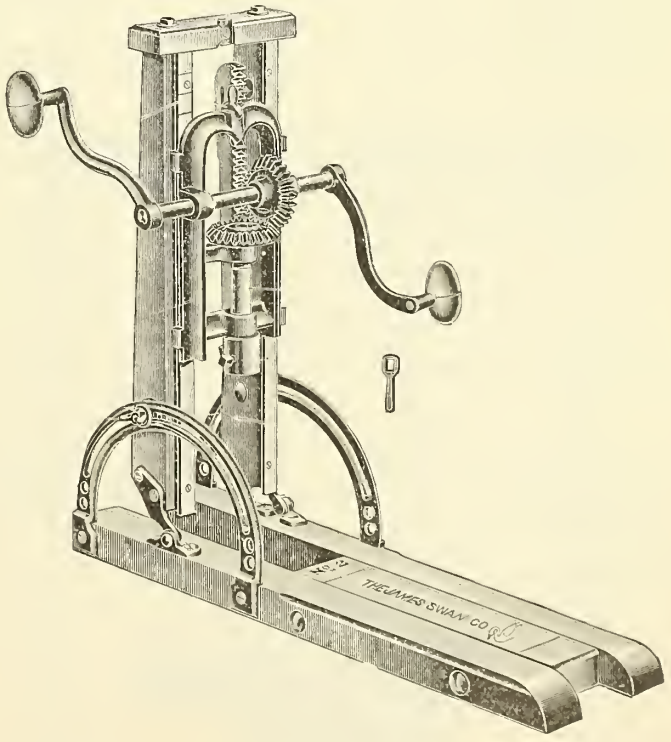


Base, upright and angle rods, spindle and cranks of steel. Bores vertically, or at any angle from the vertical, within an arc of 50 degrees. Depth of hole regulated by adjustable stop. Auger removed from hole by a few backward revolutions of cranks to loosen worm of bit, pressure with cranks to the left, automatically engaging a clutch, and foreward revolutions of the cranks. Frame locked in topmost suspension automatically; released by pressure upon a thumb latch. Adjustable cranks regulating speed and power. Regularly made to bore 12 inches, but made to order for greater depths at small additional charge. Height, 25½ inches. Weight, boxed, 49 pounds; net, 31 pounds.

Without augers, each $10.20

Packed one in a wooden box.

Swan No. 6702



Wooden frame. Can be tilted to bore at any desired angle. The rack is easily swung into the beveled gear, and by turning the handles in same direction as in boring, the auger is withdrawn. A reverse motion of the handles throws the rack out of gear.

Without augers, each $6.75

Boring Machine Augers

For Hand-boring Machines

Genuine Russell Jennings Extension Lip



Length of twist, 8 inches; length of round, 2½ inches.
Turned shank, 1½ inches by ½ inch. Length overall, 12 inches

Size in 16ths	8	9	10	11	12	13	14	15	16
Dozen	$10.00	10.00	10.00	11.00	11.00	12.00	13.00	14.00	15.00

Size in 16ths	18	20	22	24	26	28	30	32
Dozen	$17.00	19.00	21.00	24.00	26.00	28.00	30.00	32.00

Bates



Length of twist, 7½ inches; length of round, 2½ inches.
Turned shank, 1½ inches by ½ inch. Length over all, 12 inches.

Sizes not listed can be made to order at special prices, depending upon number of a size ordered

Machine Bits for Wood

Morse



Straight Shanks

No. 108

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches
1/8	$ .20	3	1 13/16
5/32	.25	3 1/4	2 3/32
3/16	.30	3 1/2	2 5/16
7/32	.35	3 3/4	2 17/32
1/4	.40	4	2 3/4
9/32	.45	4 1/4	2 31/32
5/16	.50	4 1/2	3 3/16
11/32	.55	4 3/4	3 13/32
3/8	.65	5	3 5/8
13/32	.70	5 1/4	3 27/32
7/16	.75	5 1/2	4 1/16
15/32	.80	5 3/4	4 9/32
1/2	.85	6	4 1/2
17/32	.95	6 1/8	4 19/32
9/16	1.00	6 1/4	4 11/16
19/32	1.10	6 3/8	4 3/4
5/8	1.15	6 1/2	4 7/8
21/32	1.25	6 3/4	5
11/16	1.35	7	5 5/16
23/32	1.50	7 1/4	5 1/2
3/4	1.65	7 1/2	5 11/16
25/32	1.80	7 3/4	5 7/8
13/16	1.95	8	6 1/16
27/32	2.15	8 1/4	6 1/4
7/8	2.30	8 1/2	6 7/16
29/32	2.50	8 3/4	6 5/8
15/16	2.65	9	6 13/16
31/32	2.85	9 1/4	7
1	3.00	9 1/2	7 3/16
1 1/16	3.60	11 1/4	8 1/2
1 1/8	4.00	11 3/4	8 7/8
1 3/16	4.40	12	9
1 1/4	4.80	12 1/2	9 3/8
1 5/16	5.20	12 1/2	9 3/8
1 3/8	5.60	12 1/2	9 3/8
1 7/16	6.00	12 1/2	9 3/8
1 1/2	6.40	12 1/2	9 3/8



Shanks ½ Inch Diameter, 2½ Inches Long

No. 108 A

Diameter Inches	Each	Whole Length Inches	Twist Cut Inches
1/8	$ .50	4 5/8	1 13/16
5/32	.50	4 7/8	2 3/32
3/16	.60	5	2 5/16
7/32	.60	5 1/4	2 17/32
1/4	.70	6 1/8	3
9/32	.75	6 1/4	3
5/16	.80	6 3/8	3 1/8
11/32	.85	6 1/2	3 1/4
3/8	.90	6 3/4	3 1/2
13/32	.95	7	3 3/4
7/16	1.00	7 1/4	4
15/32	1.10	7 1/2	4 1/4
1/2	1.20	7 3/4	4 1/2
17/32	1.30	8	4 3/4
9/16	1.40	8 1/4	5
19/32	1.50	8 1/2	5 1/4
5/8	1.60	8 3/4	5 1/2
21/32	1.70	9	5 3/4
11/16	1.80	9 1/4	6
23/32	1.90	9 1/2	6 1/4
3/4	2.00	9 3/4	6 1/2
25/32	2.20	9 7/8	6 5/8
13/16	2.40	10	6 3/4
27/32	2.50	10 1/4	7
7/8	2.60	10 1/2	7 1/4
29/32	2.80	10 5/8	7 3/8
15/16	3.00	10 3/4	7 1/2
31/32	3.20	10 7/8	7 5/8
1	3.40	11	7 3/8
1 1/16	3.60	11 1/4	7 5/8
1 1/8	4.00	11 3/4	8
1 3/16	4.40	12	8 1/4
1 1/4	4.80	12 1/2	8 5/8
1 5/16	5.20	12 1/2	8 5/8
1 3/8	5.60	12 1/2	8 1/2
1 7/16	6.00	12 1/2	8 1/2
1 1/2	6.40	12 1/2	8 3/8

Set No. 12

1/8 to 1/2-inch machine bits, mounted, varying by 32nds.... $7.00

SEE DISCOUNT SHEET

Machine Bits for Wood

Genuine Russell Jennings

Crucible Tool Steel

The Standard Double Thread Screw Point gives the best result on general work, and unless otherwise specified will be furnished up to $\frac{1}{2}^{6}$; over that with single thread screw point. Certain requirements, however, demand special threads or points, and in case of any trouble, we request full information as to its nature and the kind of wood used, when we will be pleased to advise fully.

For illustrations and descriptions of threads, see page 401.

Extension Lip, with Turned Round Shanks



These Bits are listed in accordance with the manufacturers standard price list for machine bits. The following shows the regular sizes of the several lengths of twist and sizes of shanks and we suggest that they be used wherever possible, though we will supply any special sizes needed, at special prices.

Length of twist, 2 inches; turned shank, $2\frac{1}{4}$x$\frac{3}{8}$ inches. Carried in stock $\frac{3}{16}$ to $\frac{12}{16}$ by 32nds. $\frac{12}{16}$ to $\frac{16}{16}$ by 16ths.

Length of twist, 4 inches; turned shank, 2x$\frac{1}{2}$ inches. Carried in stock $\frac{3}{16}$ to $\frac{17}{16}$ by32nds. $\frac{17}{16}$ to $\frac{32}{16}$ by 16ths.

Length of twist, 6 inches; turned shank, 2x$\frac{1}{2}$ inches. Carried in stock $\frac{3}{16}$ to $\frac{17}{16}$ by 32nds. $\frac{17}{16}$ to $\frac{32}{16}$ by 16ths.

Size in 16ths	3	4	5	6	7
Dozen	$8.40	7.80	8.40	9.00	9.90
Size in 16ths	8	9	10	11	12
Dozen	$10.80	12.00	13.20	14.40	15.60
Size in 16ths	13	14	15	16	17
Dozen	$16.80	18.00	19.20	20.40	21.60
Size in 16ths	18	19	20	21	22
Dozen	$22.80	24.00	25.20	26.40	27.60
Size in 16ths	23	24	25	26	27
Dozen	$28.80	30.00	31.50	33.00	34.50
Size in 16ths	28	29	30	31	32
Dozen	$36.00	37.50	39.00	40.50	42.00

Price of intermediate sizes the same as the next regular size larger.

When ordering machine bits, always state length of twist, and length and diameter of shank.

Machine bits of sizes or dimensions not carried in stock can be made to order at special prices, depending on the number of bits ordered.

Extension Lip. Square Shank Dowel



Square shank machine dowel bits can be made to order in special lengths and with shanks of special dimensions at special prices, depending upon the number of bits ordered.

Shanks not threaded, $4\frac{1}{2}$ inches long overall. Carried in stock. $\frac{3}{16}$ to $\frac{9}{16}$ by 32nds. $\frac{9}{16}$ to $\frac{20}{16}$ by 16ths.

Size in 16ths	3	4	5	6	7	8
Dozen	$4.50	4.00	4.00	4.00	4.50	5.00
Size in 16ths	9	10	11	12	13	14
Dozen	$5.50	6.00	7.00	7.00	8.00	8.00
Size in 16ths	15	16	17	18	19	20
Dozen	$9.00	9.00	10.50	10.50	12.00	12.00

Shanks on these bits are $\frac{1}{2}$-inch square

Length of shank $\frac{3}{16}$ to $\frac{10}{16}$=1 inch.

Length of shank, $\frac{11}{16}$ and up=$1\frac{3}{4}$ inches.

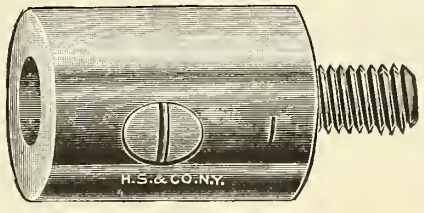
When shanks have to be threaded to fit special machines we recommend that whenever possible this threading be done by the maker, as they have facilities for doing this work so that bits will run perfectly true. We can furnish any thread if given the diameter and number of threads to the inch or a sample to work from, at same prices.



Shanks threaded, $\frac{7}{16}$x14 thread. (For Pryibil or Clement Machines.) $4\frac{1}{2}$ inches long over all. Add for threading to net price of Not Threaded $1.75 per dozen for six or more, and for less than six, 18 cents each, net.

For users of old style machines requiring bits threaded $\frac{5}{16}$ inch diameter with 20 threads per inch, we advise the use of the special steel attachment listed below, which makes it possible to use the regular ($\frac{7}{16}$ x 14 thread) Bits.

Chuck for Boring Machines

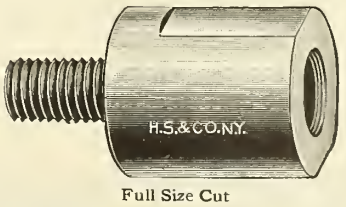


No. 1

This Chuck has a $\frac{1}{2}$-inch hole which enables the use of bits with a $\frac{1}{2}$-inch shank in the boring machines requiring threaded bits. In ordering, state thread desired.

Each $1.00

Steel Attachment for Boring Machine



Full Size Cut

For enabling use of $\frac{7}{16}$x14 threaded machine bits on old style machines made to use $\frac{5}{16}$x20 bits

Each ..... $ .75

Special Machine Bits

Forstner



Round shanks ½ and ⅜ inches in diameter, ½-inch being regular on sizes up to 2 inches. Machine bits larger than 2 inches have ¾-inch round shanks unless otherwise specified.

For smooth, round or square boring, scroll or twist work. Bores any arc of a circle. Especially adapted for hardwood working. Guided by its circular rim instead of its center, consequently can be guided in any direction regardless of grain or knots.

⅜x2x5 inches. ⅜x2-inch shank, 5 inches long overall.

Size, inches	¼	5/16	⅜	7/16	½
Each	$ .85	.85	.90	.90	.95

½x2x5 inches. ½x2-inch shank, 5 inches long overall up to 1 7/16-inches.

½x2-inch shank, 6¾ inches long overall, 1½ up to 2 inches.

Machine bits larger than 2 inches in diameter are regularly 9 inches overall.

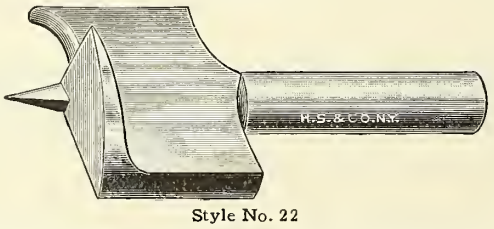
Sizes, inches	¼	5/16	⅜	7/16	½	9/16	⅝
Each	$ .85	.85	.90	.90	.95	.95	1.00
Sizes, inches		11/16	¾	13/16	⅞	15/16	1
Each		$1.00	1.05	1.05	1.10	1.20	1.25
Sizes, inches		1 1/16	1⅛	1 3/16	1¼	1 5/16	1⅜
Each		$1.25	1.30	1.30	1.45	1.45	1.55
Sizes, inches		1 7/16	1½	1⅝	1¾	1⅞	2
Each		$1.75	2.00	2.25	2.50	2.75	3.00
Sizes, inches	2⅛	2¼	2⅜	2½	2⅝	2¾	2⅞	3
Each	$10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00

In Sets

Packed in neat, compact boxes, and attention is called to the reduced prices for complete sets, making it advantageous to buy them in this way.

9 Machine Bits, ⅜ to 1⅛ in 8ths $9.25
11 Machine Bits, ⅜ to ⅞ in 16ths 10.50
17 Machine Bits, ¼ to 1⅛ in 16ths 17.50
Sets of 17 do not contain 1 3/16 and 1 5/16-inch sizes.

Center



Style No. 22

Suitable for all kinds of shallow boring and will not split light stock. Sizes over 3 inches up to 12 inches at special prices. In ordering, state complete dimensions as to size of shank, etc.

Diameter of Bit Inches	Dozen	Diameter of Bit Inches	Dozen
½	$ .60	1½	$2.30
⅝	.85	1¾	2.65
¾	1.10	2	3.00
⅞	1.35	2¼	3.35
1	1.60	2½	3.70
1¼	1.95	2¾	4.05
		3	4.40

Screw Shank Dovetail Cutters

For Dodd Machines

Also made with one-half inch Straight Shank

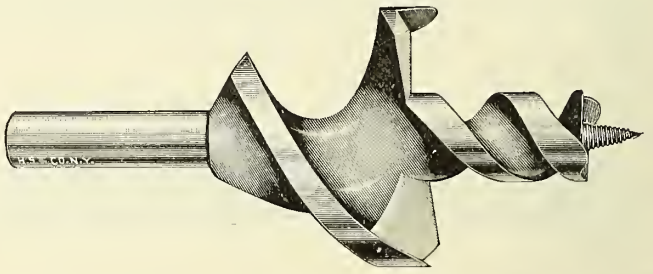


Style No. 30

Dozen $6.00

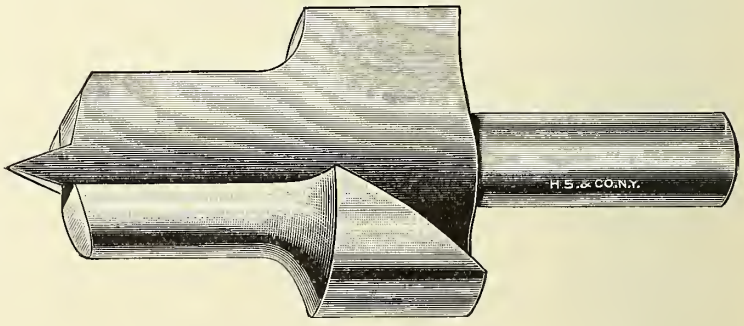
Caster

Genuine Russell Jennings Crucible Tool Steel, with Extension Lip



For H. S. & Co. No. 61½ casters; turned round shank, 2x½-inch. Length of twist, 4 inches; small twist, 13/16-inch; large, 3 7/16-inch.
Each $10.00

Hand Hole Router



Style No. 24

Suitable for boring and finishing at one operation the hand holes in beer and pop-bottle boxes.

Large, diameter 1¾ inches; small, diameter ⅞, 1 or 1⅛ inches
Each $3.75
Other sizes supplied to order

Brad Point Boring



Style No. 50

Where it is desired to bore a smooth hole through several pieces of stock at once, this bit will be found to do the work properly. Point is removable and can be easily replaced when broken. Standard length 5 inches over all. Shanks, 4x½-inch.

Size Inches	Each	Size Inches	Each	Size Inches	Each
⅝	$1.45	1¼	$2.45	2⅜	$4.50
¾	1.65	1½	2.65	2½	4 80
⅞	1.85	1¾	3.00	2⅝	5.10
1	2.05	2	3.60	2¾	5.40
1⅛	2.25	2¼	4.20	3	6.00

Special Machine Bits

Countersinks



Style No. 5

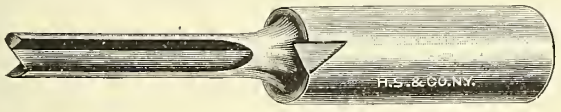
Made of tool steel, tempered by special process.

Center drills may be adjusted as desired. When set screw, in boring machine spindle, is tightened on split shank, center drill is held firmly in place.

Stock lengths: Countersink, including shank 4½ inches. Shanks ½ inch diameter by 1½ inches long. Center drills 6 inches long. Also with Morse No. 1 taper shank.

	Each
Diameter ⅜ inch, with 5/32 or 3/16 Drills	$1.50
Diameter 7/16 inch, with 5/32 or 3/16 Drills	1.50
Diameter ½ inch, with 3/16, 7/32 or ¼ Drills	1.50
Diameter 9/16 inch, with 3/16, 7/32, ¼ or 9/32 Drills	1.50
Diameter ⅝ inch, with 3/16, 7/32, ¼, 9/32 or 5/16 Drills	1.75
Diameter 11/16 inch, with 7/32, ¼, 9/32 or 5/16 Drills	1.85
Diameter ¾ inch, with ¼, 9/32, 5/16 or 11/32 Drills	2.10
Diameter 13/16 inch, with 9/32, 5/16 or 11/32 Drills	2.25
Diameter 7/8 inch, with 5/16, 11/32 or ⅜ Drills	2.40
Diameter 1 inch, with 5/16, 11/32, ⅜ or 7/16 Drills	2.65
Diameter 1⅛ inch, with 5/16, 11/32, ⅜ or 7/16 Drills	3.00
Diameter 1¼ inch, with 5/16, 11/32, ⅜ or 7/16 Drills	3.50
Diameter 1⅜ inch, with 5/16, 11/32, ⅜, 7/16 or ½ Drills	4.00
Diameter 1½ inch, with 11/32, ⅜, 7/16, ½ or 9/16 Drills	4.75

Router



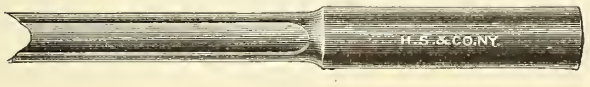
Style No. 44

Will stand up to the most severe strain. Shanks 1½x½-inch Cutting part 1½ inches long. Length over all, 3 inches.

	Dozen
Diameter of Bit, ¼ inch	$5.40
Diameter of Bit, 5/16 inch	5.40
Diameter of Bit, ⅜ inch	6.00
Diameter of Bit, 7/16 inch	7.20
Diameter of Bit, ½ inch	8.40
Diameter of Bit, 9/16 inch	10.80
Diameter of Bit, ⅝ inch	12.00
Diameter of Bit, ¾ inch	13.80
Diameter of Bit, ⅞ inch	15.60
Diameter of Bit, 1 inch	18.00

Vibrating Mortise

Used for Chair Mortising



Style No. 6

Made from best tool steel, with special tempering which insures a tool suitable for the heaviest work. Shanks 2x½ inches.

Length of cut, 2½ inches.

Special sizes at special prices.

	Dozen
Diameter, 5/16 inch	$9.00
Diameter, ¼ inch	9.00
Diameter, ⅜ inch	9.00
Diameter, 7/16 inch	9.00
Diameter, ½ inch	9.00

Taper



Style No. 8

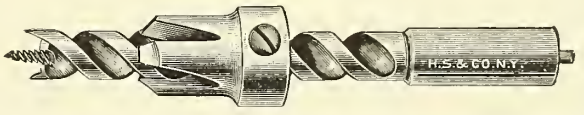
Made to bore for the screw and to countersink for screw head in one operation.

Stock lengths: Countersink 3 inches long including shank. Center drills 4½ inches total length. Shank ½ inch diameter by 1½ inches long. Also in stock with Morse No. 1 Taper Shank. Special lengths or sizes at special prices.

	Each
Diameter ½ inch, with 3/32, ⅛, 5/32 or 3/16 Drills	$1.50
Diameter 9/16 inch, with 13/64, 7/32, 15/64, ¼ or 17/64 Drills	1.50
Diameter ⅝ inch, with 9/32, 19/64, 5/16, 11/32 or ⅜ Drills	1.65

Taper Shell

For Boring Bits



The above cut represents boring bit with a taper shell countersink. This shell countersink will be found a very useful tool for boring bits, to countersink the edge of holes. It can be adjusted for any depth of hole.

Size	Each
5/16 inch	$ .75
⅜ inch	.75
7/16 inch	.75
½ inch	.75

Escutcheon or Key Hole

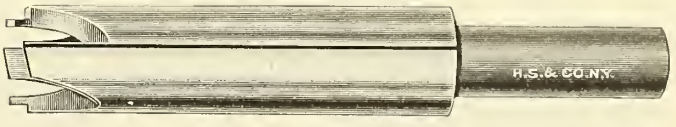


Style No. 34

Made with straight or taper shanks. Send sample or drawing, with complete dimensions, with order.

Each $ .75

Plug Cutter



Style No. 9

Used to cut plugs to put over screw heads, etc. Lumber should be cut full of plugs, then ripped off on the band saw. Special sizes or styles at special prices.

Sizes	Each
⅜ inch	$1.25
7/16 inch	1.40
½ inch	1.50
9/16 inch	1.75
⅝ inch	2.00



Bits with Precision Shanks

Genuine Russell Jennings Crucible Steel

Extension Lip Auger Bits

Size in 16ths	3	4	5	6	7
Dozen	$4.50	4.00	4.00	4.00	4.50
Size in 16ths	8	9	10	11	12
Dozen	$5.00	5.50	6.00	7.00	7.00
Size in 16ths	13	14	15	16	17
Dozen	$8.00	8.00	9.00	9.00	10.50
Size in 16ths	18	19	20	21	22
Dozen	$10.50	12.00	12.00	13.50	13.50
Size in 16ths	23	24	25	26	27
Dozen	$15.00	15.00	17.00	17.00	19.00
Size in 16ths	28	29	30	31	32
Dozen	$19.00	21.00	21.00	23.00	23.00

Length over all varies from 8 inches to 10 inches, depending on size.

Sizes in 32nds from $\frac{7}{32}$ to $\frac{31}{32}$ furnished at the price of next larger size. Standard extension lip auger bits are not carried in stock by 32nds above $\frac{31}{32}$, nor in 16ths above $\frac{32}{16}$, but can be made to order, at special prices, which depend on the number of bits ordered.

Furnished in regular lengths from 8½ to 10 inches long, depending on size. Also furnished from $\frac{3}{16}$ to $\frac{16}{16}$; in long dowel from 4½ to 6 inches long. In short dowel about 3 inches long.

Expansive

The strongest expansive bit on the market. The head is solid and designed for maximum strength. A passageway formed in the solid head, takes the cutter, which is adjusted by a worm in mesh with the threads on the cutter, which form a rack. Precise adjustment to size is remarkably easy, for the worm gives perfect control over very slight movement. The pitch of the adjusting screw is such that one complete turn of this screw changes the diameter of the hole ⅛ inch. One-half turn of the adjusting screw changes the diameter $\frac{1}{16}$ inch, and so on.

"Creeping" of the expansive bit cutter is absolutely prevented by a clamping screw, which holds the worm and cutter firmly in position.

It is of special value to steam and hot water fitters, for it saves time in placing and removing the bit, also in adjusting to size, as explained above, and gives a tight grip with little effort.

No. 70 Dozen $20.00



Styles of Thread

Regular lengths supplied in any of the three threads illustrated below. Long and short dowel and expansive bits supplied in regular thread only



Double Thread. Unsurpassed for accurate work in seasoned wood which is not extremely gummy or hard. Preferred by cabinet makers.

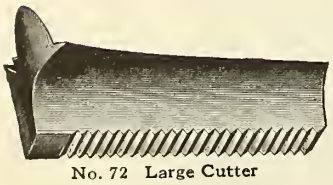


Quick Boring Thread. Especially adapted for hard or gummy woods, end grain boring, mortising doors, etc.

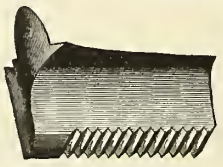


Double Quick Thread. For rapid work in soft woods only. Not practical for hard woods.

Parts for Expansive Bits



No. 72 Large Cutter



No. 73 Small Cutter



No. 74 Adjusting Screw



No. 75 Clamp Screw



No. 76 Washer

		Dozen
No. 72	Large Cutter	$5.40
No. 73	Small Cutter	4.80
No. 74	Adjusting Screw	.96
No. 75	Clamping Screw	$ .72
No. 76	Beveled Washer	1.20

See page 400 for Braces for above

Tools With Precision Shanks

Genuine Russell Jennings

German Pattern Gimlet Bits



Made from tool steel. Hardened and tempered.
Sizes $\frac{2}{32}$ to $\frac{10}{32}$.

Dozen $3.00

Forstner Bits in Sets



Set contains thirteen Bits, one each $\frac{4}{16}$ to $\frac{16}{16}$ by 16ths.

Set $16.50

Countersink for Wood

The Russell Jennings Countersink for Wood is made from the same material that has given the Russell Jennings Bit its reputation, and carries the same guarantee.

No. 90 Dozen $5.00

Countersink for Metal

The Russell Jennings Countersink for Metal is made from twist drill stock and tempered for metal cutting purposes, and is also backed by the Russell Jennings guarantee.

No. 94 Dozen $3.50

Screwdriver Bits

Russell Jennings Screw driver Bits are made from a special tool steel carefully tempered and designed for maximum strength. These screwdriver bits are of such a superior quality that Russell Jennings stamp their name on each one and back them with the Russell Jennings guarantee.

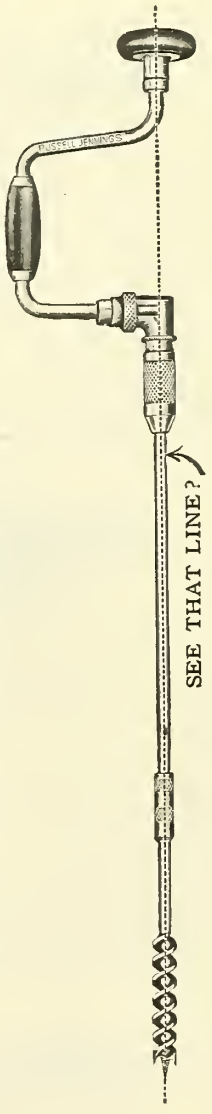
Screwdriver Bits with Precision Shank are made for use in the Precision or Universal Precision Brace Chuck. As in the case of boring bits, these screwdrivers are held fast with no possibility of turning, and without tendency to work loose. Quickly inserted and removed.

No. 82 Width, $\frac{5}{16}$ inch, dozen $3.00
No. 86 Width, $\frac{7}{16}$ inch, dozen 3.50

Auger Bit Extension No. 60



Inches	Dozen
16	$12.75
18	13.50
24	15.00
30	16.50
36	18.00



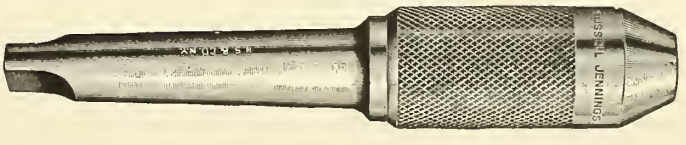
For electricians and steam fitters we recommend the use of these extensions in combination with the Precision Bit Brace and extension lip bits having Precision Shank. Perfect alignment is secured from the brace head to the screw point.

The extension has the turned shank at one end and a small Precision Chuck at the other, which holds the bit as securely as does the Precision Brace Chuck.

The reverse taper on the shank makes it impossible for the bit to pull out of the extension.

Special Precision Chuck

With No. 2 Morse Taper Shank



No. 502

This Chuck takes the regular Russell Jennings Precision Shank tools with $\frac{3}{8}$-inch shanks. It can be used in drill presses or in tail stock of speed lathes on light work. In this way Precision Shank Bits may be used both for hand work and light machine work.

Each $2.00

See page 400 for braces for above

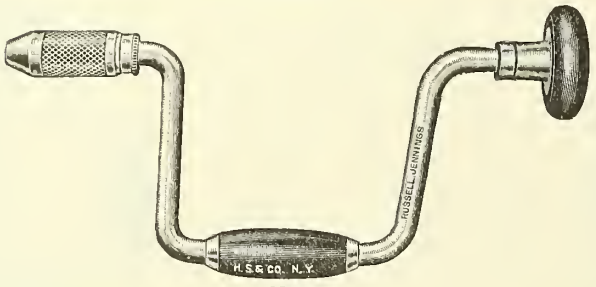
Tools With Precision Shanks

And Braces for Same

Genuine Russell Jennings

Precision Bit Braces

Sleeve

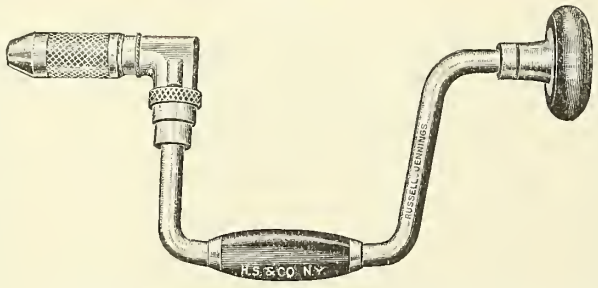


No. 30

The vulcanized Fibre Grip and Head are practically non-breakable. Ball-bearing Head. Takes bits with Precision Shanks only.

With 8-inch sweep, dozen	$24.00
With 10-inch sweep, dozen	25.00

Ratchet

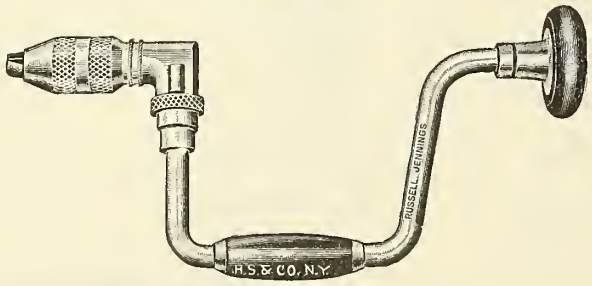


No. 50

The vulcanized Fibre Grip and Head are practically non-breakable. Ball-bearing Head. Enclosed Ratchet. Takes bits with Precision Shanks only.

With 8-inch sweep, dozen	$33.00
With 10-inch sweep, dozen	34.00
With 12-inch sweep, dozen	35.00
With 14-inch sweep, dozen	36.00

Universal Ratchet



No. 40

This Brace is fitted with ball-bearing head, vulcanized fibre grip and head, enclosed ratchet, etc. Vulcanized fibre, which is practically non-breakable, has demonstrated its worth in other lines, but in these Russell Jennings Braces is applied for the first time to a bit brace.

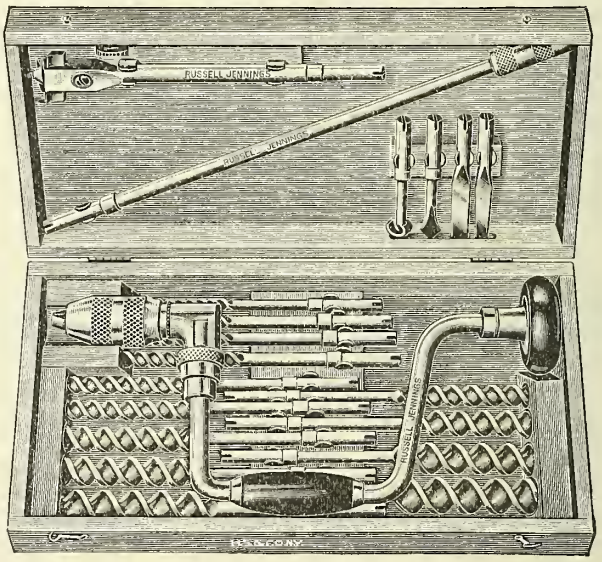
It will take either the Russell Jennings Precision Shank or the ordinary bit shank. With this chuck, a carpenter may purchase from time to time bits having the Precision Shank and yet use his ordinary shank tools as long as they last.

In the construction of this chuck no castings are used. All parts are forged and accurately machined.

With 8-inch sweep, dozen	$44.00
With 10-inch sweep, dozen	45.00
With 12-inch sweep, dozen	46.00
With 14-inch sweep, dozen	47.00

Brace and Bit Sets

Precision Shanks on all Tools



Set No. 1

Each set contains one Russell Jennings Precision Brace and a variety of tools with Precision Shank. The box is of bass wood, finely finished, strong and durable, provided with clips and other devices for holding the tools securely in place. Sets are made up as follows:

Set No. 1 With Universal Ratchet Brace No. 40 ..... $15.00
Set No. 11 With Ratchet Brace No. 50 ..... 14.00

Thirteen Extension Lip Bits, one each, $\frac{4}{16}$ inch to $\frac{16}{16}$ inch, inclusive.

One Expansive Bit with large and small cutters (bores from $\frac{7}{8}$ inch to $2\frac{1}{2}$ inches).

One Auger Bit Extension, 16 inches long.
Two Screw Driver Bits, $\frac{5}{16}$ and $\frac{7}{16}$ inch.
One Countersink for Wood.
One Countersink for Metal.

Set No. 2 Same as No. 1, except only ten bits are included, sizes $\frac{4}{16}$ to $\frac{13}{16}$ inch $13.50
Set No. 13 Same as No. 11, except only ten Bits are included, sizes $\frac{4}{16}$ to $\frac{13}{16}$ inch 12.00
Set No. 3 One Universal Ratchet Brace, No. 40, thirteen Extension Lip Bits, one each, $\frac{4}{16}$ to $\frac{16}{16}$ inch, inclusive 11.75
Set No. 15 One Precision Brace No. 50, thirteen Extension Lip Bits, 1 each, $\frac{4}{16}$ to $\frac{16}{16}$ inch, inclusive 10.50
Set No. 4 One Universal Ratchet Brace No. 40, ten Extension Lip Bits, one each, $\frac{4}{16}$ to $\frac{13}{16}$ inch, inclusive, one Expansive Bit with large and small cutters, bores from $\frac{7}{8}$ to $2\frac{1}{2}$ inches 11.50
Set No. 17 One Precision Brace No. 50; 10 Extension Lip Bits, 1 each, $\frac{4}{16}$ to $\frac{13}{16}$ inch, inclusive; 1 Expansive Bit with large and small cutters, bores from $\frac{7}{8}$ to $2\frac{1}{2}$ inches 10.25

Electricians Sets

Electricians will find that the Fig. 50 Pattern Brace with one Expansive Bit, two bit extensions and auger bits (with either quick boring or double quick thread) in the sizes used on their work, makes an ideal combination.

Prices vary with the number of bits furnished.

SEE DISCOUNT SHEET

Auger Bits for Brace

Genuine Russell Jennings

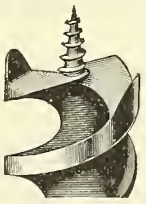
Crucible Tool Steel

The manufacture of the best Auger Bits requires steel made by the crucible process, and in order to secure uniform temper, the analysis must be kept uniform. Russell Jennings Bits are of genuine crucible tool steel. Made to order, never bought in the open market. It is high in carbon, and while a softer quality of steel would be more easily worked, the Bits would not retain their cutting edges. The forging must be done very carefully in order that the bits may be of uniform density. The steel must not be burned or cooled suddenly. In forming the head every precaution is taken to insure strength at this point. The process of tempering is also very important and the baths for hardening and for drawing temper are especially prepared for this work, the temperature being determined accurately by pyrometer. The Bits are so ground that they will bore the exact size and not bind in the wood. Lips, spurs and throats are filed to such form that the cutting edges will not wear quickly and there will be clearance for chips. The easy boring qualities of bits depend largely upon the screw threads, which have differences similar to saws. A cross-cut saw can be used with the grain, but it cuts slowly. An Auger Bit with a double thread can be used for practically all work, but it bores more slowly than the Bit with a coarse single thread screw point. The quick-boring Bit is simply a standard Auger Bit with a coarse single thread screw point. The double quick thread is still coarser and is for rapid work in soft wood. The square point is for power with a forced feed.

Unless otherwise ordered, the standard thread will be supplied. For Russell Jennings Machine Bits, see page 395.



Double Thread. Unsurpassed for accurate work in seasoned wood, not extremely gummy or hard. Preferred by cabinetmakers.



Quick Boring. Especially adapted for hard or gummy woods, end grain boring, mortising doors, etc.



Double Quick Thread. For rapid work in soft woods only. Not practical for hard woods.



Square Point for Power Boring with Forced Feed.

Extension Lip



Length over all varies from 8½ inches to 10 inches, depending on size. Size in 32ds from $\frac{7}{32}$ to $\frac{33}{32}$ furnished at the price of next larger size. Standard extension lip auger bits are not carried in stock by 32ds above $\frac{16}{16}$, nor in 16ths above $\frac{32}{16}$, but can be made to order, at special prices, which depend on the number of bits ordered. Carried in stock, $\frac{3}{16}$ to $\frac{16}{16}$ inclusive by 32ds; $\frac{16}{16}$ to $\frac{32}{16}$ inclusive by 16ths.

Size in 16ths	3	4	5	6	7	8	9	10	11	12
Dozen	$4.50	4.00	4.00	4.00	4.50	5.00	5.50	6.00	7.00	7.00
Size in 16ths	13	14	15	16	17	18	19	20	21	22
Dozen	$8.00	8.00	9.00	9.00	10.50	10.50	12.00	12.00	13.50	13.50
Size in 16ths	23	24	25	26	27	28	29	30	31	32
Dozen	$15.00	15.00	17.00	17.00	19.00	19.00	21.00	21.00	23.00	23.00

Extension Lip Dowel

This form of bit was originally designed for boring holes for dowel pins, but can be used wherever a bit shorter than standard is desired.

Long

Length over all varies from 4½ to 6 inches, as follows: $\frac{3}{16}$ to $\frac{8}{16}$, inclusive, 4½ inches. $\frac{9}{16}$ to $\frac{16}{16}$, inclusive, 5 inches. $\frac{17}{16}$ to $\frac{24}{16}$, inclusive, 5½ inches. $\frac{25}{16}$ to $\frac{32}{16}$, inclusive, 6 inches.

Carried in stock. $\frac{3}{16}$ to $\frac{12}{16}$ by 32ds. $\frac{12}{16}$ to $\frac{32}{16}$ by 16ths.

Short

Length over all, 3 inches.

Carried in stock. $\frac{3}{16}$ to $\frac{9}{16}$ by 32ds. $\frac{9}{16}$ to $\frac{12}{16}$ by 16ths. Not made above $\frac{12}{16}$. Similar to the long dowel bit except in overall length. The twist is carried up to the shank.

Sizes in 32ds when carried in stock will be furnished at the price of the next larger size. Sizes not carried in stock can be made to order at special prices, which depend upon the number of bits ordered.

When ordering, be sure to specify whether the long or short forms are desired. Long are always furnished unless short are specified.

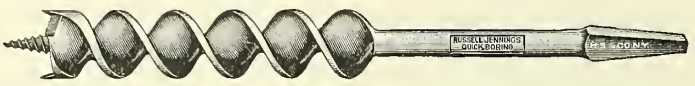
For Sets of Bits, see page 405.

Auger Bits for Brace

Genuine Russell Jennings, Oil-Finish, Open Hearth Steel

These Bits have the workmanship and construction of the better grade of Russell Jennings, but are made of open hearth steel instead of crucible steel and are not so highly finished. Made in quick boring or double quick boring, single thread, the latter for electricians use. For illustrations and descriptions of threads, see preceding page.

Extension Lip



No. 121

Length over all varies from 8½ to 10 inches, depending on size
Carried in stock in 16ths, from $\frac{4}{16}$ to $\frac{16}{16}$.

Size in 16ths	4	5	6	7	8	9	10	11	12	13	14	15	16
Dozen	$4.00	4.00	4.00	4.50	5.00	5.50	6.00	7.00	7.00	8.00	8.00	9.00	9.00

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Approximate lengths over all:

¼ to $\frac{7}{16}$ inch, 6¼ inches	1 to $1\frac{3}{16}$ inches, 7¾ inches
½ to $\frac{11}{16}$ inch, 6¾ inches	1¼ to 1⅝ inches, 8¼ inches
¾ to $\frac{15}{16}$ inch, 7¼ inches	1¾ to 2 inches, 8¾ inches

Larger than 2 inches in diameter are regularly about 9 inches over all

For smooth, round or square boring, scroll and twist work. Bores any arc of a circle. Especially adapted for hardwood working. Is guided by its circular rim instead of its center, consequently it will bore any arc of a circle and can be guided in any direction regardless of grain or knots, leaving a true, polished surface. It is more expeditious than chisel, gouge, scroll saw or lathe tool combined, for core boxes, fine and delicate patterns, veneers, screen work, scalloping, fancy scroll twist columns, newels, ribbon moulding and mortising, etc.

Sizes, inch	¼	$\frac{5}{16}$	⅜	$\frac{7}{16}$	½	$\frac{9}{16}$	⅝	$\frac{11}{16}$	¾	$\frac{13}{16}$	⅞	$\frac{15}{16}$	1
Each	$ .65	.65	.70	.70	.75	.75	.80	.80	.85	.85	.90	1.00	1.05
Sizes, inches	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{5}{16}$	$1\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	
Each	$1.05	1.10	1.10	1.25	1.25	1.35	1.75	2.00	2.25	2.50	2.75	3.00	
Sizes, inches					$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{5}{8}$	$2\frac{3}{4}$	$2\frac{7}{8}$	3	
Each					$10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	

Carpenters Nut Augers

Genuine Russell Jennings Crucible Steel

Extension Lip



Length of twist, 8 inches; length of round, 7 inches.
Made regularly in standard thread only. Other threads made to order.

Length of square, 5 inches; length over all, 20 inches.
For illustrations and descriptions of threads, see preceding page

Size in 16ths	8	10	12	14	16	18	20	22	24	26	28	30	32
Dozen	$8.25	9.50	10.75	12.00	13.25	15.00	17.00	19.00	22.00	24.00	26.00	28.00	30.00

Sizes not listed can be made to order at special prices, depending upon the number of a size ordered.

The shanks are fitted with a nut. We do not furnish wooden handles.

Snell-Jennings Pattern

Cast steel, well finished. Length over all, from 15 to 20 inches depending upon size

Same list prices as above

For sets of Bits see page 405

Car Bits

Genuine Russell Jennings Crucible Steel

Extension Lip



Length of twist, 12 inches; length over all, 20 inches. $\frac{4}{16}$ to $\frac{32}{16}$ inclusive by 16ths. Made regularly in standard thread only, other threads made to order.
For illustrations and descriptions of threads see page 401

Size in 16ths	4	5	6	7	8	9	10	11	12	13
Per dozen	$9.00	9.00	9.00	10.00	11.25	12.50	13.75	15.00	16.25	17.50
Size in 16ths	14	15	16	17	18	19	20	21	22	23
Per dozen	$19.00	20.50	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00

Size in 16ths	24	26	28	30	32
Per dozen	$38.00	42.00	46.00	50.00	54.00

All orders for car bits which do not specify length will be filled with bits of the standard length, given above.
Sizes not listed can be made to order at special prices, depending upon the number of a size ordered.

In Sets

Car bits are put up in sets 32½ quarters—13 bits (one each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16). $15.50 per set.

Genuine Russell Jennings, Oil-Finish, Crucible Steel

No. 218

These Bits can be supplied in sizes listed above, length overall 18 inches, in quick boring single thread only. See page 401 for illustrations and descriptions of threads. List prices are the same as above.

Irwin Crucible Steel

Extension Lip Double Cutter, No. 65T



Twist, about 12 inches. Shank, about 6 inches. Total length, 18 inches
Same list as above

Snell Star Pattern

Extension Lip



12-inch twist. About 18 inches overall. Regular Car Bits are designed for fine work and deep boring; warranted not to choke boring entire length of twist. Concave twist is especially valuable in these tools on account of their extra length. Will bore perfectly smooth, and leave the wood without splintering.
Made from $\frac{4}{16}$ to $\frac{24}{16}$ only. List same as above

Ship Augers

Snell



With Screw



Without Screw

$\frac{4}{16}$, 10-inch twist, entire length 14 inches. $\frac{6}{16}$ and $\frac{8}{16}$, 12-inch twist, entire length 16 inches. $\frac{12}{16}$, 14-inch twist, entire length 19 inches. $\frac{16}{16}$, 15-inch twist entire length 20 inches. Adapted to ship, dock, bridge and car building.

Warranted not to clog or bind in boring the full length of the twist. Screw Augers will not drift.

Sizes in 16ths	8 and under	9	10	11	12	13	14	15	16	17	18	19	20	21
Dozen	$7.50	9.00	9.00	10.50	10.50	12.00	12.00	13.50	13.50	15.00	15.00	16.50	16.50	18.00
Sizes in 16ths	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Dozen	$18.00	21.00	21.00	24.00	24.00	27.50	27.50	31.50	31.50	38.00	38.00	57.00	57.00	72.00
Sizes in 16ths	36	37	38	39	40	41	42	43	44	45	46	47	48	
Dozen	$72.00	86.00	86.00	101.00	101.00	115.00	115.00	130.00	130.00	144.00	144.00	158.00	158.00	

Expansive Bits for Brace

Genuine Russell Jennings Crucible Tool Steel

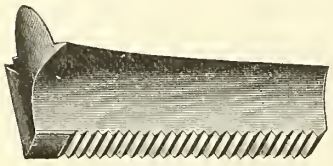


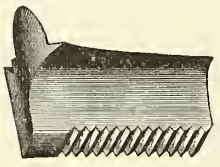
The strongest expansive bit on the market. The head is solid and designed for maximum strength. A passageway formed in the solid head takes the cutter which is adjusted by a worm in mesh with threads on the cutter, which form a rack. Precise adjustment to size is remarkably easy, for the worm gives perfect control over very slight movement. The pitch of the adjusting screw is such that one complete turn of this screw changes the diameter of the hole $\frac{1}{8}$ inch. One-half turn of the adjusting screw changes the diameter $\frac{1}{16}$ inch, and so on.

Creeping of the expansive bit cutter is absolutely prevented by a clamping screw, which holds the worm and cutter firmly in position.

		Dozen
No. 71	With ordinary bit shank	$20.00

Parts


Large Cutter


Small Cutter

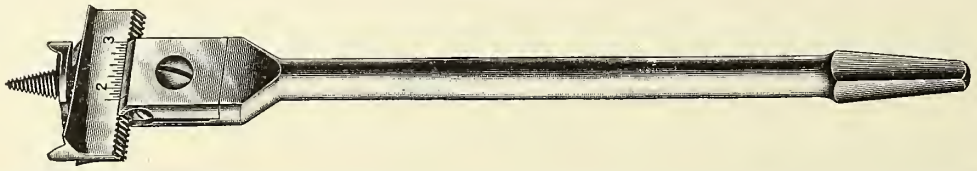

Adjusting Screw


Clamp Screw


Washer

		Dozen
No. 72	Large Cutter	$5.40
No. 73	Small Cutter	4.80
No. 74	Adjusting Screw	.96
No. 75	Clamping Screw	$ .72
No. 76	Beveled Washer	1.20

Wright



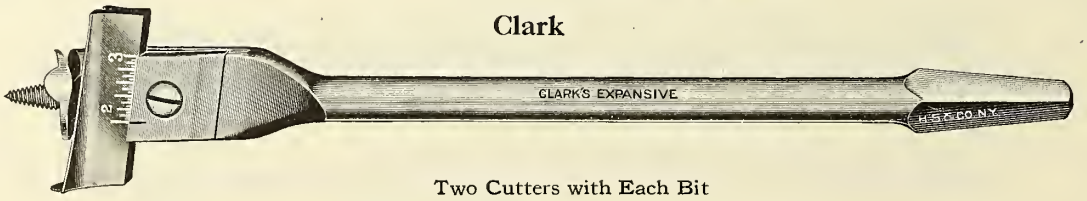
Made of a special cast steel. Finish and workmanship are of the best. The cutter absolutely cannot creep or slip. Each bit and cutter is warranted.

	Dozen
No. 10 or Large Bit has Nos. 3 and 4 cutters, bores from $\frac{7}{8}$ to 3 inches	$26.00
No. 20 or Small Bit has Nos. 1 and 2 cutters, bores from $\frac{5}{8}$ to $1\frac{3}{4}$ inches	22.00

Parts

	Dozen
No. 1 Cutter, bores $\frac{5}{8}$ to $1\frac{1}{8}$ inches	3.00
No. 2 Cutter, bores $1\frac{1}{8}$ to $1\frac{3}{4}$ inches	3.75
No. 3 Cutter, bores $\frac{7}{8}$ to $1\frac{3}{4}$ inches	5.25
No. 4 Cutter, bores $1\frac{3}{4}$ to 3 inches	$6.00
No. 5 Cutter, bores 3 to 4 inches	9.00
Cap with adjusting screw	6.00

Clark



Two Cutters with Each Bit

	Dozen
Small. Cutting from $\frac{1}{2}$ to $\frac{7}{8}$ inches, and $\frac{7}{8}$ to $1\frac{1}{2}$ inches	$18.00
Large. Cutting from $\frac{7}{8}$ to $1\frac{3}{4}$ inches and $1\frac{3}{4}$ to 3 inches	$26.00

Parts

Cutters		Dozen
Small		
No. 1	$\frac{1}{2}$ to $\frac{7}{8}$ inch	$3.00
No. 2	$\frac{7}{8}$ to $1\frac{1}{2}$ inches	3.75
Large		
No. 3	$\frac{7}{8}$ to $1\frac{3}{4}$ inches	5.25
No. 4	$1\frac{3}{4}$ to 3 inches	6.00
No. 5	3 to 4 inches	9.00
No. 6	4 to 5 inches	12.00

Screws	Dozen
Small	$ .60
Large	.70
Caps	
Small	1.44
Large	1.80

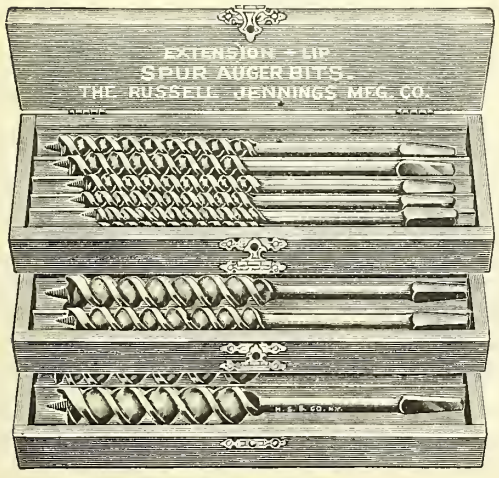
Auger Bits for Brace

In Sets

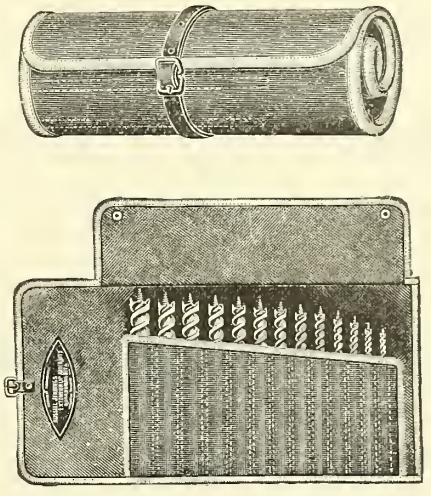
Genuine Russell Jennings Crucible Tool Steel

Extension Lip

See page 401 for illustrations and descriptions of threads



In Hardwood Tool Box



In Canvas Roll

Furnished regularly in hardwood box or in canvas roll at same price, if desired. Supplied regularly with standard screw thread, but the quick boring thread will be furnished at the same price, if so specified in order.

Standard set of 32½ Quarters: Consists of 13 bits (1 each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 sixteenths).
Each $7.00

18 Quarters. Consists of 9 bits (1 each 4, 5, 6, 7, 8, 9, 10, 11 and 12 sixteenths) and gives a full range of sizes from ¼ to ¾ inch by 16ths.
Each $4.35

20½ Quarters: Consists of 9 bits (1 each 4, 5, 6, 7, 8, 10, 12, 14 and 16 sixteenths) and gives a range of sizes from ¼ to 1 inch by 8ths, with $\frac{5}{16}$ and $\frac{7}{16}$ inch added.
Each $4.75

17½ Quarters. Consists of 7 bits (1 each 4, 6, 8, 10, 12, 14 and 16 sixteenths) and gives a range of sizes from ¼ to 1 inch by 8ths.
Each $4.00

Genuine Russell Jennings, Oil Finish, Open Hearth Tool Steel

See page 401 for illustrations and description of threads

Standard set of 32½ Quarters: Supplied regularly in Bartlet box and quick boring thread, but will be furnished, at same price, in canvas roll, if so specified in order. Consists of 13 bits (1 each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 sixteenths).
Each $7.00

Bartlet Box for Auger Bits

No. 13 11x6¾x2⅛ inches, holds 13 bits.
Each ..... .90

Canvas Rolls for Auger Bits

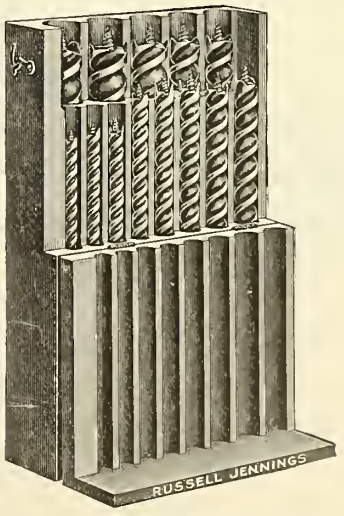
Will hold 13 bits.
Each ..... .90

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These sets are packed in neat, compact boxes, and attention is called to the reduced prices for complete sets, making it advantageous to buy them in this way.

9 Brace Bits, ⅜ to $1\frac{1}{8}$ in 8ths, in neat case $7.50
11 Brace Bits, ⅜ to $\frac{8}{8}$ in 16ths, in neat case 8.50
17 Brace Bits, ¼ to $1\frac{1}{8}$ in 16ths, in neat case 14.50

Sets of 17 do not contain $1\frac{3}{16}$ and $1\frac{5}{16}$ inch sizes.



Bartlet Box

Twist Bits For Wood

Specially tempered and pointed for wood, but not injured by contact with nails, plaster, etc.
The numbers indicate the sizes in 32nds of an inch

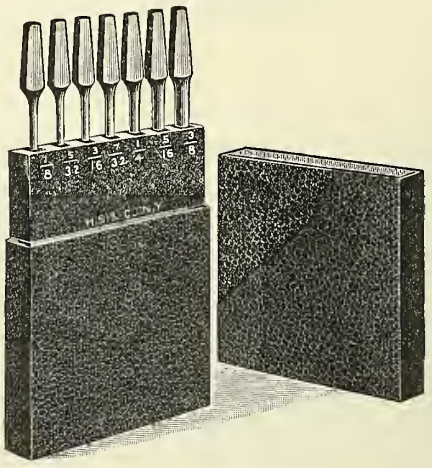


No. 109A Carbon Steel

Size of Shank $\frac{3}{16}$ inch x $\frac{3}{8}$ inch x $1\frac{1}{4}$ inches long

Number	Length Over all Inches	Length Twist Inches	Dozen	Each
2	$3\frac{1}{2}$	$1\frac{1}{4}$	$1.60	$ .15
3	4	$1\frac{1}{2}$	1.60	.15
4	$4\frac{1}{2}$	$2\frac{1}{4}$	1.60	.15
5	5	$2\frac{1}{2}$	1.75	.18
6	$5\frac{1}{2}$	$2\frac{3}{4}$	2.00	.20
7	6	3	2.50	.22
8	$6\frac{1}{2}$	$3\frac{1}{4}$	3.00	.25
9	7	$3\frac{1}{2}$	3.50	.30
10	$7\frac{1}{2}$	$3\frac{3}{4}$	3.50	.30
11	$7\frac{3}{4}$	$3\frac{7}{8}$	4.00	.35
12	8	4	4.00	.35
13	$8\frac{1}{4}$	$4\frac{1}{8}$	4.50	.40
14	$8\frac{1}{2}$	$4\frac{1}{4}$	4.50	.40
15	$8\frac{3}{4}$	$4\frac{3}{8}$	5.00	.45
16	9	$4\frac{1}{2}$	5.00	.45
17	$9\frac{1}{4}$	$4\frac{5}{8}$	5.50	.50
18	$9\frac{1}{2}$	$4\frac{3}{4}$	5.50	.50
19	$9\frac{3}{4}$	$4\frac{7}{8}$	6.00	.55
20	10	5	6.00	.55
22	$10\frac{1}{2}$	$5\frac{1}{4}$	6.50	.60
24	11	$5\frac{1}{2}$	7.00	.65

In Sets



No. 13B

Flat leatherette case, containing one each, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$ inch drills

Each $1.90

Extra Length

For Bell Hangers and Electricians Use

No. 109B Carbon Steel

Size of Shank $\frac{3}{16}$ inch x $\frac{3}{8}$ inch x $1\frac{1}{4}$ inches long

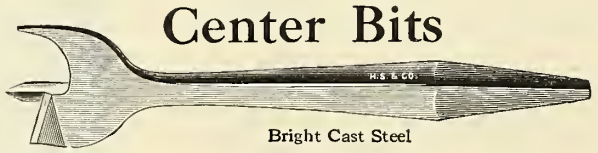
Number	12-Inch		18-Inch		24-Inch		30-Inch		36-Inch	
	Dozen	Each	Dozen	Each	Dozen	Each	Dozen	Each	Dozen	Each
6	$5.00	$ .50	$7.00	$ .70	$9.00	$ .90	$11.00	$1.10	$13.00	$1.30
8	5.00	.50	7.00	.70	9.00	.90	11.00	1.10	13.00	1.30
10	5.50	.55	7.50	.75	9.50	.95	12.00	1.20	13.00	1.30
12	6.00	.60	8.00	.80	10.00	1.00	12.00	1.20	13.00	1.30
14	7.00	.70	9.00	.90	11.00	1.10	13.00	1.30	14.00	1.40
16	8.00	.80	10.00	1.00	12.00	1.20	14.00	1.40	15.00	1.50
18	9.00	.90	11.00	1.10	13.00	1.30	15.00	1.50	16.00	1.60
20	10.00	1.00	12.00	1.20	14.00	1.40	15.00	1.50	16.00	1.60
22	11.00	1.10	13.00	1.30	15.00	1.50	16.00	1.60	17.00	1.70
24	12.00	1.20	14.00	1.40	16.00	1.60	17.00	1.70	18.00	1.80
26	13.00	1.30	15.00	1.50	17.00	1.70	18.00	1.80	18.00	1.80
28	14.00	1.40	16.00	1.60	18.00	1.80	19.00	1.90	19.00	1.90
30	15.00	1.50	17.00	1.70	19.00	1.90	20.00	2.00	20.00	2.00
32	16.00	1.60	18.00	1.80	20.00	2.00	20.00	2.00	20.00	2.00
34	17.00	1.70	19.00	1.90	20.00	2.00	20.00	2.00	20.00	2.00
36	18.00	1.80	20.00	2.00	21.00	2.10	21.00	2.10	21.00	2.10

Bright Spoon Bits



Inch	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$
Dozen	$2.35	2.35	2.35	2.35	2.35	2.75	2.75
Inch	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$
Dozen	$3.00	3.00	3.15	3.15	3.95	5.50	7.50
Inch	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$				
Dozen	$7.50	8.00	9.25				

Center Bits



Bright Cast Steel

Inch	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$
Dozen	$2.10	2.10	2.10	2.25	2.25	$2.35	2.35	2.55
Inches	$\frac{7}{8}$	$\frac{15}{16}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$
Dozen	$2.55	2.75	2.75	3.05	3.50	3.85	4.40	4.95
Inches	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$			
Dozen	$5.60	6.40	7.20	12.80	16.00			

Bits for Wood

German Gimlet

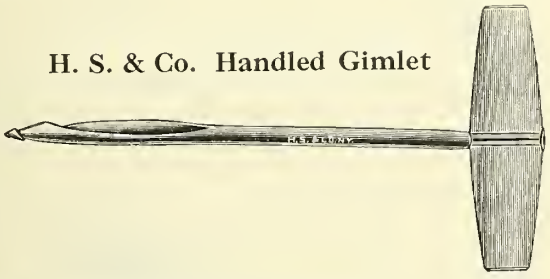


Size, 32nds	2	3	4	5	6	7
Dozen	$1.20	1.20	1.20	1.20	1.20	1.20
Size, 32nds	8	9	10	11	12	
Dozen	$1.20	1.20	1.50	1.65	1.80	

12 Inches Long

Size, 32nds	6	8	10	12
Dozen	$3.45	3.45	3.75	3.90

H. S. & Co. Handled Gimlet



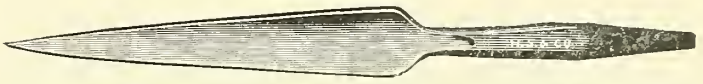
No. 762 $\frac{4}{32}$, $\frac{5}{32}$, $\frac{6}{32}$, $\frac{7}{32}$ and $\frac{8}{32}$-inch diameter, dozen $1.00

Countersink Gimlet



Number	0	1	2	3	4
Diameter of bit, inch	$\frac{5}{32}$	$\frac{6}{32}$	$\frac{7}{32}$	$\frac{8}{32}$	$\frac{9}{32}$
Bores, inches	¾	1	1¼	1½	1¾
Dozen	$2.00	2.00	2.00	2.00	2.00

Bright Taper



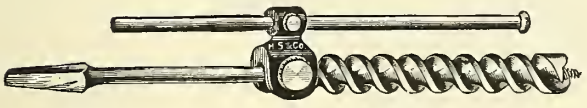
Inch	½	⅝	¾	⅞	1
Dozen	$8.50	9.50	10.50	11.25	12.25

Plug Cutters



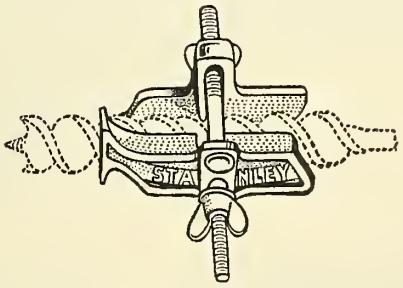
Inch	⅜	$\frac{7}{16}$	½	$\frac{9}{16}$	⅝
No. 6080 Polished, dozen	$4.80	4.80	4.80	4.80	4.80

Auger Bit Gauges



For bits up to 1 inch

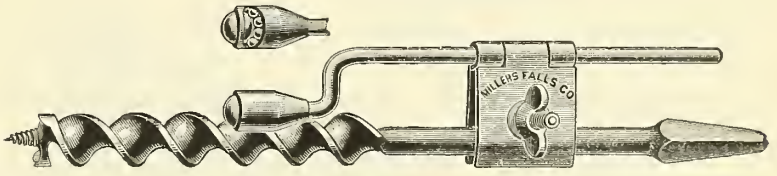
No. 1 Japanned. Polished Rods and Screws, dozen..... $4.00



Stanley Adjustable

This Gauge can be attached to bits of any size up to one inch in diameter. Two projections engage with the twist of the bit, so that it can be accurately set for the bit to bore to any depth required. Stops on both sides of the bit insure it remaining upright when the desired depth is reached, thus preventing the worm being bent or broken.

No. 49 2½ inches long, nickel-plated, dozen..... $6.00



M. F. Co. Anti-Friction

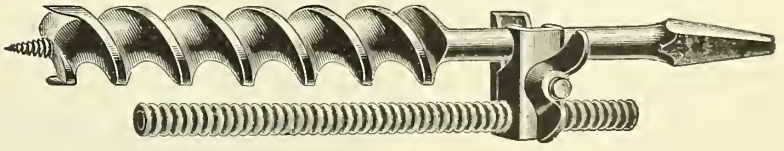
Clamps to auger bit of any size.

Tightens on bit and gauge spindle at same time.

Ball in end, running on six smaller balls, to prevent defacing delicate material when in contact with gauge.

Length, 5¾ inches.

No. 2 Polished and nickeled, dozen..... $5.00



Sargent Peerless Flexible

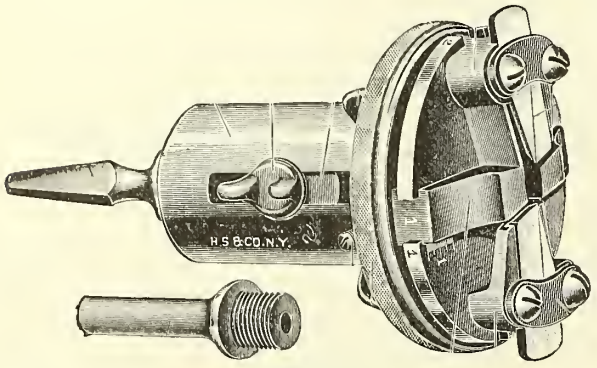
Easily attached, detached and adjusted. It fits any size Auger Bit, Twist Drill, etc., and the single thumb-screw holds it firmly in place.

It will accurately gauge a hole of any depth to within ¾ inch of the chuck of the brace. Will not mark the wood, will not slip upwards and will not interfere with the chips. It is the lightest Bit Gauge made.

No. 100 To fit any size Bit, nickel-plated, dozen..... $4.00

Hollow Augers

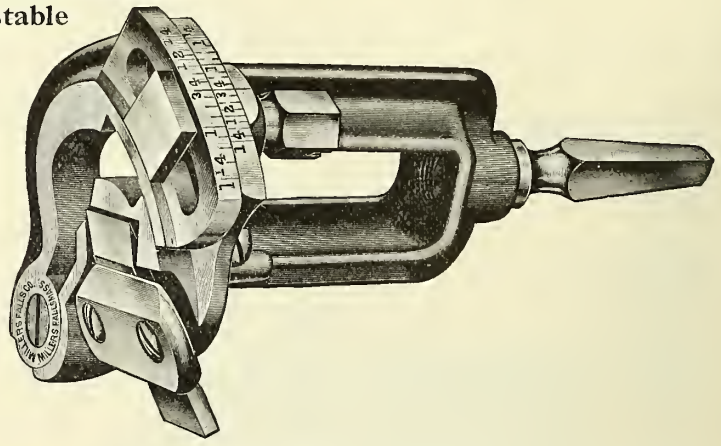
Adjustable



Swan Universal Improved No. 6001

Has a depth gauge to regulate length of tenon. The face is graduated so it can be readily adjusted to any required size.

Cuts from ⅜ to 1½ inches, each..... $4.50
Machine shanks for same, each.... $ .50 Extra cutters, set... .50

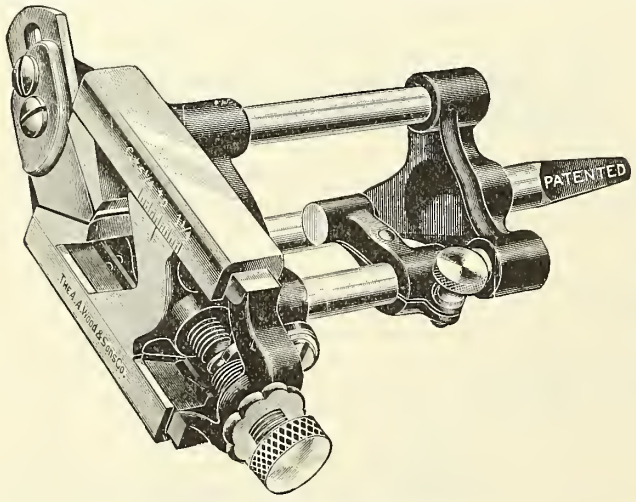


M. F. Co. No. 3

Castings are made of iron, enameled black and red; steel adjusting screw; knife carefully tempered and sharpened. Adjustable to cut tenons from ¼ to 1¼ inches, with a graduated index. Stop gauge to regulate the length of tenons. A bit stock shank is furnished to fit into the chuck of a bit brace. Packed one in a pasteboard box.

Dozen..... $46.00 Extra shanks, dozen..... $6.00

Furnished with ½-inch round shank, when so ordered, without extra charge.



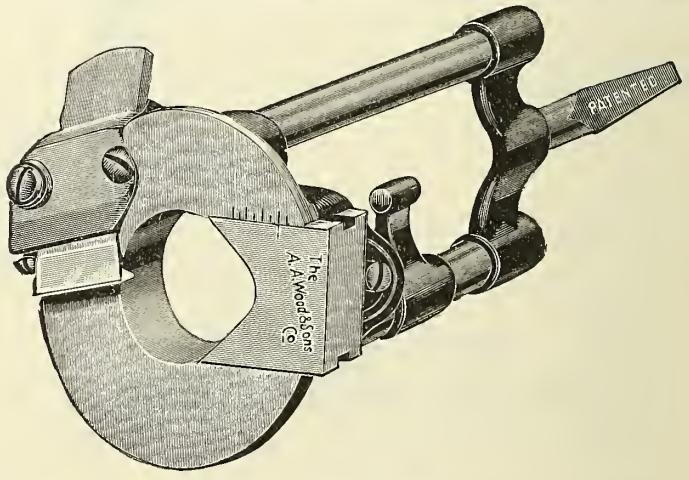
No. B 1 Universal

Cuts a tenon any size from ¼-inch to 1¼ inches, any length up to 4 inches. The knife will cut any desired thickness of chip, without changing set of Auger in size. An extra knife accompanies each tool.

By turning the thumb screw, it is the work of a second to set the Auger to cut any size tenon to suit the bit being used. There is no "cutting and trying"—the adjustments are instantly made exact.

Every part of this tool is steel; all screws are milled from steel bars; all wearing parts and all screwdriver screws are hardened. Furnished with ½-inch round shank, when so ordered, without extra charge.

Each..... $4.50 Extra Cutters, each..... $ .25
Extra shanks, each..... .50



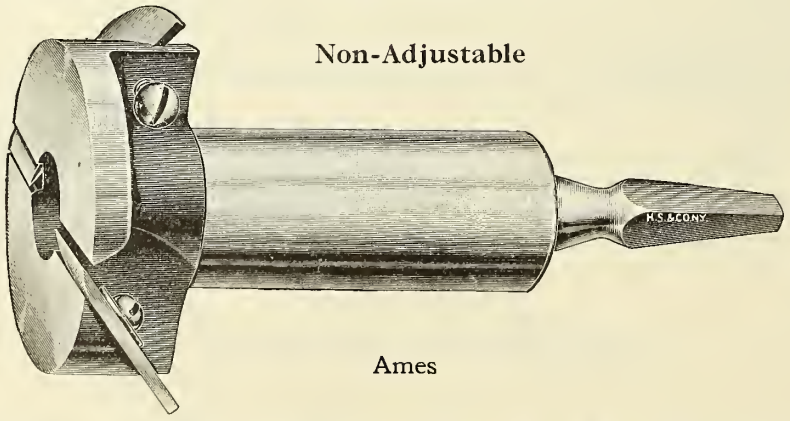
No. A 4 Ideal

Adjustable from 1⅛ inches to 1½ inches full. Does not cut smaller than 1⅛ inches nor larger than 1½ inches full.

Easily and quickly adjusted. Screws and wearing parts hardened. Patent Stop and Knife Clamp. Simple, durable and accurate.

Each..... $2.00
Extra Cutters, each..... .25

Non-Adjustable



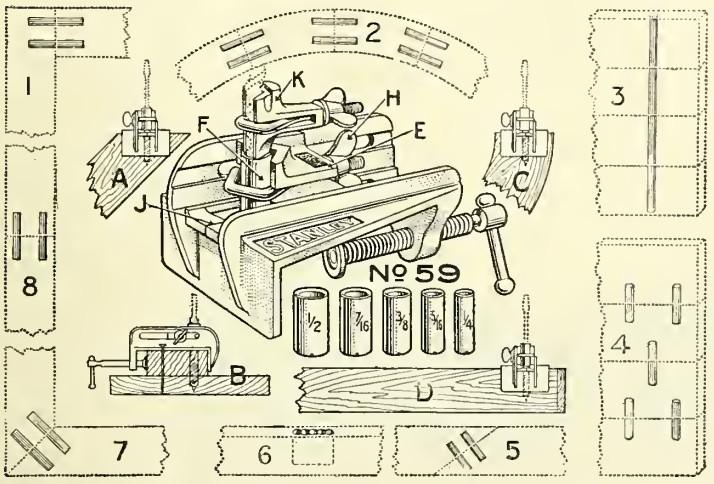
Ames

Size, inches	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½
No. 6002 With Cook auger bits, dozen	$12.00	12.00	12.00	14.00	14.00	14.00	16.00	16.00	20.00	20.00	24.00	24.00
No. 6003 Without bits	8.00	8.00	8.00	9.00	9.00	9.00	12.00	12.00	14.00	14.00	16.00	16.00

½-inch round Shanks, for machine, each ..... $ .50 Extra Cutters, each..... $ .25

Doweling Jig

Stanley



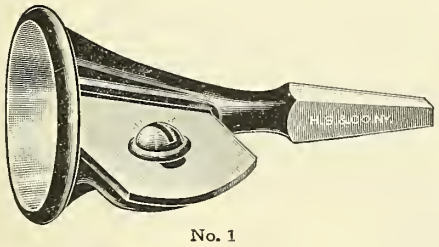
This tool is for the purpose of enabling the user to bore dowel holes in the edge, end or surface of work with ease and accuracy. It will take any thickness of material up to three inches. It is also an excellent bit guide for mortising. Five steel guides 1¼ inches long are furnished: One each ¼, $\frac{5}{16}$, ⅜, $\frac{7}{16}$ and ½-inch. To allow for variations in size of bits the guides are made $\frac{1}{100}$ inch larger than the sizes given.

A depth gauge is also furnished which can be used with or without the Jig. Where used without the Jig, the gauge should be set with the large end towards the point of the bit, but in using same with the Jig it should be set with the small end down, as shown in the cut.

Made entirely of metal, and working parts are milled true. A thoroughly practical tool.

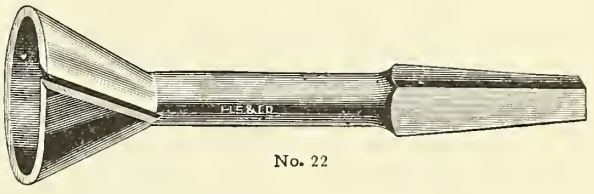
No. 59 Nickel-plated, each $1.75

Dowel Pointers



No. 1

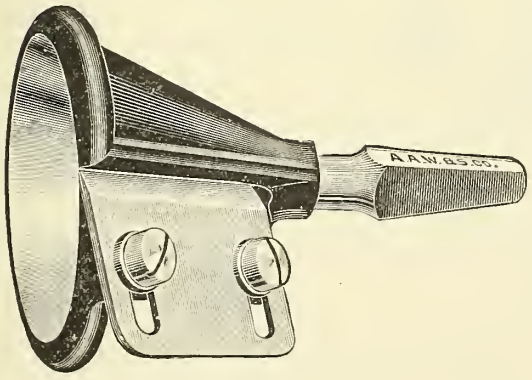
No. 1 ¾-inch, dozen $4.50



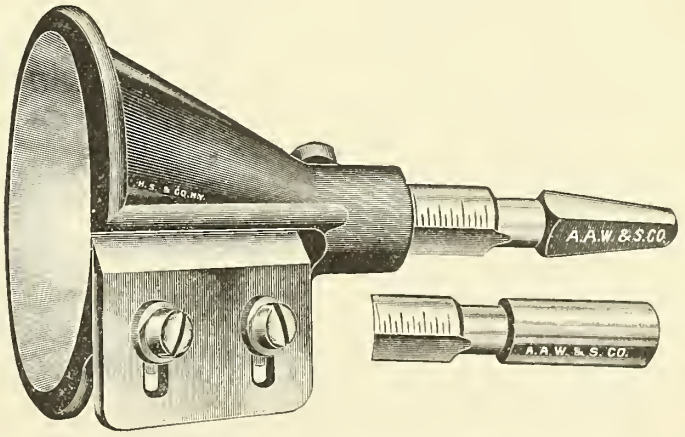
No. 22

No. 22 ¾-inch, dozen $3.00

Spoke Pointers



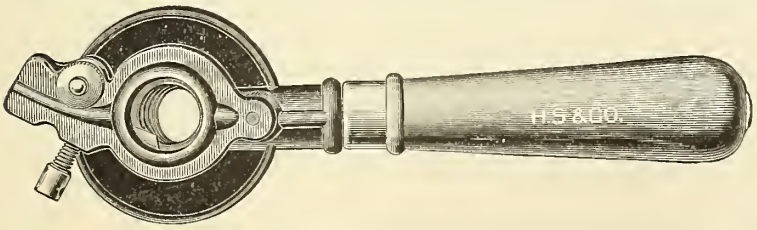
No. C1 ¼ inch to 2½ inches. Steel Screws hardened. Milled inside to a perfectly smooth finished surface, dozen $9.00



No. C2 With bit shank ¼ inch to 2¾ inches. Has a graduated adjustable shank, which acts as a depth gauge, dozen $15.00
No. C3 With ½-inch round shank, otherwise same as No. C2, dozen 15.00
Shanks only either style, dozen 3.00

Iron Screw Boxes

For Wood



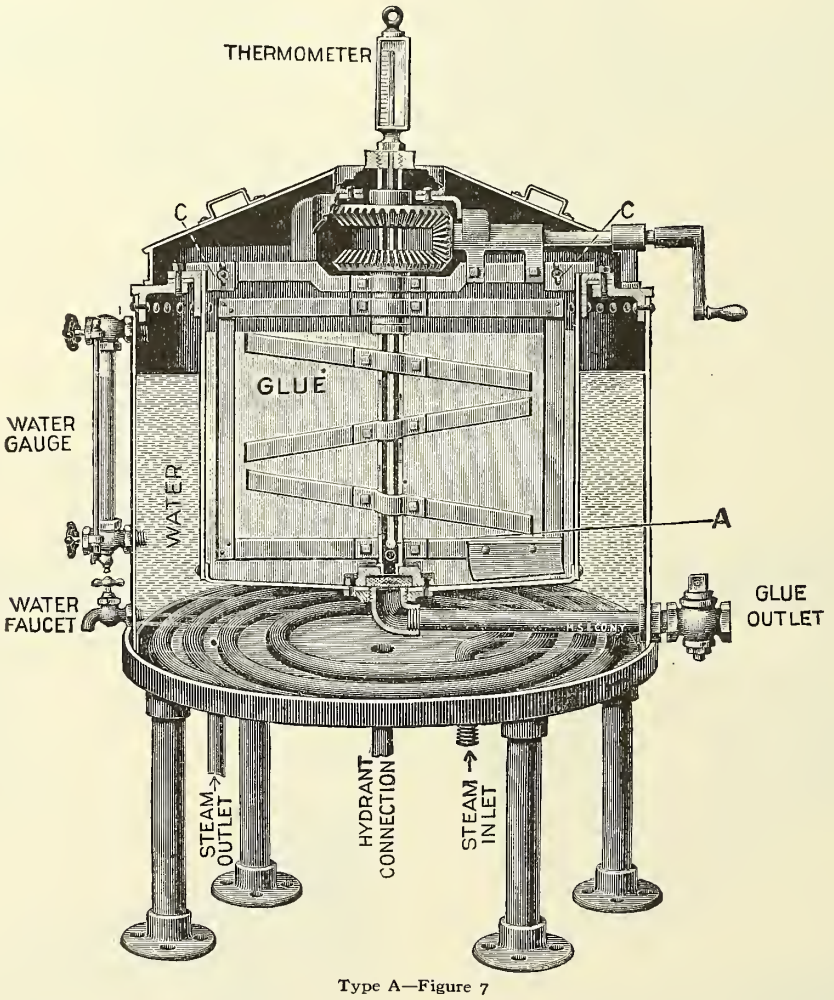


Cutting threads, inches	⅜	½	⅝	¾	⅞	1	1⅛	1¼
French, with 1 tap, each	$2.55	2.55	2.78	3.23	3.60	3.83	4.13	4.58
Extra Cutters, each	.15	15	.18	.18	.24	.24	.24	.24

Glue Heaters or Cookers

Francis

Fitted with Reliable Thermometers



Type A—Figure 7

These Cookers are manufactured in five types.

First. Both tanks made of heavy iron plates, carefully riveted together and then heavily galvanized both inside and out.

Second. Outside tank of heavy iron plate, galvanized, and inside tank of heavy and durable copper.

Third. Both tanks of cast iron with inside tank galvanized.

Fourth. Outside tank cast iron and inside tank of heavy and durable copper.

Fifth. Both tanks of heavy copper.

The bottom of each Cooker is equipped with a coil of heavy copper tubing, through which the steam circulates, thus avoiding actual contact with the water in Cooker and preventing its pollution by the impurities in the steam. This method makes a safety valve unnecessary. It does away with escaping vapor and sloppy floors. The double-acting stirrer is simple, easily removable and may be fitted for power at slight additional cost. The glue is drawn from the center of tank, and a reliable thermometer is placed directly over the outlet (as illustrated) thus giving temperature at desired location. The thermometer is connected through the hollow shaft of the stirrer and is readable at top. The water gauge accurately shows the height of water in tank. To retain the moisture in the glue tank and keep out the dirt, a cover is supplied which is instantly removable without interfering with thermometer or stirrer.

It can be fitted with automatic steam temperature controller (See page 416) instead of or in addition to glue thermometer, but thermometer is usually preferred. Unless otherwise specified, both tanks are made of heavy galvanized plates riveted, as mentioned above under "First." Each Cooker is regularly furnished complete with thermometer, hand crank stirrer, cover and 18-inch stand, but can be supplied without any or all of these extras, if desired. Extra high stand at extra charge. Can be fitted with gas or electric heating attachment at special prices.

Number	50S	51S	52S	53S	54S	55S	56S	57S
Capacity, gallons	4	6	13	20	27	40	53	75

Can be supplied with belt-driven stirrer at extra cost, if specially ordered.

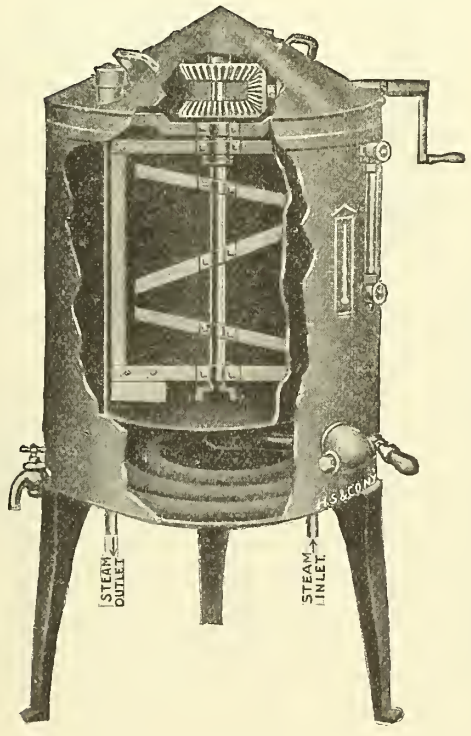
For Gas Heaters and Temperature Controllers, see page 416

Glue Heaters or Cookers

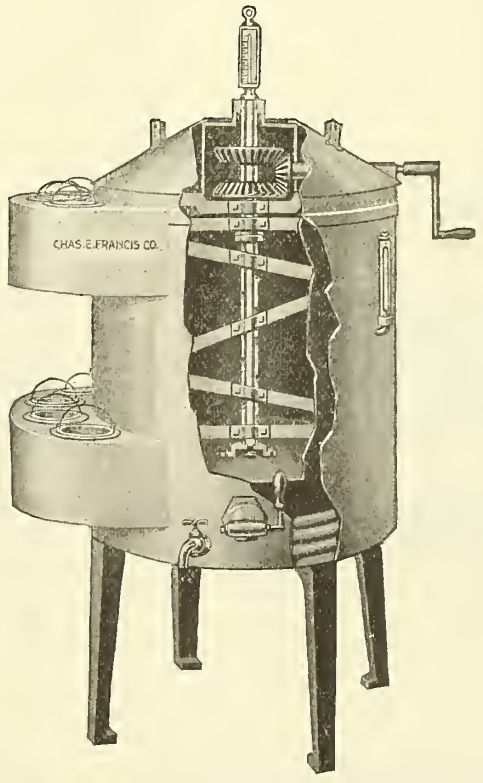
Francis

Copper and Brass

(With or Without Small Portable Pots)



Type K
Without Portable Pots



Type H
With Portable Pots, Showing Thermometer Attached

These Heaters are regularly made of copper and brass throughout—tanks, warming chambers with portable pots, coil (or pure water chamber) and covers are copper; stirrer and all other parts coming in contact with glue and water are brass, including water gauge, glue valve and faucet.

The tanks are heavy copper, strongly lapped, double seamed and reinforced. Particular attention is directed to the fact that the top of each tank, where the two tanks fit together, is riveted inside of a heavy flanged brass ring, which protects the copper and makes the tanks exceptionally strong and durable.

Glue Thermometer Attachment, Stirrer and Copper Steam Coil are recommended as desirable and valuable additions, but may be omitted to reduce price of Heater when desired. Can be fitted with Pure Water Chamber, but we recommend the Copper Steam Coil, which keeps the steam confined, prevents impurities from steam boiler from contaminating water, thus leaving it pure to use for purpose of thinning glue if desired, and the use of the coil heats water and prepares glue more quickly than the ordinary method of heating, and consumes a minimum amount of steam, also overcomes annoyance of cloud of vapor and wet sloppy floor.

The Stirrer is geared and double-acting, which is necessary to thoroughly agitate the glue.

The Thermometer registers temperature of glue at point where it is drawn from tank for actual use. Automatic temperature controller can be furnished if desired (illustrated and described on page 416).

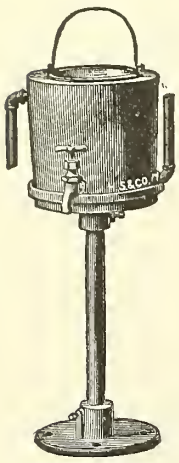
Type H Heaters are regularly made in sizes of 5, 10, 15, 20, 25 and 30 gallon capacity, with either 2, 4, 6 or 8 small pots of one or two quarts capacity.

Type K Heaters are regularly made in sizes ranging from 5 to 100 gallons and larger if desired.

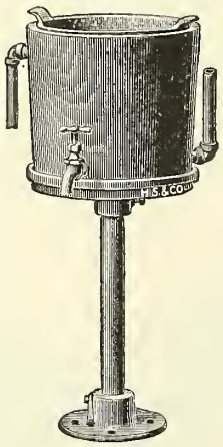
Can be furnished for steam, gas or electricity. Steam furnished regularly.

Steam Glue Heaters

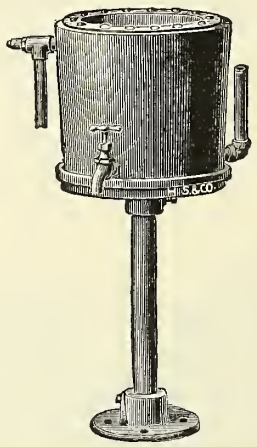
Francis



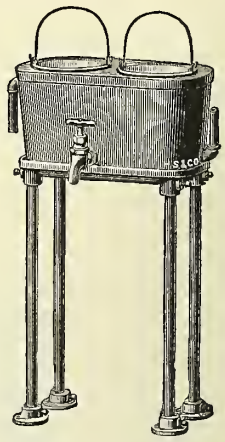
Style Nos. 1 to 4



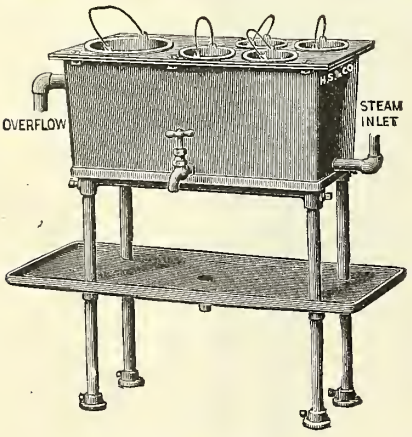
Style Nos. 5, 6, 7 and 8

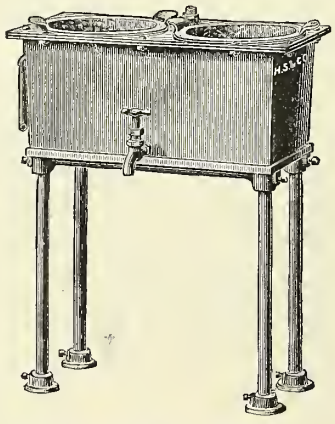


Style Nos. 5½ and 6½ (steam tight)

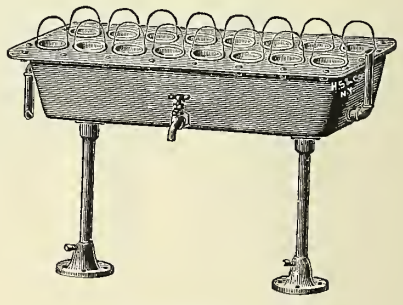


Style Nos. 9 and 10

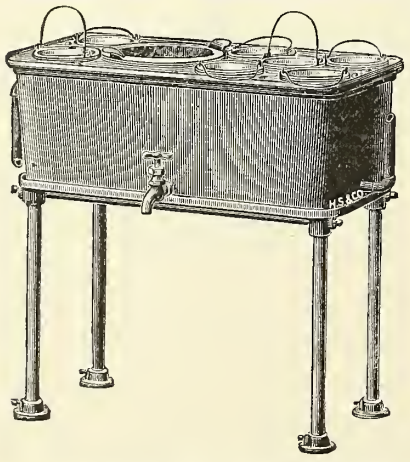


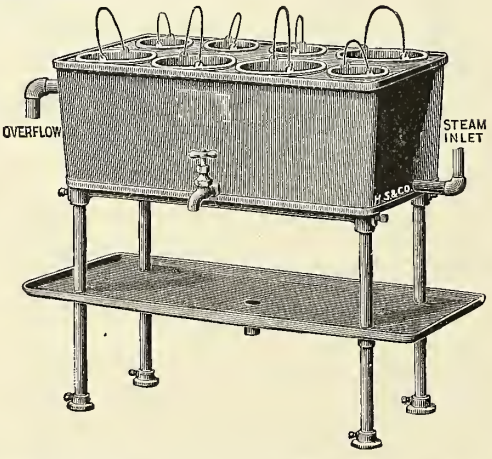


Style Nos. 11 to 15, which are furnished with or without stand and drip-pan as desired

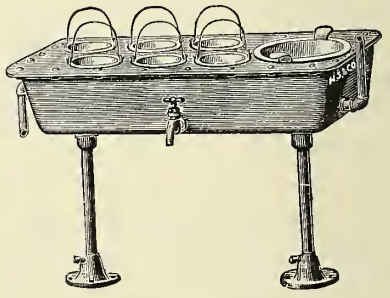


Style No. 34

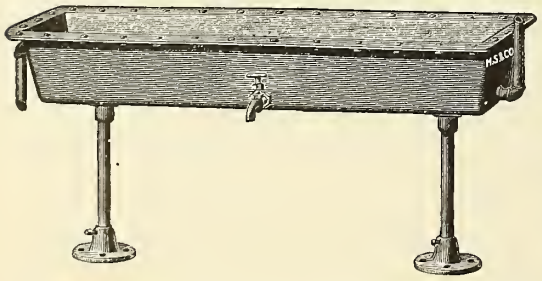




Style Nos. 16 to 29, which are furnished with or without stand and drip-pan as desired



Style Nos. 31, 32, 33 and 35



Style Nos. 36, 38 and 40, with Bevel Glue Tank without partition



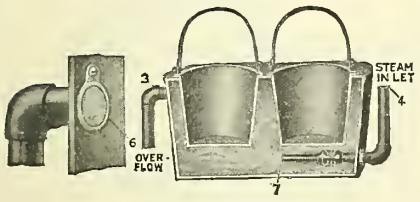
Style Nos. 37, 39 and 41, with Bevel Glue Tank with partition

Detailed description on following page

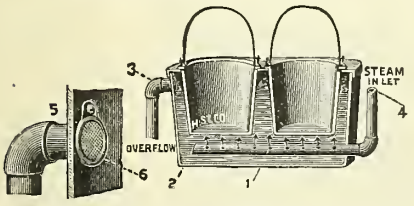
Steam Glue Heaters

Francis

(Illustrated on preceding page)



Sectional View of Steam Mixer



Sectional View of Perforated Pipe Method of Heating

Steam Glue Heaters Nos. 1 to 41 are supplied either with steam mixer or with the perforated pipe method of heating (as shown).

The steam mixer is supplied unless otherwise ordered. Either method heats the water very quickly and prevents it splashing over, but the steam injector or mixer arrangement has a tendency to overcome the knocking and pounding when steam is turned into the tank. The overflow pipe (3) carries off the surplus water. This pipe is always larger than the inlet or steam pipe. Shavings, chips, etc., are kept out of the pipe by a brass wire screen (6) placed over the end of the pipe. We recommend the use of live steam, as it is much more satisfactory and reliable than exhaust. The tank should be filled with water before turning on the steam; after that the condensation of steam will keep the water supplied. The tanks are regularly of cast iron with carefully fitted pipe connections, and glue pots are of enameled cast iron in the sizes smaller than one gallon and of galvanized cast iron in sizes of one gallon capacity and larger. Copper glue pots are furnished if desired, at extra charge.

These Heaters can be fitted with copper steam coil system of heating on the principle of Francis Glue Cookers, shown on another page.

Gas or electric heating attachments can be supplied, at special prices, for use where no steam is available.

Number	Number and Capacity of Glue Pots
1	One 2-quart
2	One 3-quart
3	One 4-quart
4	One 6-quart
5	One 2-gallon
5½	One 2-gallon
6	One 2½-gallon
6½	One 2½-gallon
7	One 4-gallon
8	One 6-gallon
9	Two 2-quart
10	Two 3-quart
11	Six 1-quart
12	One 1-gallon and three 1-quart
12A	One 1½-gallon and three 1-quart
12B	One 1-gallon and four 1-quart
12C	One 1½-gallon and four 1-quart
13	Two 2-gallon
14	One 2-gallon and two 2-quart
15	Four 2-quart
16	Two 4-gallon
17	Two 2½-gallon and two 2-quart
18	Six 2-quart
19	Four 3-quart and four 2-quart
20	One 2-gallon and seven 1-quart
21	One 1½-gallon and six 1-quart
22	One 2½-gallon and four 2-quart
23	One 4-gallon and four 2-quart
24	One 4-gallon and six 1-quart
25	Two 1½-gallon and five 1-quart
26	Nine 3-pint
27	Eight 2-quart
28	One 4-gallon, one 1-gallon and two 2-quart
29	One 2½-gallon and four 1-quart

Above heaters are regularly furnished with iron pots. Sizes up to and including 3-quart capacity are enameled, and the larger sizes are galvanized.

Copper pots furnished at extra charge.

Stand is furnished unless otherwise ordered. Drip-pan can be furnished if specified in order.

Number	Number and Capacity of Glue Pots
31	Two 2½-gallon and nine 1-quart
32	Two 2½-gallon and six 2-quart
33	One 2½-gallon and ten 1-quart
34	Sixteen 1-quart
35	One 2½-gallon and six 2-quart

Above heaters are furnished regularly with iron pots. Sizes one and two-quart capacity are enameled, the one and two and a half gallon capacity are galvanized.

Copper pots furnished at extra charge.

Stand is furnished unless otherwise ordered. Drip-pan can be furnished if specified in order.

Long Tank Type

Number	Length of Glue Tank
36	3 feet 9 inches, Plain
38	4 feet 9 inches, Plain
40	5 feet 9 inches, Plain
37	3 feet 9 inches, Divided
39	4 feet 9 inches, Divided
41	5 feet 9 inches, Divided

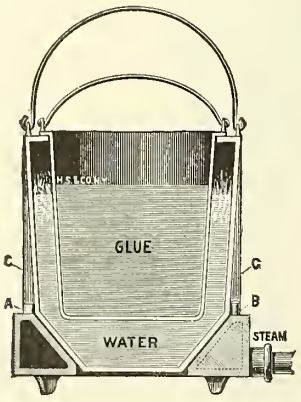
Above heaters are not intended to stand any steam pressure, and are not represented as steam tight; the joints between the water tank and the glue tank are not ground or planed. They are bolted together and packed with hemp merely to keep the vapor from escaping and are fitted with safety valves. Furnished regularly with galvanized cast iron inside or glue tanks. Copper glue tanks, if desired, at extra cost.

For Gas Heaters and Temperature Controllers, see pages 415 and 416

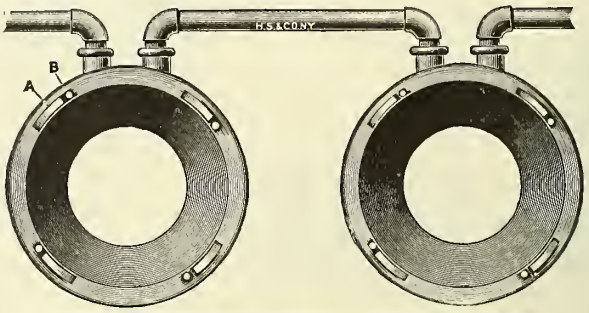
Contact Steam Glue Heaters

Francis

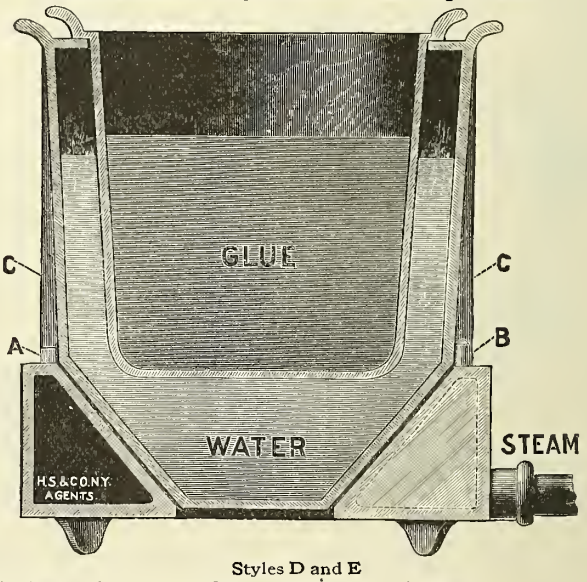
For Bench or Individual Use



Styles A, B, BB and C



Steam-Rings, Showing Manner of Connecting "in Series"



Styles D and E

The object of these heaters is to have the glue at each bench constantly ready for use. This not only prevents loss of time, but avoids frequent chilling of the glue, which destroys its holding power. As shown in illustrations, this style of heater operates by bringing the water-jacket (in which the glue-pot hangs) in contact with the steam ring. The temperature is regulated by raising or lowering the jacket on the incline of the steam ring, which is governed by four stops and ribs. The piping is done in series (see illustration) and only one steam pipe is necessary. Two valves are required, one in front of the first heater, to control the steam, and one after the last heater to draw off the condensed water. Sizes A and B are regularly equipped with enameled glue pots, and the larger sizes with galvanized iron. Copper pots will be supplied at special prices. For individual bench use, the 1 and 2 quart capacity, sizes A and B, are most suitable.

Sizes	A	B	BB	C	D	E
Capacity, quarts	1	2	4	6	8	10

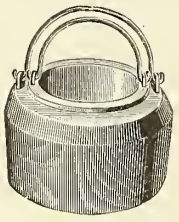
Above cuts show water-jackets raised out of contact with steam coils A, four inclines; B, four stops; C, four ribs which slide on inclines

Prices on application

Glue Pots

H. S. & Co.

Water-Jacketed



Cast Iron Inside Pot Tinned Inside

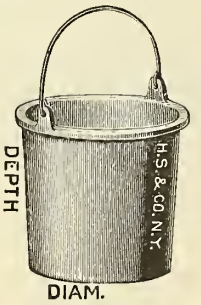
Number	000	00	0	1	2	3	4	5	6
Capacity, pints	¾	1	1¼	2	2½	3	3½	4½	5
Complete, dozen	$5.00	5.50	6.00	6.75	8.40	10.26	12.42	14.58	16.94
In side pots only, Dozen	$2.50	2.75	3.00	3.38	4.20	5.13	6.21	7.29	8.47

Francis

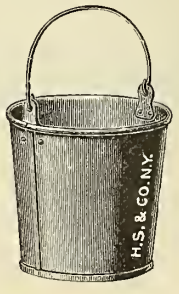
Inside, for Glue Heaters

Capacity	Diameter Inches	Depth Inches	Cast Iron	Extra Heavy Copper
1 quart	5	4⅜	$ .31	$ .70
3 pints	5¼	4¾	.37	.85
½ gallon	5⅞	5⅜	.44	1.00
¾ gallon	6⅝	6¼	.60	1.40
1 gallon	8	6½	1.20	1.75
1½ gallons	8	8½	1.45	2.25
2 gallons	9	8½	1.75	2.75
2½ gallons	10¼	8	2.00	3.25
2½ gallons, Qs.	11⅜	6¼	2.00	3.25
4 gallons	13	8	3.00	4.00
6 gallons	13¼	11	5.00	5.00

Cast-Iron Pots up to and including ¾ gallon are enamelled; the larger sizes galvanized. All pots up to and including 1½ gallons have bails as shown; the 2½ gallons QS. also has bails; the 2, 2½ (regular), 4 and 6-gallon pots have handles.



Cast Iron



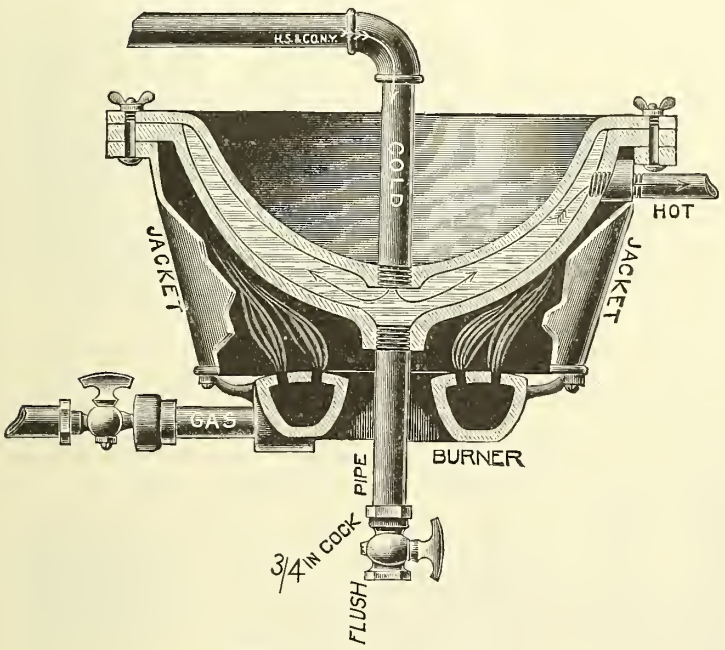
Extra Heavy Copper

Diameter—Outside of pot directly under the flange
Depth—Distance from under flange to bottom of pot

Gas Water Heater

(For Glue Heaters)

Francis



Style A Gas Water Heater

This style of Heater is particularly suitable for use in connection with Heaters Nos. 1 to 29, shown on page 412. Its comparatively small size and style of construction allow it to be used directly under the Heater, as shown in lower illustration. It is surrounded by a cast iron casing, which prevents the flame being affected by draughts of air, and also causes the heat to be evenly and quickly distributed over the entire surface. This feature utilizes the full value of the gas consumed, thereby preventing any waste of heat. As circulation of the hot water causes the cooking of the glue, there is no danger of burning, nor is extremely close attention demanded, as in cases of direct application of heat.

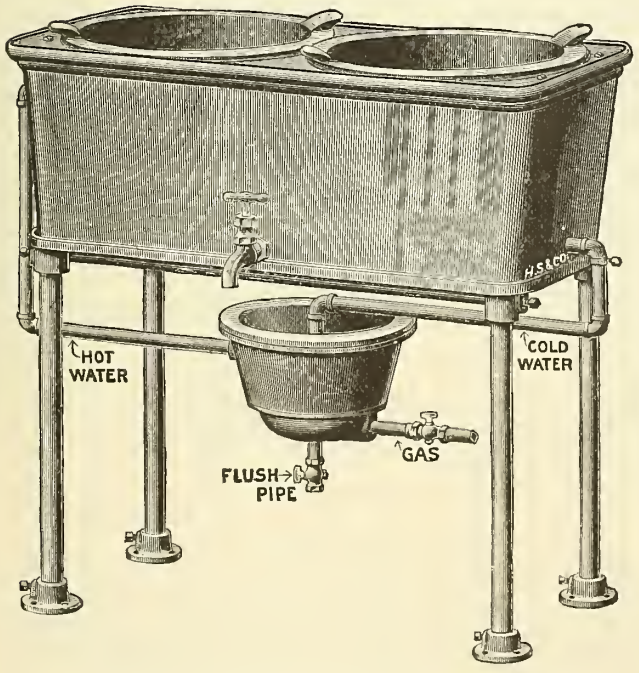
Many shops and factories have no steam supply available except in winter, which makes it necessary to have some independent heating device, such as gas or electricity.

This Heater is provided with a powerful atmospheric burner attached to the casing by screws, directly under the bowl.

In lighting, the gas should be turned on for a few seconds before applying the light; this clears the air from the mixer and burner and prevents back-burning, which causes a white flame accompanied by a hissing sound. Never allow the gas to burn in this way, as it causes no heat and coats the Heater thickly with soot, preventing the proper utilization of the heat.

Care should be taken to see that the Heater is properly connected, correctly operated and kept free from soot and other dirt.

In ordering any type of gas burner, it should be specified whether for natural or artificial gas, and with what cooker it is to be used.

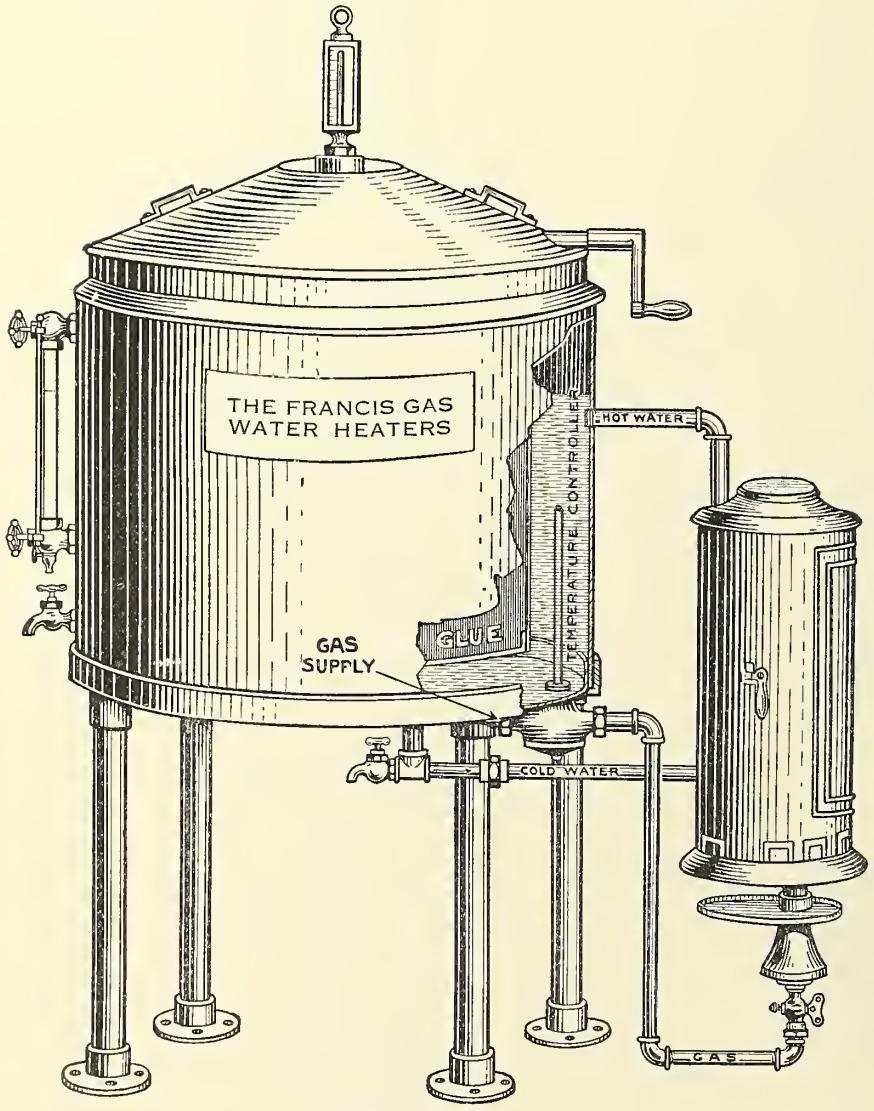


Style A Gas Water Heater Fitted to No. 16 Glue Heater

Gas Water Heater
And
Automatic Gas Temperature Controller

For Glue Heaters, Glue Cookers and Glue Spreaders

Francis



Type A—Figure 9

This illustration shows a Glue Cooker fitted with Double Copper Coil Gas Water Heater and Automatic Gas Temperature Controller.

These Copper Coil Heaters are furnished in three types: Single, Double (as shown) and Triple.

The Gas Temperature Controller is automatic and may be set to any degree desired. The gas will then burn at full capacity until that degree of temperature is reached, when the gas supply is cut down just enough to maintain the desired heat.

When ordering any type of gas water heater, specify whether wanted for natural or artificial gas, and if Gas Temperature Controller and connections are wanted.

Automatic Steam Temperature Controller

For Glue Heaters or Cookers and Glue Spreaders

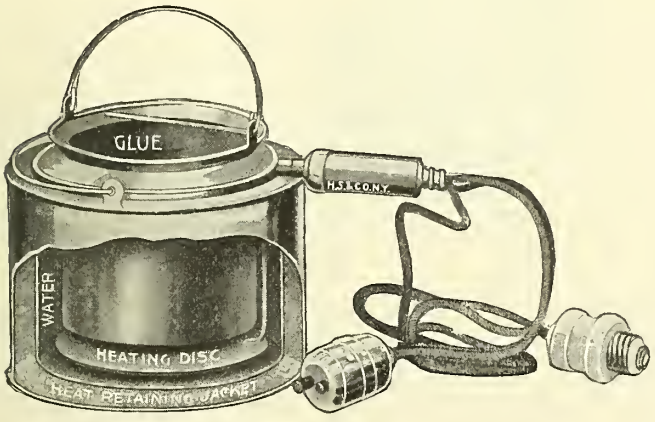
Francis

In the cooking and using of glue, accurate temperature safeguards are essential, and the controller shown in illustration on this page, is automatic, keeping the water constantly at any given temperature. Between 150 and 160 degrees is best, as the water temperature is always higher than that of the glue, sometimes as much as 20 degrees. While the controller illustrated above is for use with a gas heater, we are in position to supply them for use in connection with a steam heating system, or any other type or system of heater or cooker. The illustration shows a Cooker with heavy, galvanized plate-iron tanks; Double-Acting, Hand-power Glue Stirrer; the Water Temperature Controller, described herein, and a Glue Thermometer, which gives the actual temperature of the glue itself at the exact spot where it is to be drawn for use.

In ordering the Temperature Controller, always specify the size, capacity and make of Cooker with which it is to be used, as well as heating system.

Electric Glue Pots and Heaters or Cookers

Francis

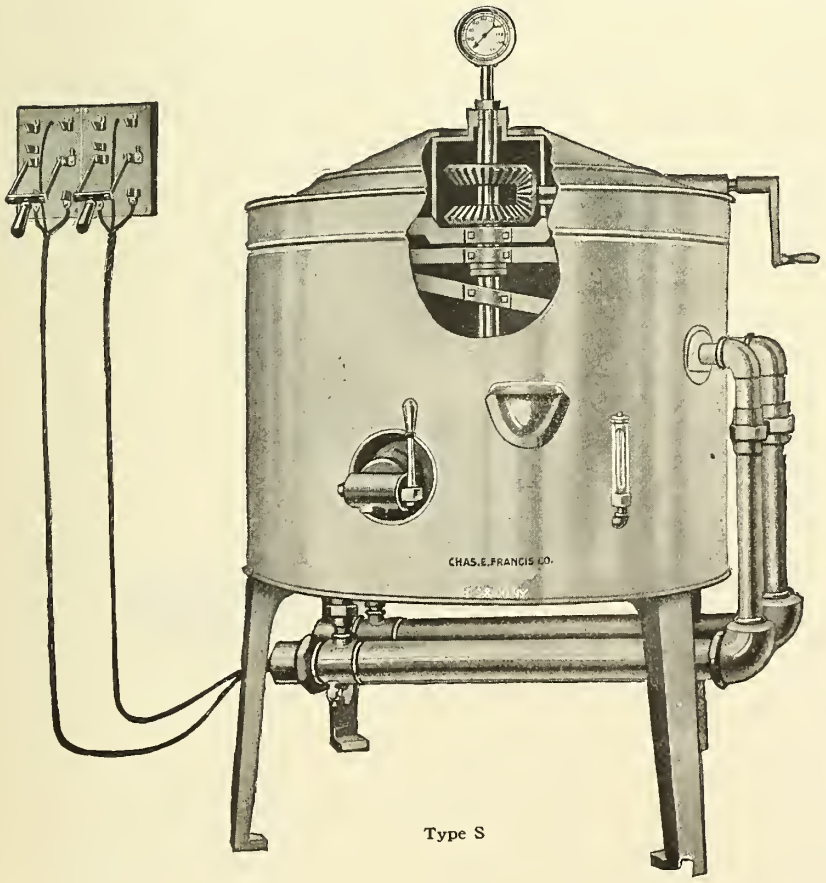


Pots With or Without Heat-retaining Jacket

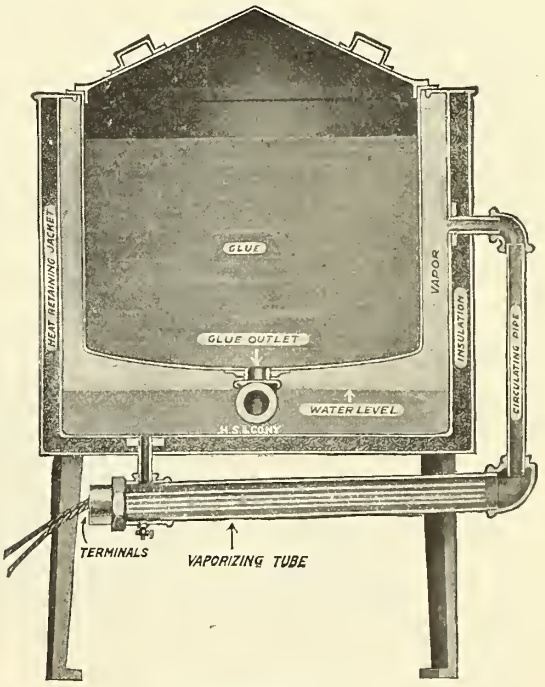
It is recommended that these electric glue pots, or heaters, be fitted with heat-retaining jackets, packed with suitable insulating material, as they greatly reduce the consumption of electricity. They are furnished either with or without these jackets, and are made in the following sizes:

Single Pot Capacity	Double Pot Capacity of Each Pot
1 pint	1 pint
1 quart	1 quart
2 quarts	2 quarts
3 quarts	3 quarts
4 quarts	4 quarts
6 quarts	6 quarts
8 quarts	8 quarts

Heaters or Cookers



Type S



Sectiona View
Illustrating Heat-retaining Jacket and Circulation System of Heating

Construction

All copper and brass; or Glue Pot only of copper, and Water Jacket and Heat-retaining Jacket of iron; or all iron.

Heat-retaining Jacket greatly reduces the consumption of current. Fitted with Glue Thermometer Attachment. Double-acting Stirrer. Bayonet Electric Heating System (vaporizing water instantly by circulation and preparing glue in comparatively short time).

Made in sizes: 5, 10, 15, 20, 25, 30, 40 and 50 gallons capacity, and larger. When ordering state actual voltage.

Send for descriptive circular

Electric Glue Pots

The Electric Glue Pot is one of the most successful and important applications of electricity to the mechanical arts. It is efficient, practical and rapid; is portable and permits of extremely flexible arrangement. Under correct working conditions, it gives an absolutely even, steady heat that keeps the glue in perfect working condition for any length of time. Being independent of any stationary heating system, and connected as readily as an electric light, it can be used anywhere. Hence, the electric pot has been adopted in many book binderies, piano factories, pattern shops, etc. They are non-inductive, consequently equally effective on direct or alternating circuits. It is very important that the actual voltage of the circuit be given when ordering.

General Electric

General Electric Pots are manufactured in two distinct types, distinguished by their method of heating the glue. The heating elements in both types are practically indestructible. Aluminum is used in both types for the glue container, both on account of its remarkable power as a heat distributor and because its unctuous surface prevents the glue from sticking to it.

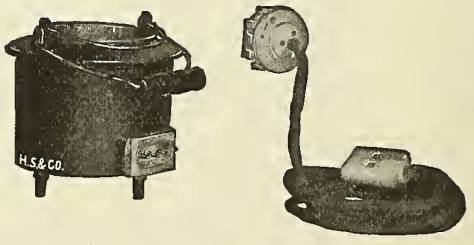
Jacketless

This type has no water jacket and heats the glue by direct thermal contact with the walls of the pot. It is designed only for continuous operation, as it requires from ½ to 1 hour to bring the glue to a perfect working temperature. As the current is applied direct, there is a saving of approximately one-half that used by the water-jacketed type. The circuit must be reasonably constant for the successful operation of the jacketless type, as a high heat will burn the glue and a low heat allow it to cool.



Water-Jacketed

This type employs the usual water jacket for heating the glue and permits the use of a "high starting heat" to cause a rapid melting of the glue, as is often required for sudden, intermittent service. The water-jacket is made of cast iron. These pots are also especially applicable on circuits where extreme voltage fluctuations are liable to occur, for the water-jacket automatically compensates, by its increased evaporation, for any excess current due to voltage variations as well as to the "high heat."



With Cartridge Units

Capacity	Watts	Voltage	Each
½ pint	20	95–125	$4.00
1 quart	70	95–125	10.00
1 quart	70	200–250	12.50
2 quarts	90	95–125	12.00
2 quarts	90	200–250	14.00
4 quarts	140	95–125	15.00
4 quarts	140	200–250	17.00
8 quarts	250	95–125	22.00
8 quarts	250	200–250	24.00

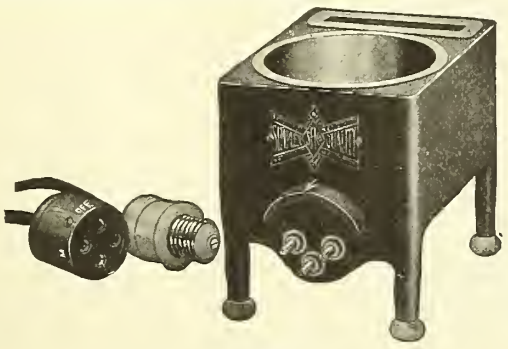
With Cartridge Units—Three Heats

Capacity	Watts	Voltage	Each
1 pint	85–170–340	95–125	$11.00
1 quart	110–220–440	95–115	12.00
1 quart	110–220–440	200–250	13.25
2 quarts	170–340–680	95–125	13.00
2 quarts	170–340–680	200–250	14.25
4 quarts	275–550–1100	95–125	15.00
4 quarts	275–550–1100	200–250	16.25

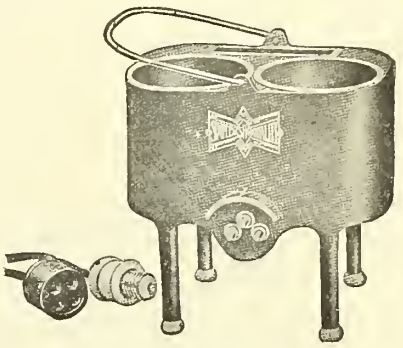
Electric Glue Pots

Simplex

Made for standard voltages up to 120 but will be furnished for 220 volts at regular prices. Furnished to order for higher voltages at special prices. Supplied with Flexible Conductor and Lamp Socket Plugs unless otherwise specified.



No. 1722

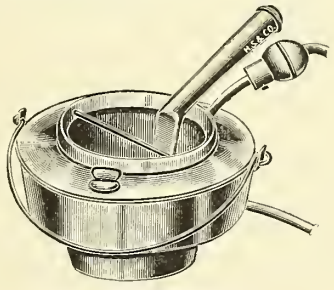


No. 1723

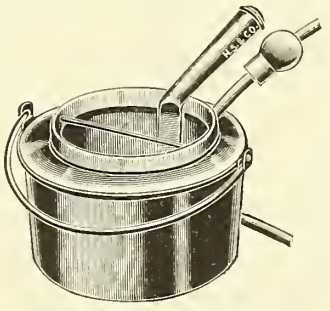
Where glue is used in small quantities and where two kinds are used by the same workman, these pots will be found useful. In each pot is a separate copper vessel for brushes where they may be kept in hot water. The outer pot, or water-jacket, is of japanned iron, with the heater enameled on the bottom. The glue vessels are of spun copper without seams. Very well suited for home as well as factory use. They use very little current and cost of operation is nominal at any price for current.

Complete with cord, three heat connector and plug.

Number		Watts Minimum	Watts Maximum	Each
1722	Single glue vessel (½ pint) and brush holder. Three heats. Six feet conductor cord, connector and lamp socket plug.....	50	300	$7.50
1723	Two glue vessels (1 pint each) and brush holder. Three heats. Six feet conductor cord, connector and lamp socket plug.....	85	500	11.00
1724	Two glue vessels (1 quart each) and brush holder. Three heats. Six feet conductor cord, connector and plug switch.....	160	800	$16.00
1725	Two glue vessels (2 quarts each) and brush holder. Three heats. Six feet conductor cord, connector and plug switch.....	225	1100	20.50



No. 403 With Reservoir



No. 408 Without Reservoir

Made throughout of burnished copper, practically indestructible

With Reservoir

In three parts, the glue pot, the spiral tube coil heater, and the water vessel. The upper part of this latter forms a reservoir which feeds water into the well as fast as it evaporates. Thus the well itself is always full, but as it holds only a little water at a time, it heats quickly and little current is required to keep the water hot, so that the reservoir type glue pot can be run cheaper than any other style.

Frequently these pots are permanently located on a bench, by cutting a hole to let the smaller diameter project through and allow the reservoir to rest on a low circular iron stand fastened to the bench.

Cast Iron Stands ..... $ .50

Number		Watts Minimum	Watts Medium	Watts Maximum	Each
403	1 pint. With reservoir. Three heats. Four feet of cord and plug switch.....	85	175	330	$13.50
404	1 quart. With reservoir. Three heats. Four feet of cord and plug switch.....	100	220	440	14.50
405	2 quarts. With reservoir. Three heats. Four feet of cord and plug switch.....	170	330	660	16.00
406	1 gallon. With reservoir. Three heats. Four feet of cord and plug switch.....	275	550	1100	22.25
407	2 gallons. With reservoir. Three heats. Four feet of cord and plug switch.....	360	720	1440	$41.00
410	5 gallons. With reservoir. Three heats. Four feet of cord and plug switch.....	625	1250	2500	78.00

Without Reservoir

With this pot it requires from sixteen to twenty minutes to have the glue ready for use, starting with everything cold. Much less time is required by the reservoir types which are more economical in current consumption, but in no other particular are they superior, while the price of those listed below is lower. In all glue pots the minimum current is sufficient to maintain the glue in proper condition for work.

Cast iron stand, each, 50 cents.

Number		Watts Minimum	Watts Medium	Watts Maximum	Each
407½	1 pint. Three heats. Four feet of cord and plug switch....	110	220	440	$11.00
408	1 quart. Three heats. Four feet of cord and plug switch....	170	330	660	12.00
409	2 quarts. Three heats. Four feet of cord and plug switch....	220	440	880	13.50

See preceding page for general talk on Electric Glue Pots

Glue Spreaders

Francis

General Description

With the exception of those for the 53, 60 and 84-inch Power Feed Spreaders, all tanks are regularly made of cast iron, the inside or glue tank being galvanized. In the three large sizes mentioned above tanks for the lower glue roll are regularly made of heavy galvanized plate iron. Copper tanks will be supplied if specially ordered but we recommend the regular equipment, as above, which will be found most durable and satisfactory.

Copper steam coils are supplied with all copper and plate iron tanks, but are not required with those of cast iron, though will be supplied at extra prices if specially ordered.

The cast iron glue tank is regularly fitted into the steam tank, so as to make an absolutely steam tight joint. All types and sizes of these tanks are arranged so they may be easily and quickly drained and cleaned.

While these Spreaders may be used for actually cooking the glue, it is not economical nor good practice to use them for that purpose. In most cases it is advisable to have the heater or cooker directly connected to the spreader, thereby eliminating all handling of the glue, which necessarily cools it somewhat and which unavoidably injures to some extent its adhesive qualities.

With the large Power Feed Spreaders it is best to have two heaters, mounted at heights to properly feed the glue into the tanks of the Spreaders—one heater to prepare the glue, allowing it to flow to the second cooker, from which it may be fed to the spreader as needed. This method insures a constant store of properly cooked glue, and allows it to be fed slowly into the spreader glue tank. The latter is most important, as any over supply of glue will cause foaming, which prevents its proper application due to the presence of the tiny air bubbles.

The rolls on the Power Feed Spreaders are corrugated and made of a specially prepared metal which is more durable than the steel formerly used. The corrugations are such as have been found most suitable for all ordinary requirements.

Various forms of fabric-covered rolls, iron rolls, brushes and combinations of the above are supplied on the Hand Feed Machines as listed in the following pages.

Corrugated metal rolls will be supplied for these later if ordered, but are generally recommended only for the Power Feed Spreaders.

All Francis Rolls are so mounted that they may readily be removed, allowing every facility for frequent thorough cleaning.

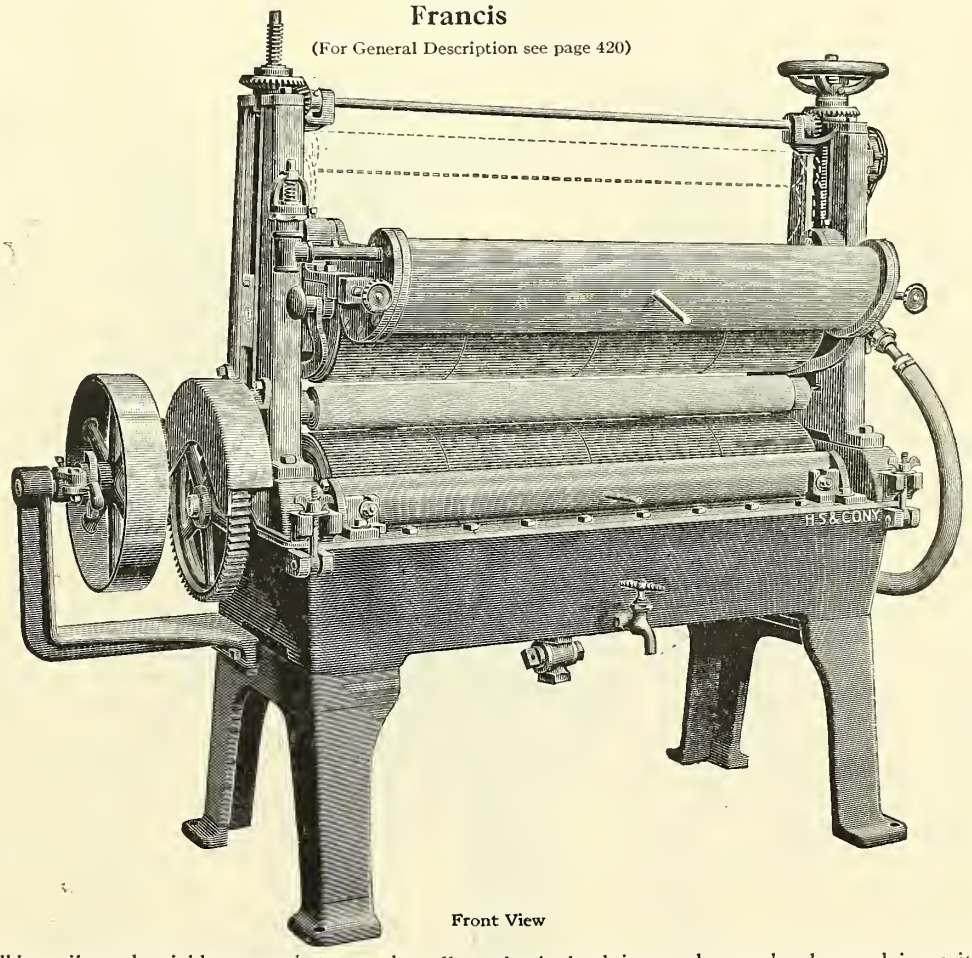
The cast-iron steam tanks of glue spreaders and boilers are not made to stand any steam pressure whatever and in their erection the utmost care should be taken that pipes are free from all obstructions so as to avoid any possible back pressure. The safety valves furnished for the overflow pipes must be in position and should be tested frequently and see that they work easily. By following this rule in setting up the equipment much trouble will be avoided.

Power Feed Combination Glue Spreaders

(Power Driven)

Francis

(For General Description see page 420)



Front View

The Idler Feed Roll is easily and quickly swung between the rolls to do single gluing, and can also be used in position over the upper glue roll for thin stock, which is a convenience when the machine is set for double gluing, and an occasional piece of stock must be glued on one side, which is thus done without rearranging or disturbing the glue rolls. The idler roll is attached to extensions on roll boxes, the same as the glue trough for the upper glue roll. These boxes are supported by adjusting screws, so no weight but that of roll itself comes on its bearings. The idler roll comes directly over the center of glue roll, and holds the stock firmly against the glue roll, so that it keeps stock flat to spread glue evenly all over.

Model D

With Cast Iron Tanks

12-Inch
Floor space occupied, 3 feet 6 inches x 2 feet 3 inches.
Approximate weight, 680 pounds.
Approximate weight, crated for shipment, 740 pounds.

18-Inch
Floor space occupied, 4 feet x 2 feet 3 inches.
Approximate weight, 760 pounds.
Approximate weight, crated for shipment, 830 pounds.

25-Inch
Floor space occupied, 4 feet 7 inches x 2 feet 3 inches.
Approximate weight, 875 pounds.
Approximate weight, crated for shipment, 940 pounds.

31-Inch
Floor space occupied, 5 feet 1 inch x 2 feet 3 inches.
Approximate weight, 950 pounds.
Approximate weight, crated for shipment, 1060 pounds.

37-Inch
Floor space occupied, 5 feet 7 inches x 2 feet 3 inches.
Approximate weight, 1150 pounds.
Approximate weight, crated for shipment, 1225 pounds.

44-Inch
Floor space occupied, 6 feet 2 inches x 2 feet 3 inches.
Approximate weight, 1350 pounds.
Approximate weight, crated for shipment, 1430 pounds.

75-Inch
Floor space occupied, 8 feet 9 inches x 2 feet 3 inches.
Approximate weight, 2500 pounds.
Approximate weight, crated for shipment, 2700 pounds.

Model E

With Heavy Iron Plate Galvanized Tanks and Fitted with Copper Coils

53-Inch
Floor space occupied, 34 x 78 inches.
Approximate weight, 1280 pounds.
Approximate weight, crated for shipment, 1375 pounds.

60-Inch
Floor space occupied, 34 x 85 inches.
Approximate weight, 1475 pounds.
Approximate weight, crated for shipment, 1600 pounds.

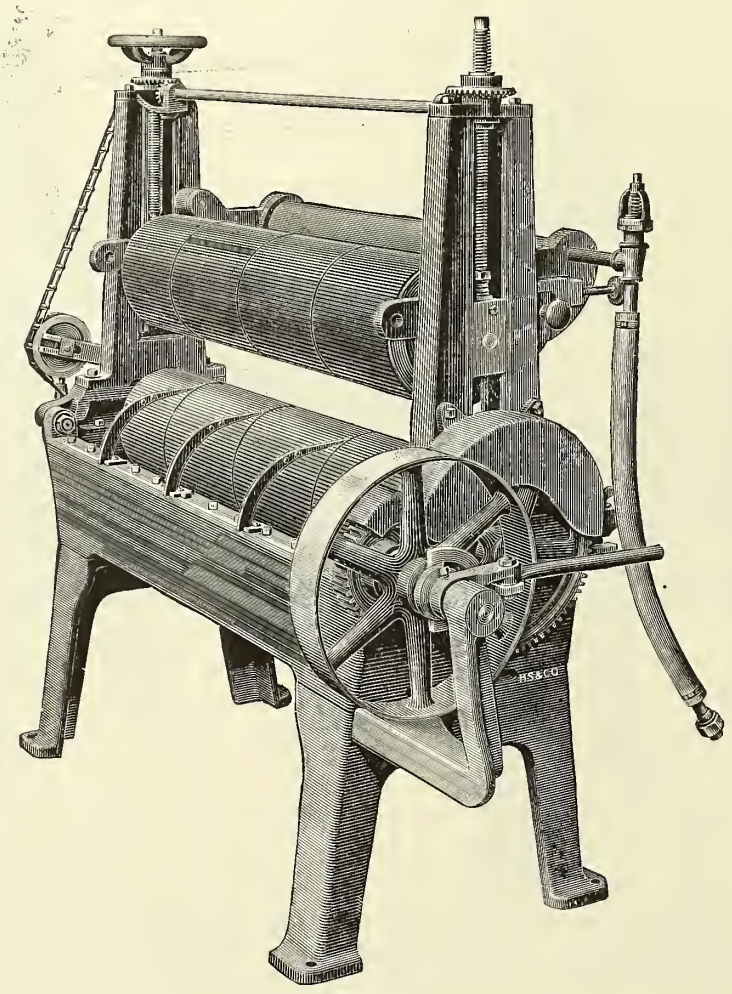
84-Inch
Floor space occupied, 34 x 109 inches.
Approximate weight, 2100 pounds.
Approximate weight, crated for shipment, 2250 pounds.

Power Feed Double Glue Spreaders

(Power Driven)

Francis

(For General Description see page 420)



Back View

Model D

With Cast Iron Tanks

12-Inch
Floor space occupied, 3 feet 6 inches x 2 feet 3 inches.
Approximate weight, 670 pounds.
Approximate weight, crated for shipment, 730 pounds.

18-Inch
Floor space occupied, 4 feet x 2 feet 3 inches.
Approximate weight, 750 pounds.
Approximate weight, crated for shipment, 820 pounds.

25-Inch
Floor space occupied, 4 feet 7 inches x 2 feet 3 inches.
Approximate weight, 850 pounds.
Approximate weight, crated for shipment, 910 pounds.

31-Inch
Floor space occupied, 5 feet 1 inch x 2 feet 3 inches.
Approximate weight, 925 pounds.
Approximate weight, crated for shipment, 1030 pounds.

37-Inch
Floor space occupied, 5 feet 7 inches x 2 feet 3 inches.
Approximate weight, 1125 pounds.
Approximate weight, crated for shipment, 1210 pounds.

44-Inch
Floor space occupied, 6 feet 2 inches x 2 feet 3 inches.
Approximate weight, 1320 pounds.
Approximate weight, crated for shipment, 1400 pounds.

75-Inch
Floor space occupied, 8 feet 9 inches x 2 feet 3 inches.
Approximate weight, 2450 pounds.
Approximate weight, crated for shipment, 2650 pounds.

Model E

With Heavy Iron Plate Galvanized Tanks and Fitted with Copper Coils

53-Inch
Floor space occupied, 34 x 78 inches.
Approximate weight, 1220 pounds.
Approximate weight, crated for shipment, 1300 pounds.

60-Inch
Floor space occupied, 34 x 85 inches.
Approximate weight, 1400 pounds.
Approximate weight, crated for shipment, 1535 pounds.

84-Inch
Floor space occupied, 34 x 109 inches.
Approximate weight, 1975 pounds.
Approximate weight, crated for shipment, 2100 pounds.

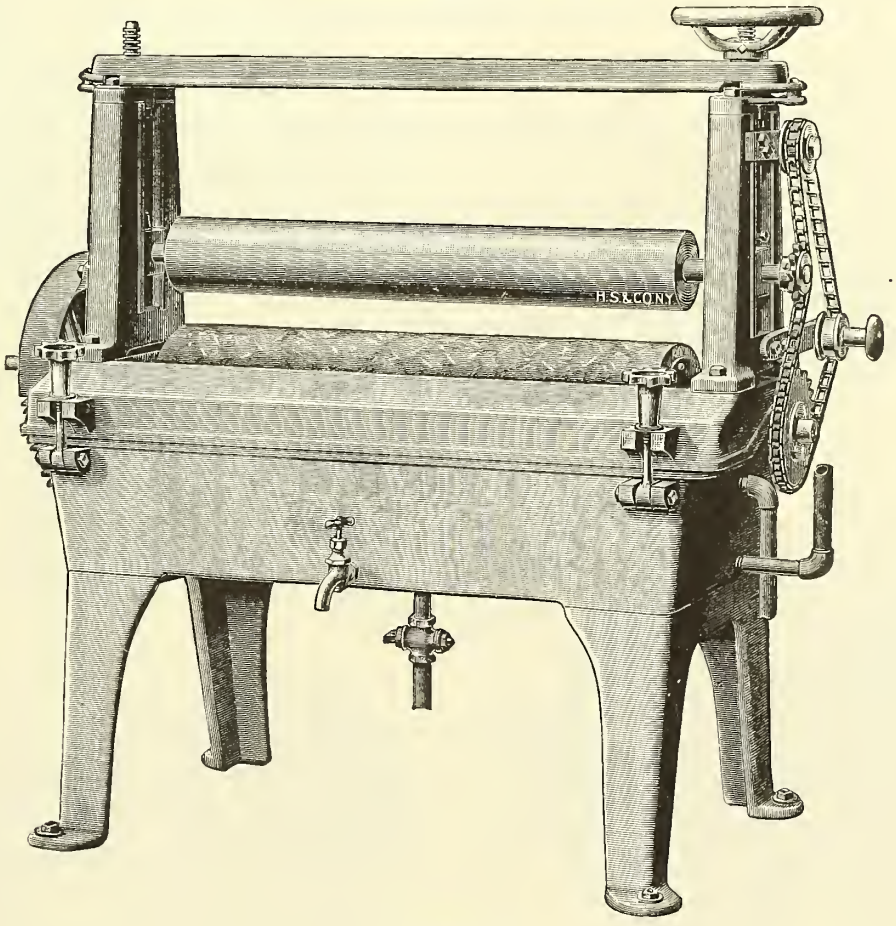
PRICES ON APPLICATION

Power Feed Single Glue Spreaders

(Power Driven)

Francis

(For General Description see page 420)



Front View

Model D

With Cast Iron Tanks

12-Inch
Floor space occupied, 3 feet 6 inches x 2 feet 3 inches.
Approximate weight, 540 pounds.
Aproximate weight, crated for shipment, 580 pounds.

18-Inch
Floor space occupied, 4 feet x 2 feet 3 inches.
Approximate weight, 600 pounds.
Approximate weight, crated for shipment, 650 pounds.

25-Inch
Floor space occupied, 4 feet 7 inches x 2 feet 3 inches.
Approximate weight, 640 pounds.
Approximate weight, crated for shipment, 710 pounds.

31-Inch
Floor space occupied, 5 feet 1 inch x 2 feet 3 inches.
Approximate weight, 760 pounds.
Approximate weight, crated for shipment, 840 pounds.

37-Inch
Floor space occupied, 5 feet 7 inches x 2 feet 3 inches.
Approximate weight, 900 pounds.
Approximate weight, crated for shipment, 1000 pounds.

44-Inch
Floor space occupied, 6 feet 2 inches x 2 feet 3 inches.
Approximate weight, 1040 pounds.
Approximate weight, crated for shipment, 1140 pounds.

75-Inch
Floor space occupied, 8 feet 9 inches x 2 feet 3 inches.
Approximate weight, 1800 pounds.
Approximate weight, crated for shipment, 2000 pounds.

Model E

With Heavy Iron Plate Galvanized Tanks and Fitted with Copper Coils

53-Inch
Floor space occupied, 34 x 78 inches.
Approximate weight, 950 pounds.
Approximate weight, crated for shipment, 1025 pounds.

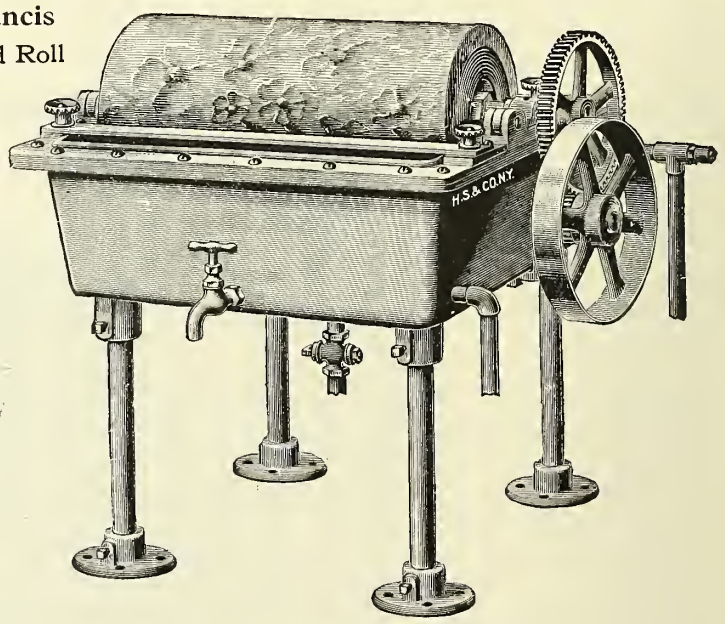
60-Inch
Floor space occupied, 34 x 85 inches.
Approximate weight, 1100 pounds.
Approximate weight, crated for shipment, 1200 pounds.

84-Inch
Floor space occupied, 34 x 109 inches.
Approximate weight, 1475 pounds.
Approximate weight, crated for shipment, 1575 pounds.

Hand-Feed Glue Spreaders

(Power Driven)

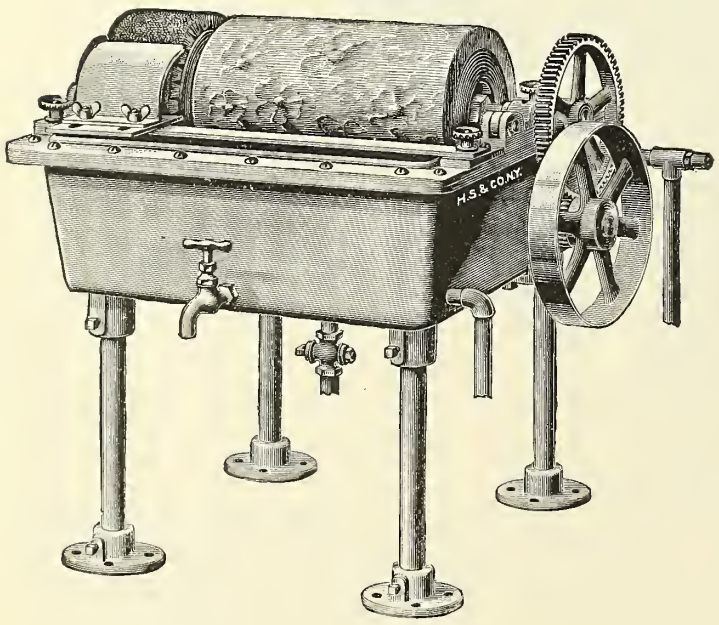
Francis Solid Roll



Designed to rapidly spread glue on edges and for narrow stock in general. The glue roll is of iron, substantially covered with fabric, which is inexpensive and easily applied. The roll may be removed and the glue prepared in tank. But we recommend the use of a connected cooker, which will be found more economical and satisfactory.

No.	Length of Roll Inches	Approximate Weight Pounds Gross	Pounds Net	Size of Pulley Inches	Speed
2	8	310	260	12x2¼ Drive	125 R.P.M.
3	12	310	260	12x2¼ Drive	125 R.P.M.
4	18	365	300	12x2¼ Drive	125 R.P.M.
8	25	575	500	14x2½ Clutch	80 R.P.M.

Combination Roll



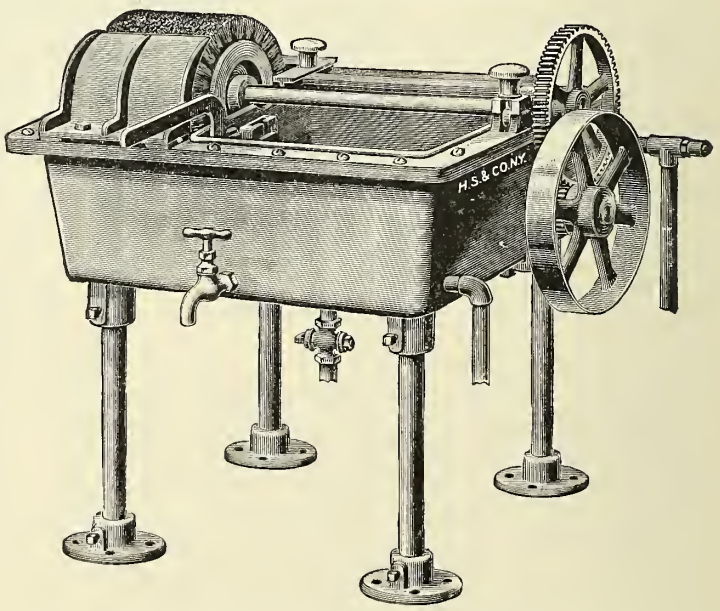
This Spreader is of the same general design as others on this page, but has a combination roll containing both solid and brush sections.

This combination makes it possible to do much of the work, as described on other two spreaders, and it is an excellent machine for use where there is a great variety of small work to be handled rapidly and economically.

An adjustable Scraper is supplied to scrape surplus glue back into the tank, the scraper for the Brush Roll being adjustable independently of the other. A Guard, as shown, is furnished to relieve the Brush of the weight of the stock.

No.	Width of Brush Roll Inches	Width of Solid Roll Inches	Approximate Weight Pounds Gross	Pounds Net	Size of Pulley Inches	Speed
5	3½	12	365	300	12x2¼ Drive	125 R.P.M.
9	6	10	365	300	12x2¼ Drive	125 R.P.M.
10	6	18	575	500	14x2½ Clutch	80 R.P.M.

Brush Roll and Divided Tank



This Spreader is designed for gluing tongue and groove or V-joints and all other small work with an uneven surface, where a brush is necessary to rub the glue into position. The brush is drawn with copper wire into a brass ring and protected with a coating of shellac. When worn out, the brass ring may be refilled at slight expense. A scraper in supplied as described on this page. The divided glue tank is an excellent feature, as it permits the glue to be cooked and fed to the brush through a gate.

No.	Width of Brush Roll Inches	Capacity Reservoir Gallons	Approximate Weight Pounds Gross	Pounds Net	Size of Pulley Inches	Speed
6	6	2½	365	300	12x2¼ Drive	125 R.P.M.
11	12	3½	575	500	14x2½ Clutch	80 R.P.M.

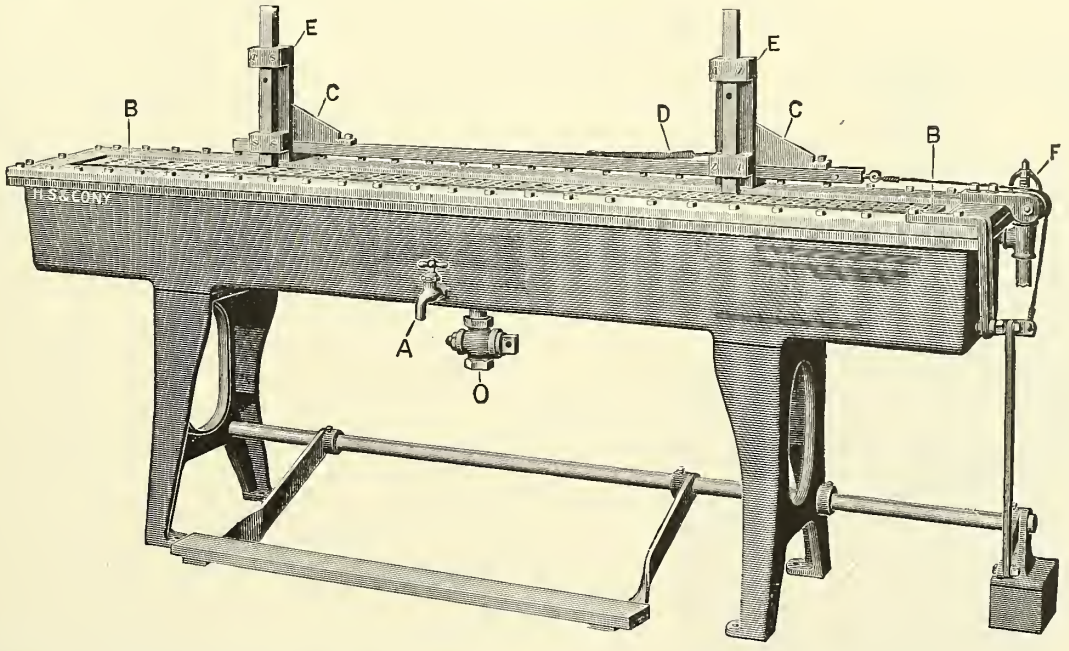
These Spreaders will also be supplied with solid rolls, either corrugated or fabric covered, when specially ordered.

PRICES ON APPLICATION

Joint Glue Spreaders

Long Tank with Perforated Plate

Francis



These machines are designed for gluing the straight edges of long stock used in the manufacture of pianos, furniture, coffins, and panels as well as in general woodworking. They are clean, rapid and economical in operation. They may be used for shallow tongue and groove joints of thick or thin stock (singly or several pieces at a time) of any length; or for the taped edges of face veneer.

The method of operation is clearly shown in illustration. The operator folds veneer at the taped joint, and in other edge work grasps what stock he can handle. Then presses the foot lever which brings up the perforated plate (almost full length of glue tank).

The perforations in plate are of proper size and spacing to allow surplus glue to drip back into tank, leaving enough between perforations to coat stock evenly and without waste. By resting the edge on top of plate, and moving stock slightly back and forth, the joint is thoroughly and evenly coated. This method also prevents the glue running over the sides of stock and saves much time and glue as compared with the use of the brush.

The rise and fall of the perforated plate keeps the glue stirred and prevents formation of scum, while the steam-jacketed tanks keep the glue hot and ready for constant use. The fitted cover on the glue tank automatically rises and falls with each movement of the perforated plate.

The tanks are regularly made of heavy iron castings, the inner or glue tank galvanized (or may be solid copper, if specified). The joints between tanks are machined true and steam packed so as to prevent wet and sloppy floors and the annoyance of escaping vapor.

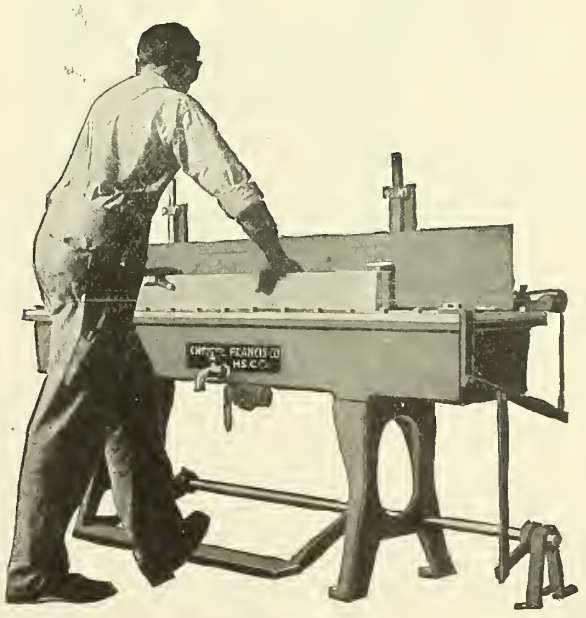
Fitted with water faucet, and pop safety valve, the latter to prevent back pressure if overflow pipe should get stopped up. (This valve is not needed if fitted with Copper Glue Tank, in which case machine has Plate Iron Outside Tank and Copper Steam Coil). Glue valve is provided for drawing glue out of tank.

The perforated plate is regularly 4 inches wide for the regular sizes mentioned below, which provide for all ordinary requirements. Special sizes made to order.

The self-acting cover, as shown in illustration, is a valuable addition and will be supplied when ordered.

No. 290, inside length of glue tank, 5 feet 11 inches.

No. 300, inside length of glue tank, 7 feet 11 inches.



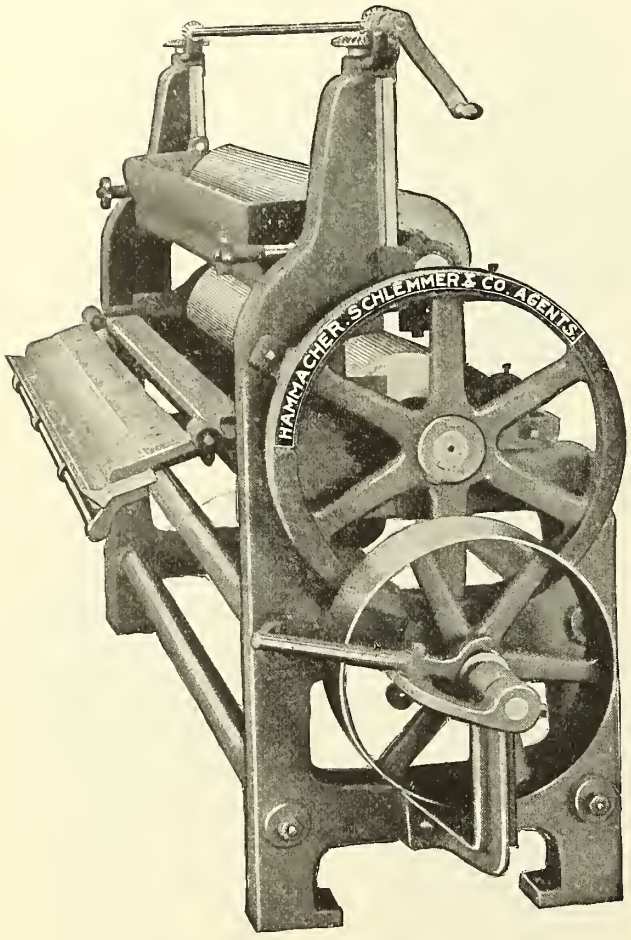
With self-acting cover which rises and closes automatically as perforated plate rises and falls. This cover prevents exposure of the glue to the air for any length of time, preventing formation of scum and also keeping it free from dust and dirt.

Power Feed Double Glue Spreaders

Power Driven

Francis

For Vegetable Glue



End and Front View
Showing scraper thrown away from roll

Specially designed for use with cold vegetable glue, but has heating chambers for both upper and lower rolls, which allows heat to be used when desired, and permits using hot glues—either animal, silicate of soda, casein, etc.

An extra heavy, nicely-designed machine of high-grade construction, equal to all the peculiar requirements of cold vegetable glues.

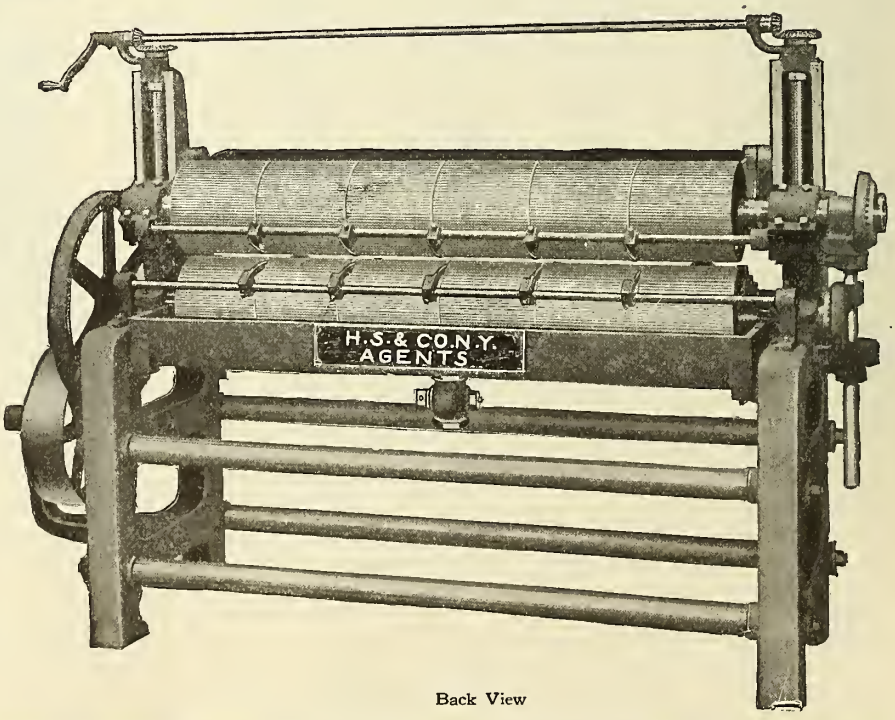
Being equipped with heating device and thereby made suitable for hot glues there is no need of a double equipment.

Cast-iron Tanks, Corrugated Rolls of a specially prepared metal.

If desired, the Idler Feed Roll used on Combination Spreaders, described on page 421, can be supplied.

Made regularly in following widths: 31, 38, 45, 53 and 60 inches.

Suitable Mixer or Converter can be furnished according to nature or requirements of particular adhesive to be used.



Back View

Modern Glue-Room Equipment

Francis

A. Large Glue Cooker for preparing glue. This Cooker is fitted with Power Stirrer and with Glue Thermometer C with stem extending down through Stirrer Shaft close to the point where glue is drawn from the Cooker.

B. Cooker used as reservoir or supply tank. Into this Cooker the glue is drawn from Cooker A as soon as properly prepared, and then drawn from this to Spreader as needed. This Cooker is fitted with Angle Thermometer D so operator can see that glue is kept at proper temperature.

E. Double Glue Spreader fitted with Glue Thermometer F. The Glue Thermometer in Spreader shows the operator when glue is in working condition.

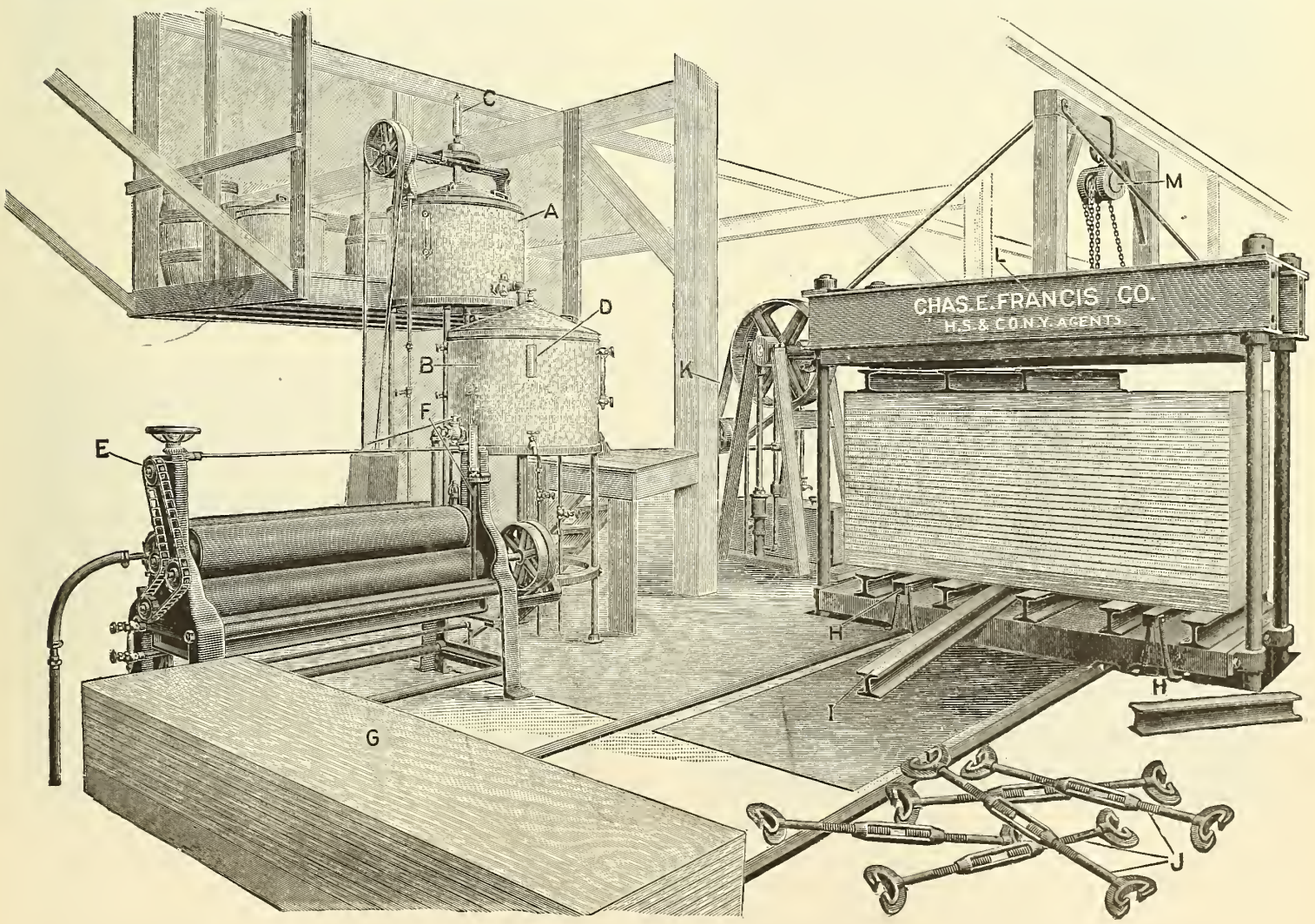
G. Truck to handle stock to press. After passing through Spreader the stock is placed on this truck, which is then pushed to Press L. The top of the truck and steel trestles H are fitted with rollers, which permit the pile of stock to be pushed from the truck to the press. The truck is pushed back to the Spreader, the operator places the I-Beams and retaining clamps, binds the load and pushes it on another truck which carries it to the proper position. For illustrations see page 429.

H. Roller Equipped Trestles which receive stock from truck. These Trestles hold the stock high enough from platen to allow the Retaining Clamp Beams I to slip in easily, and when platen rises the Trestles drop down so that pressure comes on the I-Beams, and after stock is clamped and platen is down the Trestles again carry the load and it can be easily removed from the Press.

K. Large Double Power Pump for Press. This Pump is built in strong frame of iron and steel, and a tank for water or oil, whichever may be used in operating the Press, is fitted in bottom of the Pump Frame.

L. Large Hydraulic Veneer Press. Press shown is Open Side Hydraulic Type, built to order to meet requirements of size, capacity and strength.

M. Chain Block for removing stock from Press. Placed so the stock, while held by the Retaining Clamps, can be lifted to any ordinary Truck, or by use of Trolley Block it can be run away from Press and stock left in clamps until thoroughly dry. This is sometimes more convenient than the truck method mentioned under G.



Hydraulic Veneer Presses

Francis

Designed and constructed especially for Veneered and Built-up work. Particularly adapted for use in Piano, Furniture, Panel, Desk, Door and other wood-working shops where Built-up or Veneer work is used in quantity.

The preceding page illustrates a complete outfit of Hydraulic Veneer Press Equipment, Glue Spreader and Glue Cookers. It shows hoist arrangement of removing stock from the press, which is desired in some cases, but the patented unloading arrangement, shown on following page and described below, has been found to be a big improvement and is given the preference over all other methods of handling the stock.

Each press is substantially made with a heavy steel frame, solidly bolted into perfect rigidity. No wooden parts are used in the press nor for the clamps.

The lower platen for the presses of ordinary size for the usual pressure requirements is heavily and strongly built of cast-iron, planed smooth and true and guided by polished steel strain rods, insuring smooth and accurate movement.

The upper platen consists of sections of heavy steel beams placed cross-wise and faced with a rolled steel plate. The pressure is evenly distributed over the whole surface and is regulated and protected by pressure gauge and safety valve.

The platen trestles, equipped with rollers (as illustrated on following page), facilitate handling and eliminate entirely all danger of jamming the press or disturbing stock while moving. The presses are built for any required pressure, but the general run of veneering and built-up work for the industries mentioned almost invariably requires our Heavy Duty Press, guaranteed for pressure up to 100 pounds per square inch of platen surface. Presses can be built of lighter construction for less pressure or constructed for considerably heavier pressure, according to any special requirements. They are regularly supplied with either single, double or four-plunger power pump, according to size and capacity of press, and are complete with safety valves, pressure gauge and all connections. The Belt Power Pump is regularly furnished and usually preferred, but Steam Power Pump can be furnished if required.

The Single Beam Retaining Clamps, shown on page 438, are used in connection with these presses. These clamps are easily handled, quickly placed, readily adapt themselves to different widths of stock, are quickly tightened, hold the stock securely, are quickly released, and they practically overcome all trouble and expense with repairs. The clamps of course are extra, according to the number and size of clamps wanted.

New Unloading Device

This is a patented feature, and while the Hydraulic Veneer Press can be furnished without it, it may certainly be recommended. It handles the stock out of and away from the press much more quickly than the overhead track and trolley hoist arrangement, saves rehandling of the stock after it is dry, and is indeed a big improvement over all other arrangements of handling the stock to and from the press.

When the bale of stock in the clamps is ready to remove from the press, the pressure of the press is released; the platen then lowers itself and the roller trestles again rest on the floor stands holding the bale of stock upon the rollers of trestles high enough for clamp beams to clear platen of press. The bale of stock is then easily rolled out of press until it is over the regular floor truck (placed in position for it), and by pulling the lever of the unloading device the bale of stock is instantly lowered on to this truck, and the weight resting on the clamp beams, it releases the roller trestles, which are pushed (on roller floor stands) toward front of press and the truck carrying the bale of stock is then free to be taken to any part of the building desired. Thus a factory truck is used for each bale of stock if desired, and the bale is usually left on it until thoroughly dry, thus saving rehandling. The ordinary factory truck is used without stakes and preferably with two swivel casters at each end instead of only one.

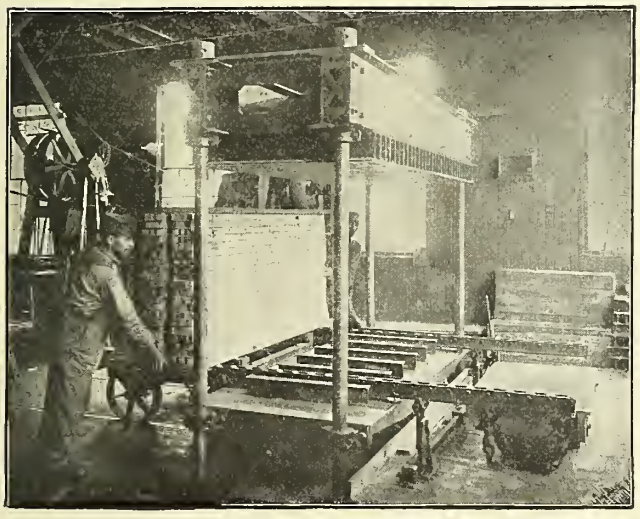
Size of Platen

Inches	Inches	Inches	Inches
30 x 40	36 x 108	42 x 84	30 x 72
24 x 60	42 x 108	48 x 84	36 x 72
30 x 60	48 x 108	24 x 96	42 x 72
36 x 60	24 x 120	36 x 96	48 x 72
42 x 60	36 x 120	42 x 96	24 x 84
48 x 60	42 x 120	48 x 96	30 x 84
24 x 72	48 x 120	24 x 108	36 x 84

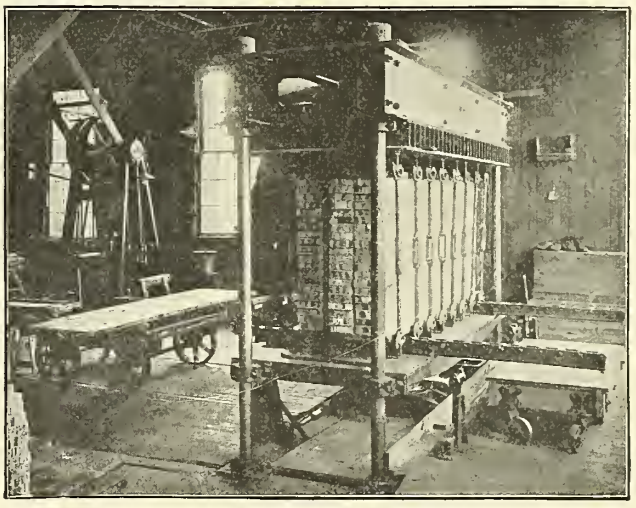
Open Side Hydraulic Veneer Press

Francis

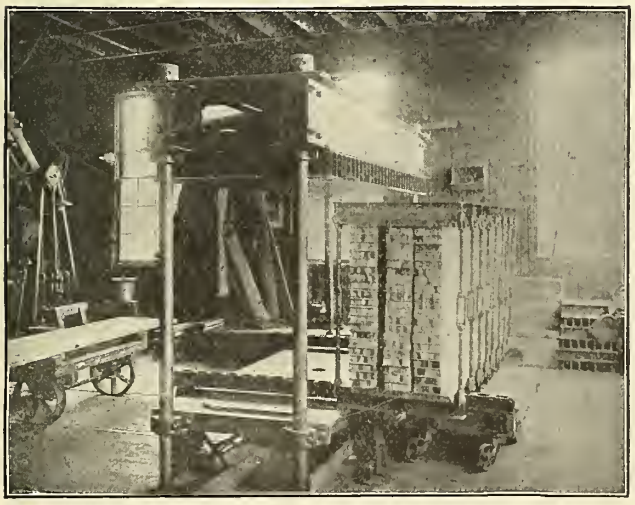
With Loading and Unloading Device



Rolling Stock into Press
The Rollers on trestles permit rapid handling with no danger of disturbing stock



Pressure Applied, Retainers Tightened
Load is removed from trestles and applied to heavy smooth platen



Stock in Retainers Being Lowered onto Ordinary Factory Truck

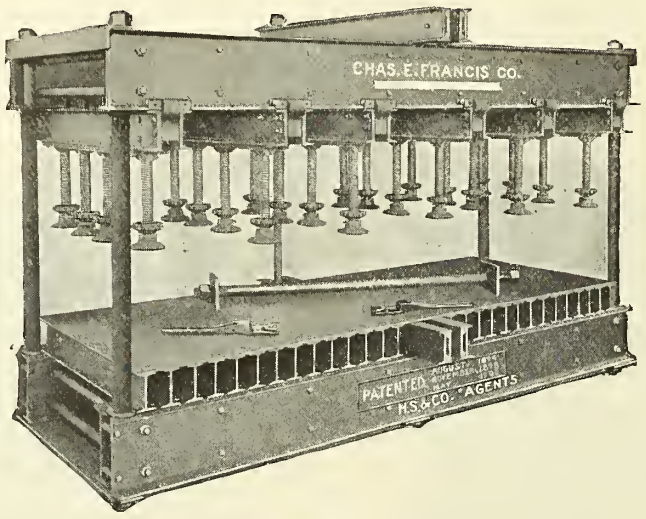


Press Ready for Next Load

For general description, see pages 427 and 428

Large Complete Steel Veneer Presses

Francis



Style C

Accessible From Both Sides and Ends

Both Center Rods Removable

Designed for all the large and heavy work in furniture manufacture and allied trades. Particularly suitable for veneering plain one panel sanitary flush doors. All of the distinctive features of the iron presses illustrated on next page are embodied in these presses. As shown, the upright rods do not extend through the base plate and therefore do not prevent the use of its full surface. The dimensions of the base plate are given in the clear, so that stock of those sizes may be clamped without trouble. These presses are necessarily strong and substantial in construction and have 2x24-inch screws adjustable both ways, with heavy, square-cut threads and malleable iron nuts. The pressure is easily applied with the 20-inch ratchet wrenches furnished with each press. One wrench is supplied with each press Nos. 150 to 155; two with Nos. 156 to 166; three with Nos. 167 to 178.

The adjusting screws are operated from roller slides, attached to outside of frame, so as to permit pressure at extreme edges. Extra roller slides, adjusting screws and wrenches may be secured at any time. All presses are regularly made to take 26 inches under screws, but height may be changed if desired.

Special designs of Glue Presses will be furnished, either in accordance with drawings, or to meet special conditions.

Can be made any size desired. Regular sizes are as follows:

Style D

Number	Dimensions of Base Plates	Regular Number of Cross Sections	Regular Number of Screws in each Cross Section
150	20 inches x 6 feet	4	2
151	20 inches x 7 feet	5	2
152	25 inches x 6 feet	4	2
153	25 inches x 7 feet	5	2
154	30 inches x 5 feet	4	2
155	30 inches x 6 feet	4	2

This style the same as C (illustrated) except smaller and has no center upright rods

Style C

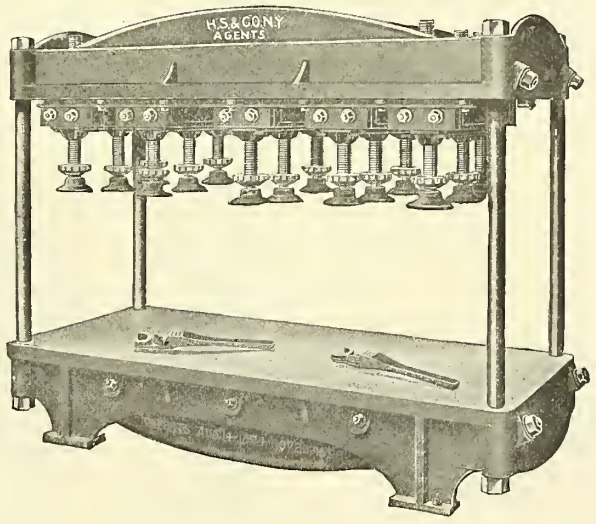
156	30 inches x 8 feet	5	2
157	30 inches x 10 feet	6	2
158	30 inches x 12 feet	7	2
159	36 inches x 8 feet	5	3
160	36 inches x 10 feet	6	3
161	36 inches x 12 feet	7	3
162	36 inches x 16 feet	9	3

Style C

Number	Dimensions of Base Plates	Regular Number of Cross Sections	Regular Number of Screws in each Cross Section
163	42 inches x 8 feet	5	4
164	42 inches x 10 feet	6	4
165	42 inches x 12 feet	7	4
166	42 inches x 16 feet	9	4
167	48 inches x 8 feet	5	4
168	48 inches x 10 feet	6	4
169	48 inches x 12 feet	7	4
170	48 inches x 16 feet	9	4
171	54 inches x 8 feet	5	4
172	54 inches x 10 feet	6	4
173	54 inches x 12 feet	7	4
174	54 inches x 16 feet	9	4
175	60 inches x 8 feet	5	5
176	60 inches x 10 feet	6	5
177	60 inches x 12 feet	7	5
178	60 inches x 16 feet	9	5

Large Complete Iron Veneer Presses

Francis



No. 38

These Presses have extra heavy cast-iron tops and bases, strongly ribbed and braced and are further strengthened by large steel truss-rods drawn tightly over the arches. The top of the base and bottom of the top are planed true.

The cross-sections are strengthened by steel draw rods. The number of cross-sections and of screws attached to each may be varied to suit conditions and each may be purchased at any time. All these Presses are regularly fitted with 2x24-inch steel screws, with square-cut thread.

The nuts are made of best malleable iron, are tapped out and have an extra long thread bearing. The cross-sections slide lengthwise of the press and the screws are adjustable on the cross-sections, giving perfect adjustment in both directions.

The sizes 35, 36 and 37 are the same style as No. 38, illustrated, and Nos. 23, 24, 25 and 26 are the same design except with upright center rods, which are necessary on account of the extreme lengths of these Presses. These rods, however, are removable on one side which gives ample convenience in loading and unloading the stock.

The smaller sizes Nos. 35 to 38, inclusive, are especially suitable for work in piano, furniture, chair and trunk factories and the large sizes are particularly adapted for door factories and for general planing mill work.

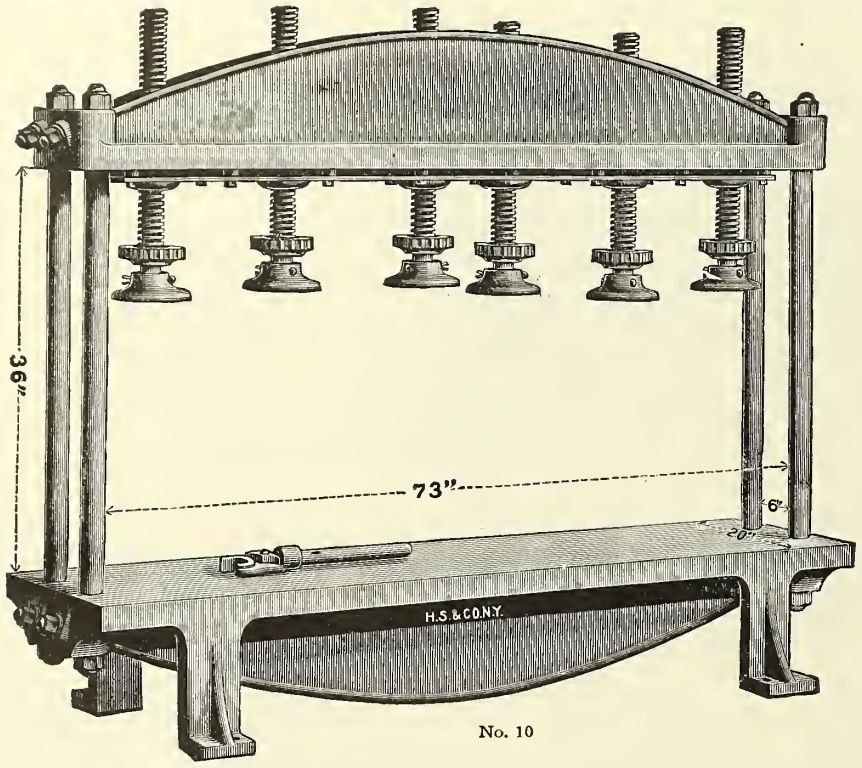
While the standard distance between bottom of screw flanges and top of base plates is 26 inches, this distance may be altered to suit special conditions.

Numbers	35	36	37	38	23	24	25	26
Length of Base	3 ft. 6 in.	4 ft. 9 in.	6 ft.	6 ft. 8 in.	8 ft. 6 in.	10 ft.	12 ft.	8 ft. 6 in.
Extreme Width of Base	30 in.	30 in.	30 in.	36 in.	30 in.	30 in.	30 in.	36 in.
Length between Uprights	3 ft. 1 in.	4 ft. 4 in.	5 ft. 7 in.	6 ft. 1 in.	8 ft.	9 ft. 6 in.	11 ft. 5 in.	8 ft.
Width between Uprights	25½ in.	25½ in.	25½ in.	29 in.	25 in.	25 in.	25 in.	30 in.
Height between Top and Base	37 in.	37 in.	37 in.	37 in.	37 in.	37 in.	37 in.	37 in.
Extreme Height between Screws and Base	26 in.	26 in.	26 in.	26 in.	26 in.	26 in.	26 in.	26 in.
Number of Cross-Sections	2	3	4	5	5	6	7	6
Number of Screws	4	6	8	15	10	12	14	18
Approximate Weights	1900 lbs.	2500 lbs.	3300 lbs.	5800 lbs.	4000 lbs.	4600 lbs.	6500 lbs.	6000 lbs.

Complete Iron Veneer Presses

Francis

These presses differ from the iron presses shown in the preceding pages in the arrangement of the feet which, in this style, extend below the arches, making it unnecessary to place the presses on beams.



No. 10

No. 10

Has six adjustable screws, fitted with ratchet wrench attachment. A wrench is furnished with each press.

Length between upright rods, 73 inches.

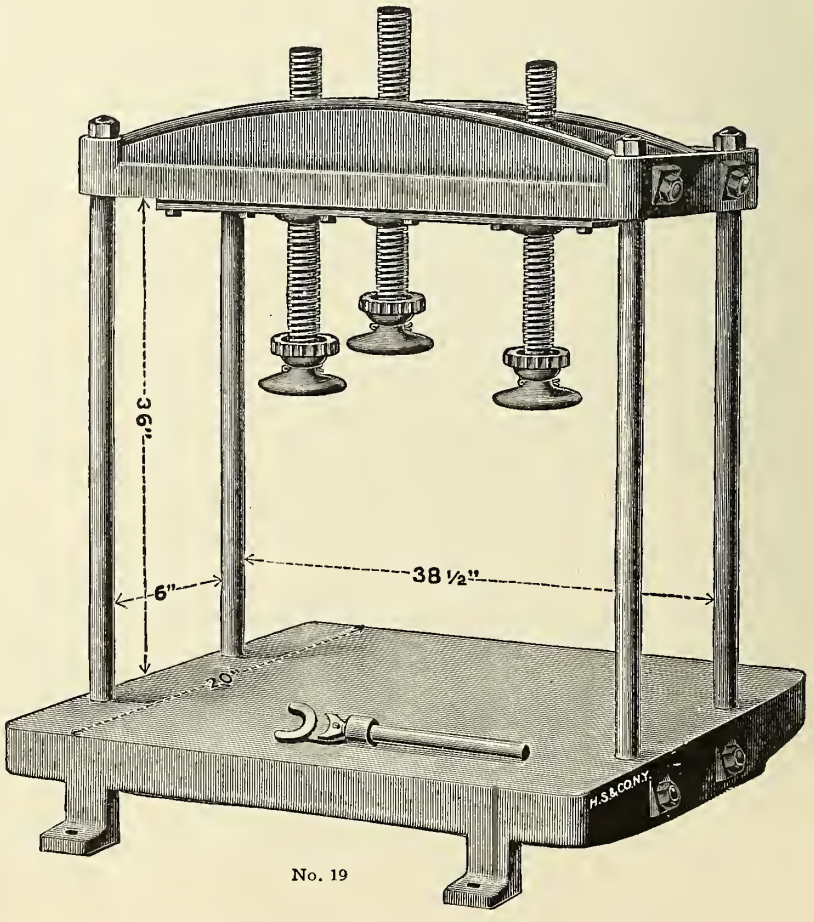
Width of base overall, 20 inches.

Width of base between upright rods, 6 inches.

Greatest distance between base and bottom of screw flanges, 28 inches.

Weight complete, 1,850 pounds.

Extra screws can be supplied if desired.



No. 19

No. 19

Has three adjustable screws fitted with ratchet wrench attachment. A wrench is furnished with each press.

Length between upright rods, 38½ inches.

Width of base over all, 20 inches.

Width of base between upright rods, 6 inches.

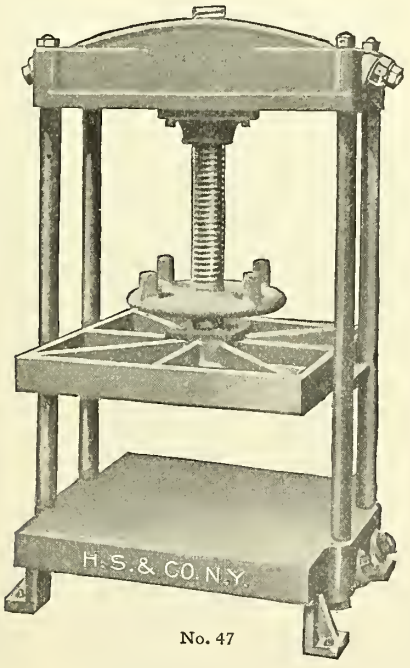
Greatest distance between base and bottom of screw flanges, 28 inches.

Weight complete, 800 pounds.

Extra screws can be supplied if desired.

Extra Heavy Complete Iron Veneer Presses

Francis



No. 47

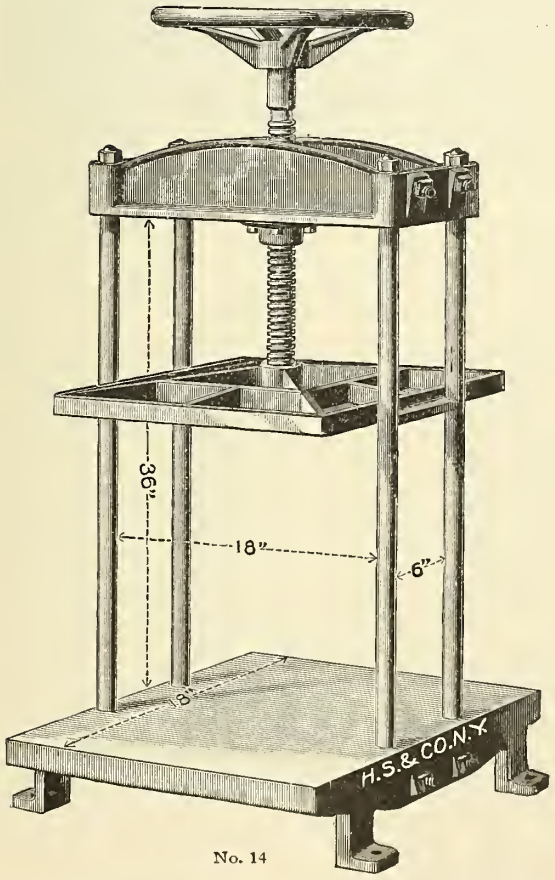
These presses are extra heavy and substantial in construction, being designed for the heavy pressure required for such work as bending chair backs and pressing veneered saddle seats and any other work requiring extra heavy pressure.

Both the base and top platens are extremely rigid and heavy and are ribbed and braced and reinforced with steel rods over the arches. The two brace surfaces are planed perfectly true, thus insuring straight and even pressure in clamping the stock.

No. 47, as illustrated, is equipped with a single screw and has an adjustable pressure plate 24x24 inches. The screw is 3 inches in diameter with ½-inch pitch and the weight of the complete machine is about 1,100 pounds.

No. 50 is of the same general construction except it is equipped with two plates 32x44 inches, with two screws to each plate, giving greatly increased clamping power for still heavier work. Length of base between end upright rods 66 inches; width of base 48 inches. This machine weighs about 6,500 pounds.

No. 51, practically the same in every way as No. 50 except equipped with four pressure plates, each 32½ inches long by 23 inches wide, one screw in the centre of each plate, thus making it more adjustable than the No. 50. Length of base between end upright rods 66 inches; width of base 48 inches. Weight 6,750 pounds.



No. 14

Small Complete Veneer Presses

One 18-inch Hand Wheel furnished with each Press.

Screws in these presses are 2 inches diameter by 24 inches long.

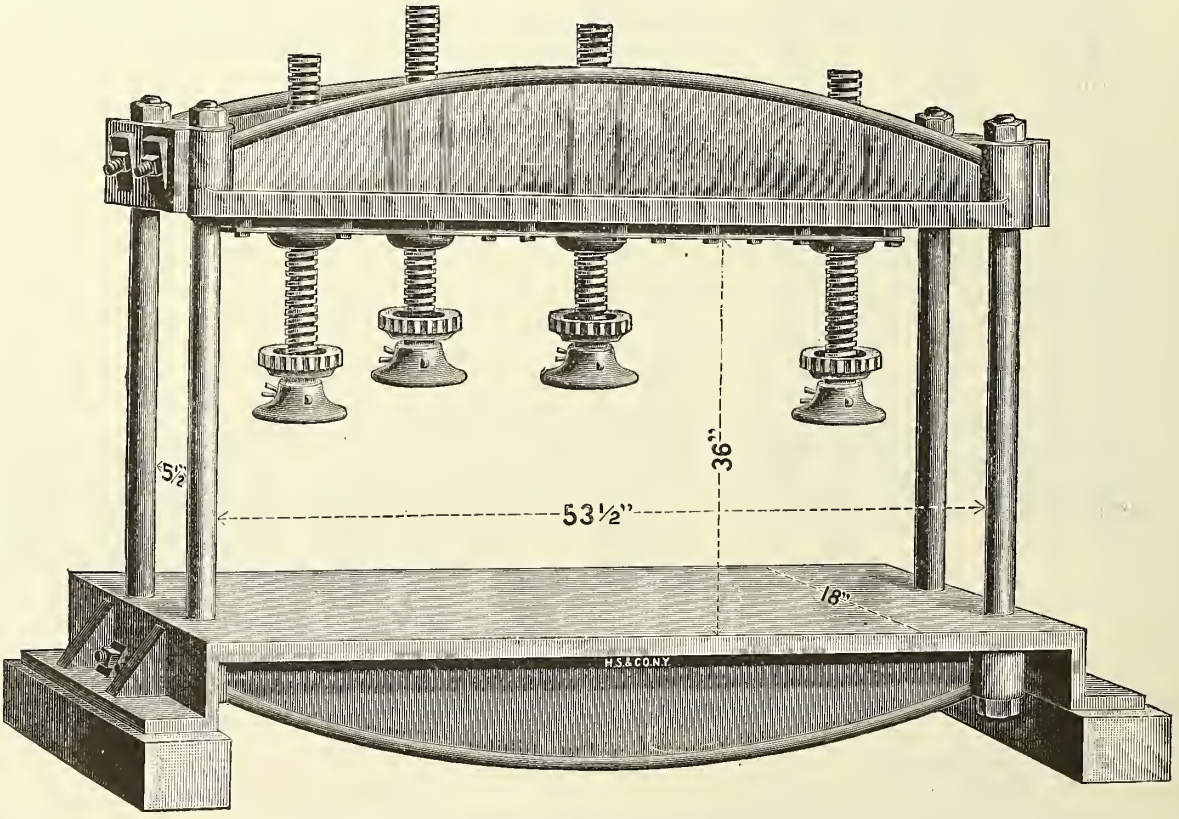
Construction is the same as the Sectional Presses, except that they have feet to rest on the floor.

Number	Width Between Upright Rods Inches	Length of Base Inches	Size of Plate Inches	Weight Complete Pounds
12	12	12	12x12	275
13	12	18	12x15	300
14	18	18	18x18	425
15	18	24	18x18	460
16	24	24	24x24	600
17	24	30	24x24	650
18	28	28	28x28	725

Greatest distance between base and plate 30 inches. Height can be changed to suit purchaser.

Extra Heavy Sectional Veneer Presses

Francis



No. 8-A With Ratchet Screws

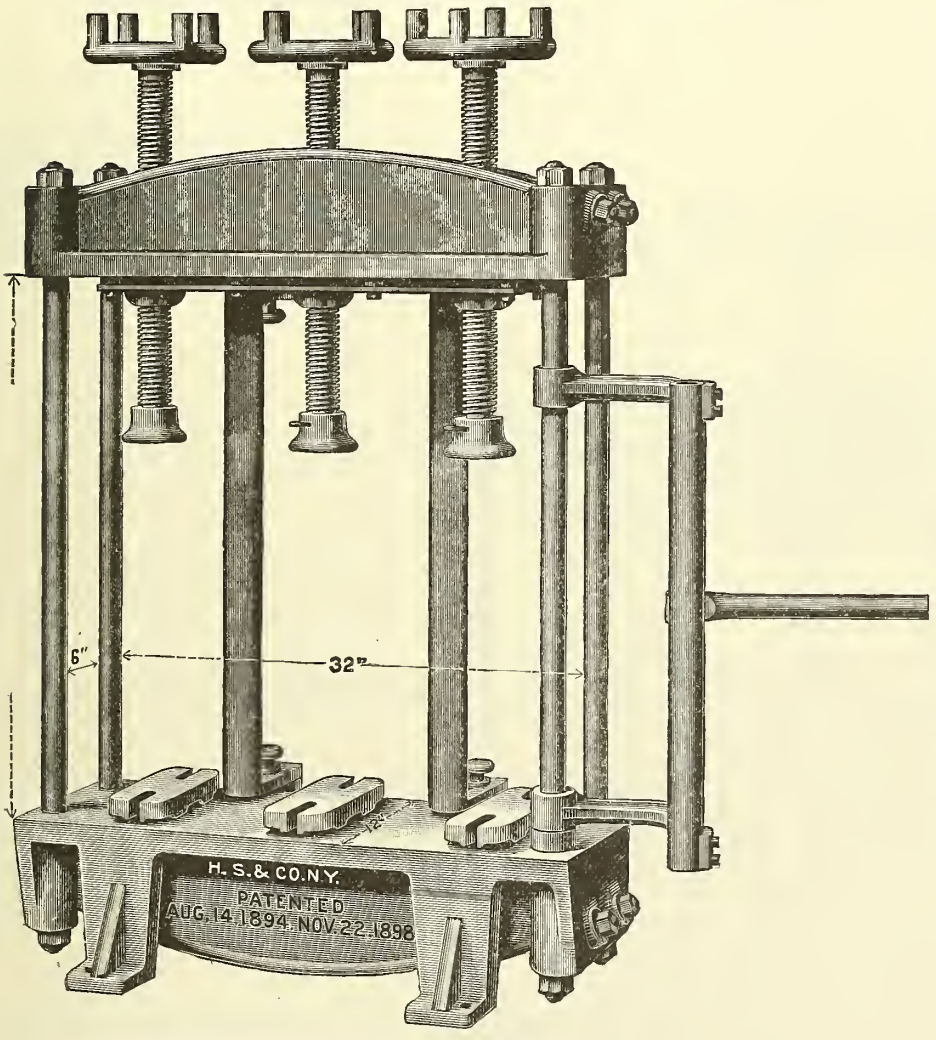
Number	Width Between Uprights Inches	Width of Bases Inches	Number of Adjustable Screws	Approximate Weight Pounds
1	12	12	1 Square Head	200
2	18	12	2 Square Heads	320
3	24	12	2 Square Heads	375
4	28	12	2 Square heads	450
5	32	12	2 Square Heads	510
6	38	12¼	3 Square Heads	650
7	44	13	3 Square Heads	750
8	53	14	4 Square Heads	1100
9	60	15	4 Square Heads	1250
8-A	53	18	4 Ratchet	1200
9-A	60	18	4 Ratchet	1350

A Lever Wrench (double or straight style) or a 9-inch Hand Wheel is regularly furnished with each Press Nos. 1—9, and a Patent Ratchet Wrench with each Press Nos. 8-A and 9-A. Any of the other Presses can be fitted with Ratchet Screws at a slight additional cost. The number of screws in these Presses can be increased or changed to suit the purchaser.

Can furnish these Presses with frame of structural steel if desired.

Table Leg Press and Retaining Clamps

Francis



Press empty, with clamp bases in position, ready for stock

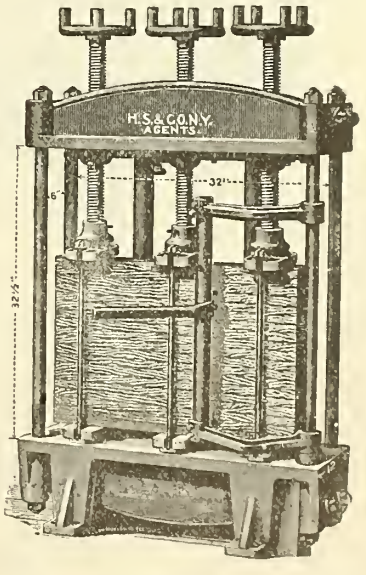
This press is designed especially for table leg stock or other small work requiring heavy pressure. It has two adjustable back guides to center the stock under screws and front swinging guide to help hold stock in position when applying pressure; the use of retaining clamps makes the capacity of press practically unlimited and saves considerable floor space.

The heavy screws of the press are used to apply pressure and the clamps, which are put in place before pressure is applied, are then tightened after which the heavy screws are released and the stock, securely held in the clamps, is removed from the press and left clamped until dry.

The top and base of the press are cast-iron, planed true, uniformly and substantially made and heavily ribbed, arched and braced. The three adjustable screws with which the press is fitted are 2 inches in diameter and 24 inches long, made of steel and have heavy square threads. The nuts are of toughest malleable iron and have long thread bearing; they slide freely in planed ways so that the screws can be adjusted lengthwise of the press and brought down on the clamp tops.

Extra screws can be added at any time if desired. The Press will take stock up to 12 inches wide by 32 inches long. The height is 31 inches under the screws, which allows about 27 inches in height between the base and top of malleable iron clamps. The height can be changed if desired by using longer uprights. Three sets (3 to a set) of malleable iron retaining clamps are regularly furnished with each press, viz.:

One set, No. 1, for stock 3 to 6 inches wide.
One set, No. 2, for stock 6 to 9 inches wide.
One set, No. 3, for stock 9 to 12 inches wide.
Extra Clamps can be furnished if desired.



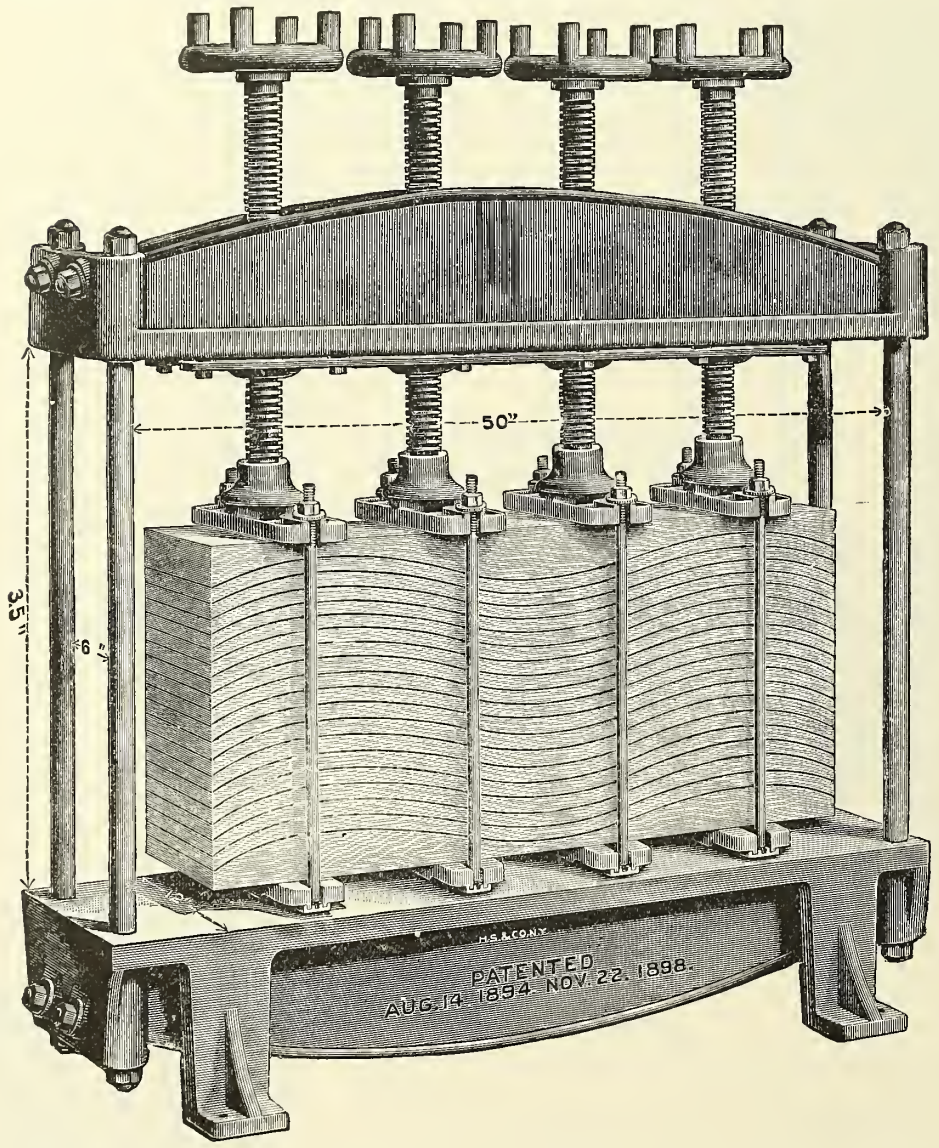
Press containing stock. Pressure has been applied and stock clamped ready for delivery

For illustration and description of these Clamps, as well as light pattern I-Beam Retaining Clamps, see page 438

Drawer Front Presses and Retaining Clamps

Francis

These presses are designed for use in furniture, table and other factories where built-up stock is used in quantities. Illustration shows 50-inch Press. Also made in 60-inch size.



The heavy screws apply the necessary pressure to the stock. The clamps are then tightened after which the heavy screws are released and the stock, held securely in the Clamps, is removed from the press and placed in storage to dry, which operation may be repeated as often as required.

The top and base of the press, planed true, are heavy cast-iron, heavily ribbed, arched and braced. The 50-inch Press is fitted with 4 and the 60-inch size with 5 adjustable screws. The screws are of steel and have heavy Acme Standard square threads. The nuts are malleable iron and have long thread bearing. They slide freely in planed ways, so that the screws can be adjusted lengthwise and brought down on clamp tops. Extra screws can be added at any time.

In either size press the base is 12 inches wide. The height is 31 inches under the screws which allows about 27 inches between the base and tops of the clamps. Height may be changed if desired. The heavy screws are 2 inches diameter by 24 inches long

One Set, No. 1, for stock 3 to 6 inches wide
One set, No. 2, for stock 6 to 9 inches wide
One set, No. 3, for stock 9 to 12 inches wide
} supplied with each Press

Three sets, malleable iron clamps (four of each size) supplied with each 50-inch Press.

Three sets, malleable iron clamps (five of each size) supplied with each 60-inch Press.

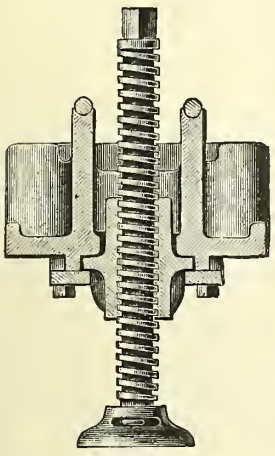
Extra parts supplied at any time.

Clamp Rods are ⅝-inch diameter, made of steel with malleable iron heads, which fit ribs at side, thus adding strength.

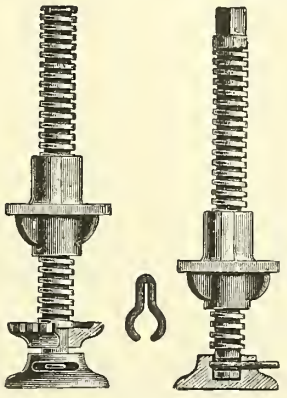
For illustration and description of these Clamps as well as Light Pattern I-Beam Retaining Clamps, see page 438

Press Screws

For Iron and Steel Veneer Presses



Sectional View Showing Top of Press with Nut and Screw



Ratchet and Square Head Screws Showing Method of Fastening Ratchet and Flange

The sectional view of the top of a Press shows a screw and nut in position and demonstrates the simple, practical method of adjustment in the large presses shown. The nuts slide in planed ways, riding on steel strips bolted to the tops.

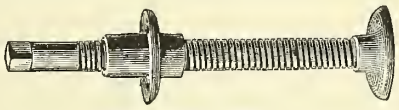
The heavy cast-iron flange swivels freely on the screw and is securely attached. By method illustrated above the steel screws are cut with an Acme Standard square thread and are strong and uniform. The pressure is exerted against the end of the screw, which fits into the cup of the flange, forming an oil reservoir which prevents wear.

Any Francis Press using 2-inch diameter screws can be fitted with ratchet screws at a slight additional cost, or the quantity or arrangement of screws can be altered to suit customer.

2 x 24 inches, with squared top, each	$4.00
Fitted with patent ratchet wrench attachment, additional, each	.50

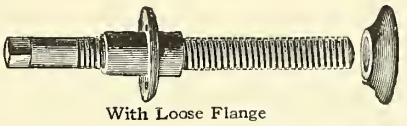
For Wooden Veneer Presses

We do not usually advise the building of wooden veneer presses, as the repair expense is large and there is constant danger of imperfect work, due to warping or other faulty alignment. For some purposes, however, wooden-frame presses are satisfactory and the following screws are suitable for such use.



With Fitted Flange

Size, inches	1x12	1¼x16	1½x16	2x16	2x24
Complete	$1.80	2.50	2.80	3.50	4.00
Nut only	.40	.45	.55	1.05	1.05
Flange	.20	.25	.30	.55	.55



With Loose Flange

Size, inches	1x12	1¼x16	1½x16	2x16	2x24
Complete	$1.25	1.50	1.80	3.30	3.75
Nut only	.40	.45	.55	1.05	1.05
Flange	.10	.12	.15	.50	.50

Two-inch screws can be fitted with patent ratchet wrench attachment (instead of squared at top) at $.50 each, extra.

H. S. & Co.



Wrought-iron screw, with cast-iron nut and flange. 20 inches long overall, 16-inch thread.

	Dozen
1¼-inch diameter	$40.00
Nuts only, 3x3x3½ inches; base ½-inch thick	7.50
Flanges only, diameter 3 inches	3.00

Wrenches

Hand Wheel



9 Inches Diameter

	Each
For 1-inch Screws	$ .50
For 1¼-inch Screws	.55
For 1½-inch Screws	.55
For 2-inch Screws	.85



For 2-Inch Screws

	Each
18-inch diameter	$2.25
24-inch diameter	3.00

Double Lever



Malleable Iron

For 2-inch Screws, each ..... $ .85

Ratchet



20 Inches Long

For 2-inch Screws fitted with Ratchet Wrench Attachment.

Each $2.50

Single Lever

Forged Steel



Straight



Bent

For 2-Inch Screws

	Each
Straight 24 inches long	$1.65
Bent 24 inches long	2.00

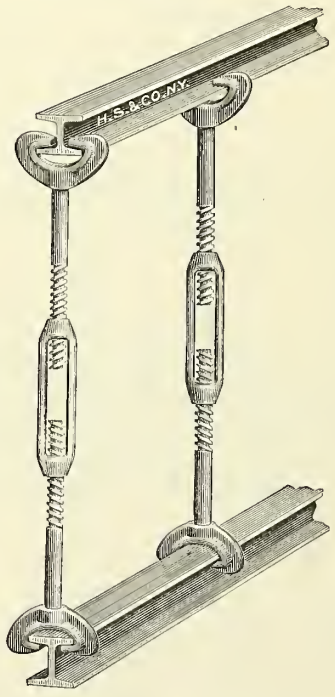
Malleable Iron

17 inches long, for 1¼ and 1½-inch screw, each 1.20

Retaining Clamps for Use in Veneer Presses

Francis

I-Beam



The use of Retaining Clamps and I-Beams in binding loads of pressed stock is a thoroughly practical and economical method, one press being sufficient for any quantity of work.

The Francis Retaining Clamps are rapid in action, and durable and substantial in construction. This system also eliminates entirely any danger of removing the stock from press before it is ready, as no delay in preparing other stock can possibly be caused providing there is sufficient storage room.

The heads of these clamps are securely fastened to the connecting rods, are strongly made of special malleable iron, shaped to clasp the flanges of the I-Beam so as to get its full strength. The connecting rods are made of refined iron, with heavy square threads four to the inch, so that each turn permits ½-inch adjustment. The turn buckles are drop-forged steel, shaped to require very little space for adjustment, in order that the rods may be placed close to the work. They are made in two patterns, regular and light.

The regular is for all widths of stock and is usually preferred. It uses a 4-inch heavy I-Beam and 1-inch rods. The light pattern is recommended for stock up to 12 or 14 inches in width. It uses a 3-inch I-Beam and ¾-inch rods. All rods are regularly made to take 24 to 30 inches of stock between beams. These lengths may be changed to suit the capacity of any press at slight additional cost.

All I-Beams for regular pattern clamps are made 4 inches longer and for light pattern 3 inches longer than the widest stock they will receive, so as to allow ample room for clamping. Rods, beams and turn-buckles of the same sizes are interchangeable throughout and any one of them may be purchased separately.

Regular Pattern

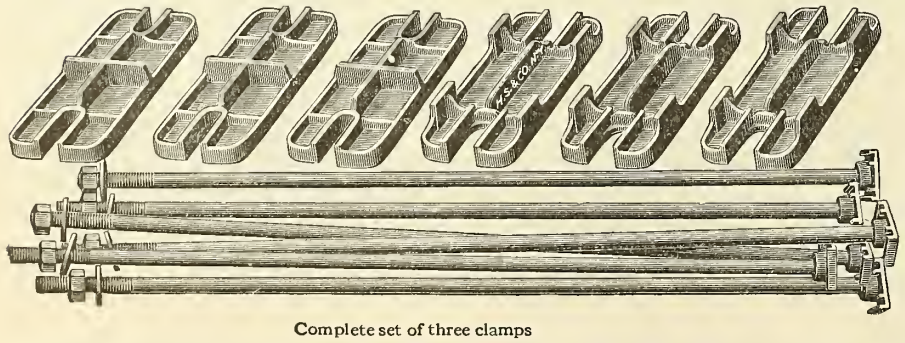
No. 1 take stock to 18 inches wide
No. 2 take stock to 24 inches wide
No. 3 take stock to 30 inches wide
No. 4 take stock to 36 inches wide
No. 5 take stock to 42 inches wide
No. 6 take stock to 48 inches wide

Light Pattern

No. 10 made for any width of stock up to 6 inches wide
No. 11 made for any width of stock up to 10 inches wide
No. 12 made for any width of stock up to 14 inches wide

Malleable Iron

Advised only for use with table leg and drawer front presses, but may be used with the regular Veneer Presses for light narrow stock, if desired.



Complete set of three clamps

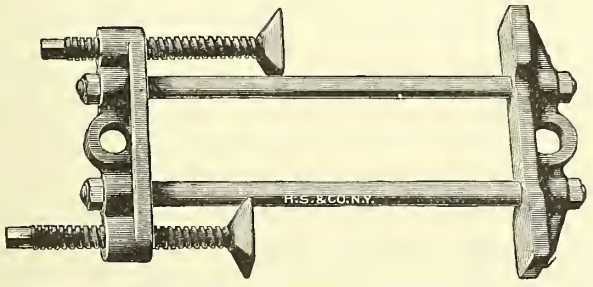
Number 1 for stock 3 to 6 inches wide
Number 2 for stock 6 to 9 inches wide
Number 3 for stock 9 to 12 inches wide

The top and base castings of these clamps are the best malleable iron, very strongly ribbed to secure strength with the least possible weight. Flat side of top and base castings, also feet of the bases are planed true. The rods are of steel ⅝-inch diameter and have malleable iron heads that fit the ribs at the sides of the adjusting slots in the base and top of the clamps.

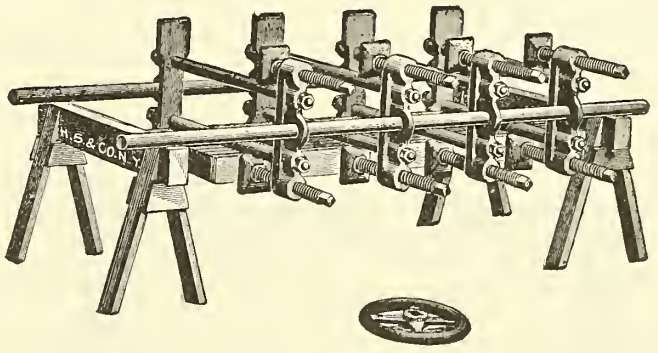
Clamps

Francis

Double, for Stiles, Rails and Strips



Separate Clamp Showing Construction



Set of Clamps Showing Method of Operation

By using longer connecting rods greater capacity can be obtained at a slight additional cost.

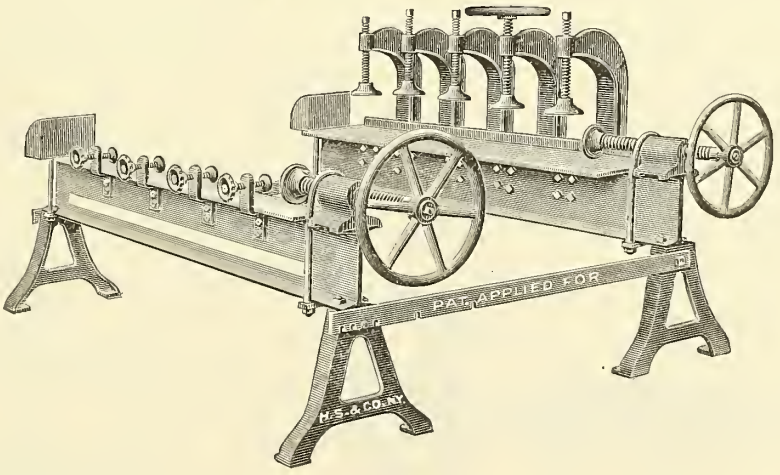
No. 1 1-inch diameter, Square Thread Screws; length15 inches; weight 24 pounds. Projections 3 inches square.

No. 2 1¼-inch diameter, Square Thread Screws; length 15 inches; weight 55 pounds. Projections 5 inches long, 4 inches wide.

Hand Wheel Wrench for No. 1 Double Clamp, 9 inches diameter. Hand Wheel Wrench for No. 2 Double Clamp, 14 inches diameter. In ordering state number of wrenches wanted as none are supplied with regular equipment.

A larger size of somewhat similar Clamps are made with 6x4-inch projections. This style is especially suitable for veneered moulding work. Full particulars on request.

Piano Back

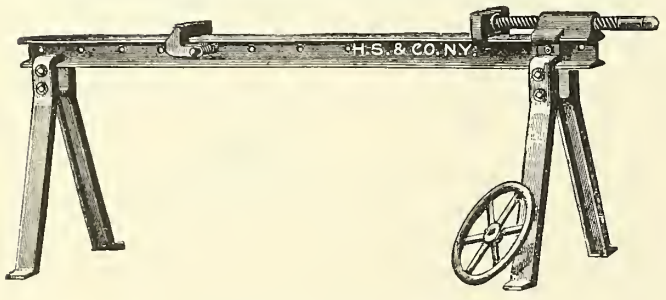


This design will clamp at different angles, holding the stock firmly and producing perfectly glued frames; will take stock 5 feet 6 inches long. The connecting rods are 4 feet 6 inches long and are fitted with slots for adjustment to different sizes. The beam which carries the five perpendicular clamps also supports a 10½-inch plate, planed true, with angle protruding 1½ inches to form a back guide for the stock. The curved clamps are made of strongly ribbed malleable iron, will take up stock to 9 inches and are curved so that center of screws are 5¼ inches from guide. These steel screws have square-cut thread, are 1¼ inches in diameter and have 6-inch adjustment. The screws at ends of beams are 1½ inches in diameter, with 12-inch adjustment. The hand wheels for applying pressure on the screws are 14 inches in diameter. The beams are of steel and faced with steel plates planed true on top surfaces. The lugs on front beam have ⅝-inch screws fitted with flanges and hand wheels to hold stock to guide while being clamped.

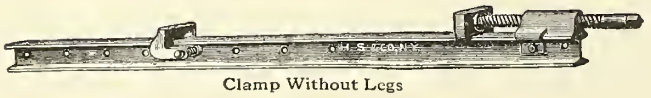
Clamps

Francis

Steel Beam Trestle



Trestle Clamp Complete



Clamp Without Legs

These Clamps were designed to meet the demand of woodworkers for a Trestle Clamp strong and stiff enough to apply the necessary pressure and still keep the trestle straight and true.

The top is made of steel I-Beam, and as glue does not stick to steel as it does to wood, the surface of the beam remains clean and true.

The Nut, Flange, Stop and Legs are all made of best malleable iron. The Nut casting for screw is 6 inches long. The screw is steel, 18 inches long, 1¼-inch diameter, and has square threads. The flange on end of screw hooks under the top flange of beam, holding itself firmly in the desired position. The stop is ribbed to stand the strain, and its position is easily changed by pulling out the pin as shown and sliding to desired place, where it is fastened by the heavy steel pin being forced into hole by a spring.

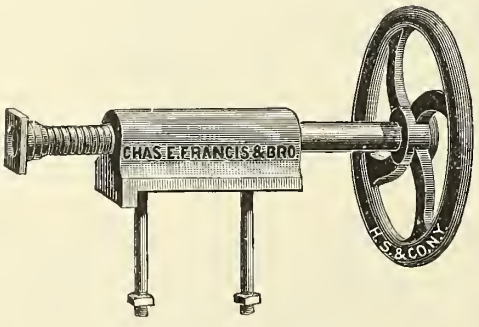
The Clamps are furnished either with or without legs. The legs can be slipped off by loosening the bolts that clamp them together which will be found very convenient where room is scarce.

Can be furnished in any length up to 18 feet. The following lengths are regular.

	Complete		Without Legs	
Length Feet	Weight Pounds	Each	Weight Pounds	Each
4	88	$10.00	63	$7.50
6	103	10.75	78	8.25
8	118	11.50	93	9.00
10	133	12.25	108	9.75
12	148	13.00	125	10.50

One Hand Wheel, 14 inches in diameter, is furnished with each Clamp. Extra Hand Wheels, each $1.00

Carpenters



For Wood Trestle. Wheel, 9 inches Diameter

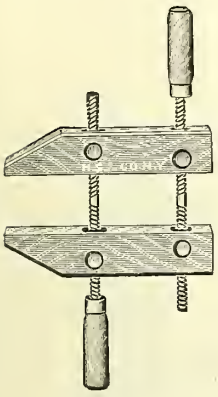


Iron Loop to Hold Stop

The screw is of steel, 1-inch in diameter, 15 inches long, and has square thread. The flange on end of screw is of malleable iron.

Carpenters Clamp, complete, with Loop $2.70

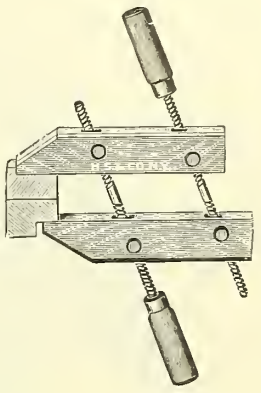
Iron Loop only ..... .35



As a Regular Hand Screw

Hand Screws

Jorgensen Adjustable, with Steel Spindles



Showing One Jaw Overlapping the Other

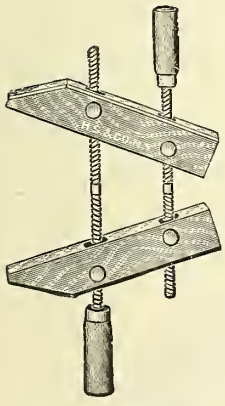
Their most important advantage lies in the fact that the jaws can be adjusted to any angle, a very desirable feature, as it does away with the necessity of squaring-up irregular surfaces. One jaw can also be made to overlap the other as shown in the illustration.

The spindles are of steel, and have a right and left thread, and open and close almost twice as fast as the old style clamps. The sockets in which the spindles work are also of steel; the jaws are of well-seasoned maple.

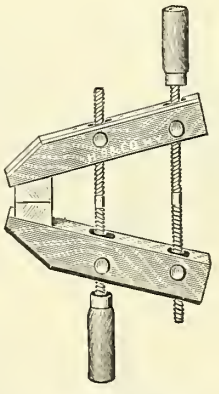
Glue will not adhere to the spindles causing the threads to strip, a trouble very common with ordinary wooden spindles.

The superior points of the Jorgensen Adjustable Hand Screws are embodied in the following: Adjustability of jaws to any angle and position—steel spindles, which are practically indestructible—rapidity—strength—durability.

A single clamp will adjust to any one of the positions shown in the illustrations or any modification of them.

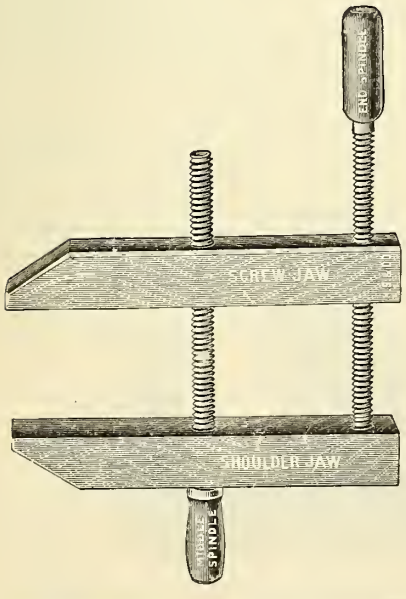


In Position for Beveled Work



In Position for Beveled Work

Number	Length of Jaws Inches	Opening Between Jaws Inches	Dozen	Each
0	8	4	$6.60	$ .66
1	10	6	7.80	.78
2	12	8	8.70	.87
3	14	10	9.60	.96
4	16	12	11.40	1.14
5	18	14	13.20	1.32



Aldrich, First Quality, Oiled

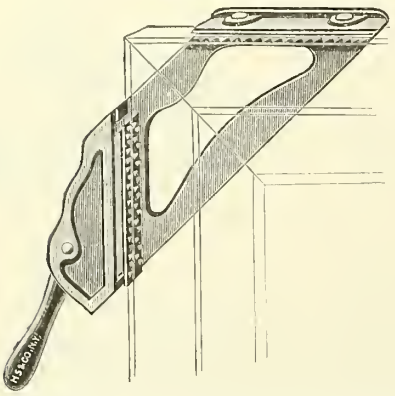
Jaws are made from best thoroughly seasoned maple, carefully selected and free from imperfections. Spindles are made of second growth hickory and are interchangeable.

All parts being carefully oiled, the glue is prevented from adhering to clamps.

Number	Length of Jaw Inches	Size of Jaw Inches	Length of Spindle Inches	Diameter of Spindle Inches	Opens Inches	Dozen	Extra Spindles Dozen	Extra Jaws Dozen
0	21	3	26	1¼	15	$36.00	$12.00	$12.00
2	20	3	24	1¼	13	34.00	11.33	11.33
5	18	2¾	22	1¼	12	31.00	10.33	10.33
10	16	2¼	18	1	9½	25.00	8.33	8.33
12	14	2	16	1	8	22.00	7.33	7.33
14	12	1¾	14	¾	7	16.00	5.33	5.33
16	10	1⅝	12	¾	5½	14.00	4.67	4.67
17	8	1⅜	10	½	4	11.00	3.67	3.67
17½	6	1⅛	8	½	3	10.00	3.33	3.33
18	4	¾	6	⅜	2¼	8.00		

Mitre Clamps

H. S. & Co.



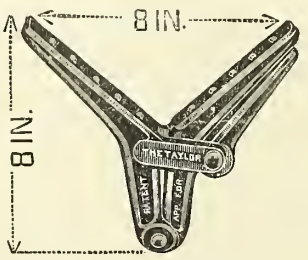
This Automatic Mitre Clamp requires no adjusting, takes any width or thickness of casing (whether sprung or flat) and sets in place and clamps a mitre in less time than it takes to make a full turn of a single screw.

It has no intricate parts to get out of order and is always in position.

Inexpensive, light, compact, effective and practically indestructible, Is being used by woodworkers and sash, door and blind manufacturers throughout the country.

Dozen $24.00

Taylor No. 36

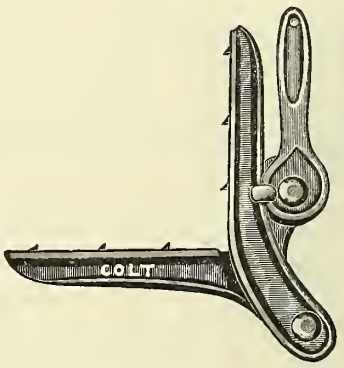


Light and strong. The jaws are planed true, and fitted to hold the work perfectly square when closed. The pins are only large enough to give a grip which prevents slipping. Eccentric is so designed that the initial part of the movement brings the jaw quickly into engagement, the latter part closing more slowly, giving great holding power.

Spring action holds the clamp open, always ready for use. Malleable iron castings, with Stubbs steel pins.

Each $1.75

Colt

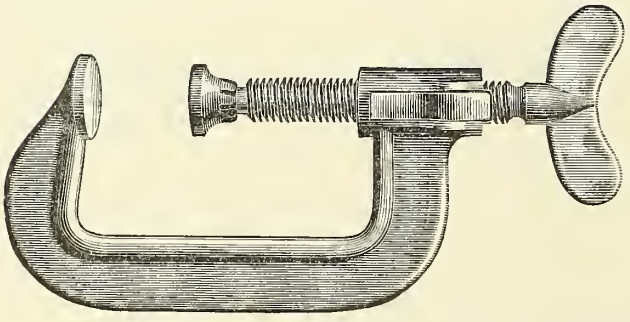


One motion of the cam sets the mitre and firmly clamps it in place, the pressure being made directly on the clamp jaw, giving it great power. Special attention has been given the design to make it light as well as strong. Positive in action, easy to apply, no springs to get out of order. Made of best refined malleable iron with tempered drill steel spurs.

Each $1.50

Iron and Steel Clamps

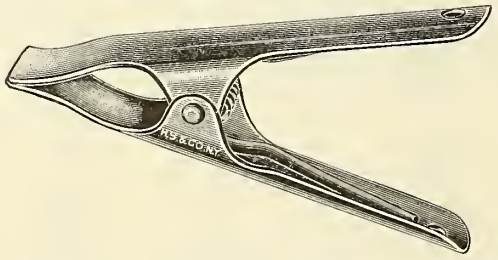
Quick Action. Malleable Iron



By means of a spring split-nut the spindle can be moved quickly backward or forward without turning it.

Opens, inches	3	4	5	6	7	8
Dozen	$6.00	6.80	7.60	10.80	12.50	14.50

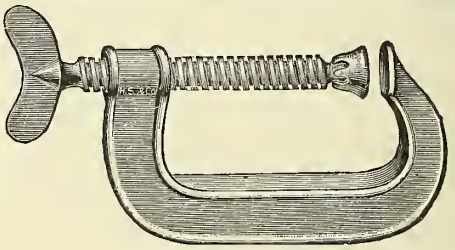
Spring Action. All Steel



Practically indestructible, suitable for a large variety of small work. May be attached and detached instantly. Made from stamped steel, with highest grade oil tempered springs, having strong tension.

		Dozen
A	Opening 1-inch	$1.50
B	Opening 1½ inches	2.50
C	Opening 2¾ inches	3.50
D	Opening 4 inches	6.00

Carriage Makers. Malleable Iron



With Ball and Socket Swivel

Numbers	11	12	13	14	15	16
Opens, inches	2	2½	3	4	5	6
Dozen	$2.00	2.60	3.00	4.20	5.00	6.50
Numbers	17	18	19	20	22	24
Opens, inches	7	8	9	10	12	14
Dozen	$7.80	9.00	10.00	11.00	13.50	18.50

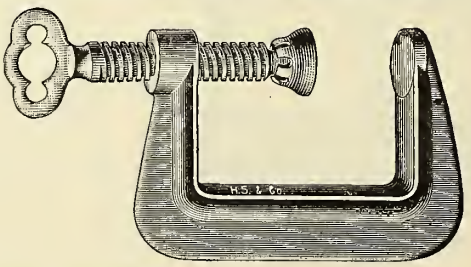
Special Deep, Extra Heavy

No. 8 5-inch opening, 7 inches deep between, frame and screw, dozen $30.00

No. 9 6-inch opening, 12 inches deep between frame and screw, dozen 36.00

No. 8½ 10-inch opening, 8½ inches deep between frame and screw, dozen 50.00

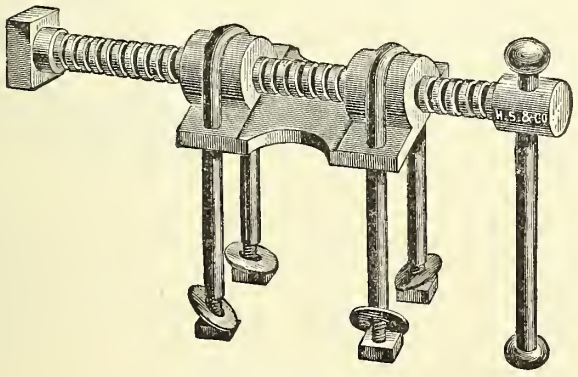
Quilt Frame. Cast Iron Japanned



No. 32 Opens 1⅞ inches dozen $1.00

Clamp Fixtures

Iron Heads
For Carpenters Clamps



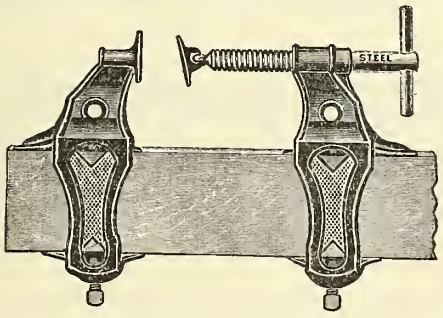
With Single Nut

Diameter of screw, 1-inch. Length of screw, 10 inches.
No. 11 Wrought screw, iron handle, dozen $24.50

With Double Nut (As illustrated)

Diameter of screw, inches.....	1	1⅛	1¼
Length of screw, inches.....	11	13	14
No. 12 Wrought screw, iron handle, dozen	$32.50	38.00	47.00

Dehnes Automatic

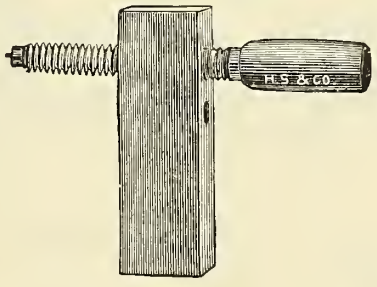


Malleable Iron with Steel Spindle

One of the castings is held firmly in place by means of a set screw, the other is kept loose enough to slide freely, so that the slightest pressure will automatically lock it.

No. 1 For beam ⅞x2¼ inches. Without beam, per set.... $1.35
No. 1½ For beam $1\frac{1}{16}$x$2\frac{13}{16}$ inches. Without beam, per set... 1.50

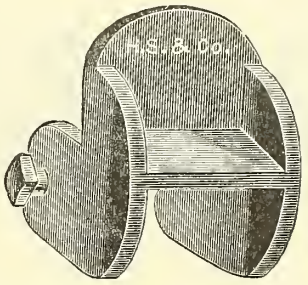
Wooden Heads with Spindles



Numbers.....	70	69	68
Diameter of Spindle, inches.....	⅞	1	1⅛
Dozen.....	$5.83	7.50	10.00

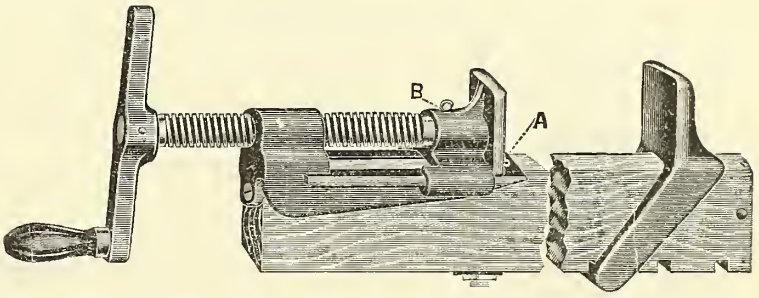
Spindles only or Heads only, half the price of complete clamp heads.

Iron Stops
For Carpenters Clamps



For 2½-inch beam. Dozen $10.80

Sheldon Malleable Iron

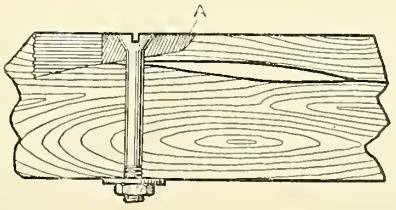


No. 1

Indestructible and best adapted to excessive pressure and heavy work.

The above cut shows fixtures designed to attach to wood bars 1¼ inches thick by 2½ inches wide, any length. The screws are ⅝-inch in diameter, 7 inches long, with deep, square threads cut from cold rolled steel. The sliding head is supported by malleable guides, thus relieving the screw of any bending strain when clamping irregular or thin material. They also keep the head from turning when pressure is being applied. The heads are easily hung, and will not get loose or out of line with the frame, or split the wood to which they are attached.

Note improved and indestructible method of atttaching screw to sliding head at B. A steel collar is supplied which entirely envelopes groove in screw, and steel thrust plate at end of screw.



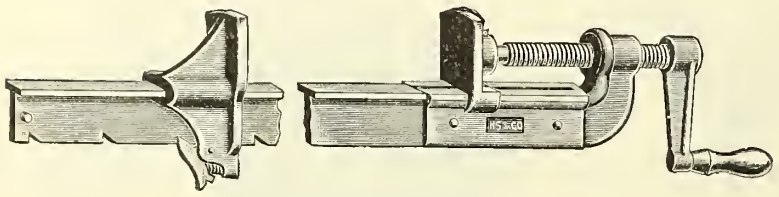
The accompanying sketch illustrates the method of mortising the head frame into the bar at "A," more than doubling the strength over those with the square mortises. The ends of the wood fibres underneath the iron frame being held down by the pressure of the bolt. We advise the use of $2\frac{3}{4}$x$\frac{5}{16}$-inch flat head stove bolts for attaching these heads.

Guaranteed by maker against weakness or wear for one year.

Dozen sets, fixtures only..... $10.00

Clamps

Stearns Steel Bar



The bar is rolled from a special quality of stiff steel; the "T" shape has much more strength for a given weight than is possessed by flat stock.

The notches are cut on the lower edge of the bar, affording greater holding power to the sliding jaw than if they were on the upper edge.

The steel screw is provided with a deep and powerful thread; the cranks, sliding jaws and pawls are malleable, and the handle of wood ebonized. The sizes given below represent a maximum width of work which each size will take. Regular size, $\frac{3}{16}$x1½-inch bar, ⅝-inch screw.

Open, feet	1	1½	2	3	4	5
Each	$1.35	1.43	1.50	2.00	2.25	2.50

Extra heavy, for large or heavy work, ¼x1¾-inch bar, ¾-inch screw.

Open, feet	3	4	5	6	7	8
Each	$2.75	3.25	3.75	4.25	4.75	5.50

Sheldon Tempered Spring-Steel Bar

Note the Following Features:

A. Steel collar that entirely envelopes groove in end of screw, eliminating all possibility of the head becoming detached from the screw.

B. Ample sleeve enveloping bar, eliminating all bending strains on the screw and holding head rigidly in position.

C. An indestructible latch cast into head engaging in a tempered steel notch in bar. Can be used continuously in any single position without cutting loose or slipping.

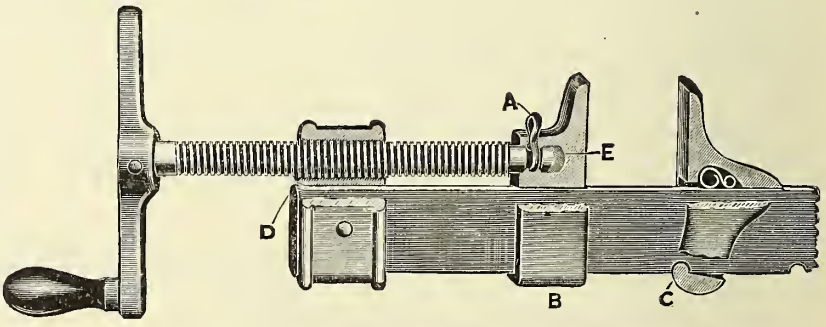
D. The screw head driven and headed on to bar before pinning insures absolutely permanent alignment under any pressure.

E. Hardened Steel Plate, eliminating wear at end of screw.

This combination will be recognized as the most consistent possible support for a screw subject to heavy pressure.

All useless complications at this point are eliminated and these clamps are unconditionally guaranteed.

Length, feet	2½	3	4	5	6	7
Dozen	$20.00	22.50	25.00	28.00	31.00	34.00

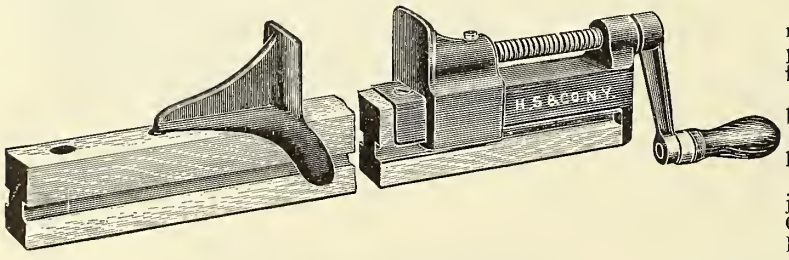


Spindles are ⅝-inch diameter, 7 inches long; square thread cut from cold rolled steel; sliding head, 1¾x2 inches. Saddle held in bar notches by indestructible spring. Bars, $\frac{5}{16}$x1⅜-inch tempered steel.

The extra stiffness of the spring steel permits the use of a screw with 8 threads to the inch, giving 25 per cent. greater pressure than the usual 6 threads per inch commonly used.

The double-end malleable cranks are quick acting and indestructible and permit the use of two hands for excessive pressure.

Stearns Wood Bar



This Clamp is suitable for framing, cabinet and piano work, manufacturing furniture, sash, door, blinds, etc., and for all purposes in which wood work is required to be firmly held in a powerful clamp.

The bottom of the wood bar is perfectly smooth, the clamps may be set flat on the bench and the work put in them from the upper side.

The bar is made of thoroughly seasoned and carefully selected hard wood, oil finished, 1¾x2⅜ inches iron, carefully japanned.

The jaws, crank and end-plate or head are malleable iron, japanned.

Open, feet	4	6
Dozen	$18.00	22.00

Wooden

Cabinet Makers

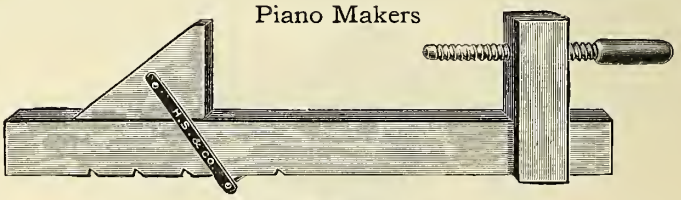


Maple, with hickory screw; 1¾x1⅞-inch beam

Numbers	71	72	73	74	75
Opens, feet	2	3	4	5	6
Dozen	$23.33	25.00	28.33	33.33	40.00

Extra stops for above, dozen $5.83

Piano Makers



Maple, with hickory screw

Numbers	56	57	58	59	60
Opens, feet	2⅓	3⅓	4⅓	5⅓	6¼
Whole length, feet	3	4	5	6	7
Beam, inches	⅞x3	⅞x3	⅞x3	⅞x3	1⅛x3½
Dozen	$25.00	31.67	36.67	41.67	46.67

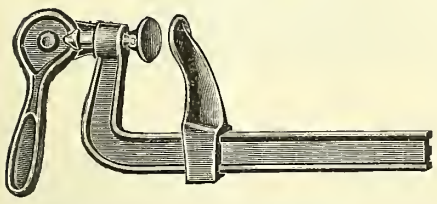
Extra stops for above, 3, 4, 5 and 6 feet, dozen ..... $ 8.33
Extra stops for above, 7 feet, dozen 10.00

For Spindles and Heads, see page 443

Quick Acting Clamps

Colt Improved Malleable Iron

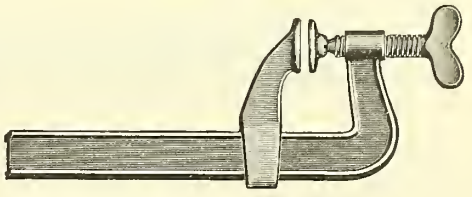
Eccentric Clamp



Made from best mallable iron, double flanged on each side, giving the requisite strength without excessive weight. The opening of movable jaw is ribbed, pressing on front and back of bar to reinforce the gripping power of the lugs between flanges, and supporting the jaw at right angles to bar. The jaw slides easily on the bar, and work is set rapidly and firmly.

The No. 1012 clamp is used extensively by concrete and cement workers.

Screw Clamp



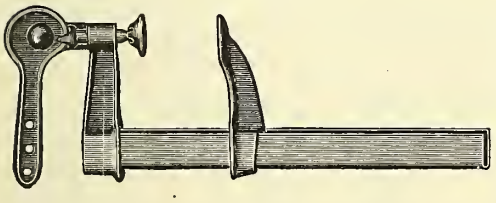
Eccentric

Numbers	1002	1004	1006	1008	1012
Opens, inches	2¼	4	6	8	12
Reach, inches	1	1¾	2⅜	3	3
Dozen	$3.60	4.80	6.60	8.40	10.20

Screw

Numbers	1104	1106	1108
Opens, inches	4	6	8
Reach, inches	1¾	2⅜	3
Dozen	$4.80	6.60	8.40

Eccentric

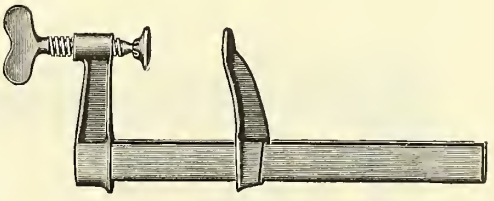


U-Bar

The U-Bar is made of the best open hearth steel plate pressed into shape when cold, which process stiffens the bar. Has a fixed head and a movable jaw with strong fixed tongue bearing on the bottom of the U-Bar, making a broad strong grip.

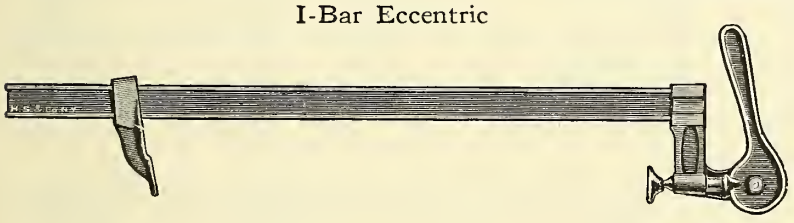
Nos. (Eccentric)	4006	4008	4010	4012
Nos. (Screw)	4106	4108	4110	4112
Opens, inches	6	8	10	12
Reach, inches	2⅛	2¾	2¾	2¾
Dozen	$7.20	9.00	10.00	10.80

Screw



Colt Cabinet

I-Bar Eccentric



Made with sliding foot and fixed head. The clamp is instant in action and perfect in work. The sliding foot with its improved locking device will grip the bar at any point without the necessity of notches which weaken the bar or springs to get out of order.

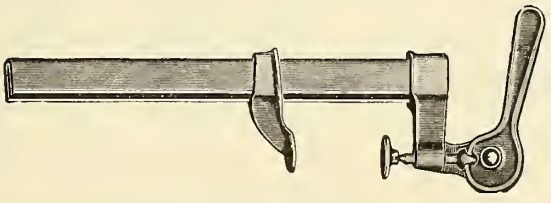
I-Bar Screw



1¼-Inch I-Bar. 2-Inch Reach

Number Eccentric	Number Screw	Opens Inches	Dozen
1210	1310	10	$10.00
1212	1312	12	10.80
1218	1318	18	12.60
1224	1324	24	14.40
1230	1330	30	16.20
1236	1336	36	18.00
1248	1348	48	21.60
1260	1360	60	25.20
1272	1372	72	28.80
1284	1384	84	32.40
1296	1396	96	36.00

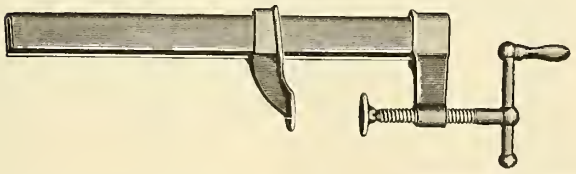
U-Bar Eccentric



1¼-Inch I-Bar. 4-Inch Reach

Number Eccentric	Number Screw	Opens Inches	Dozen
1410	1510	10	$10.60
1412	1512	12	11.40
1418	1518	18	13.20
1424	1524	24	15.00

U-Bar Screw



1¼-Inch U-Bar. 2-Inch Reach

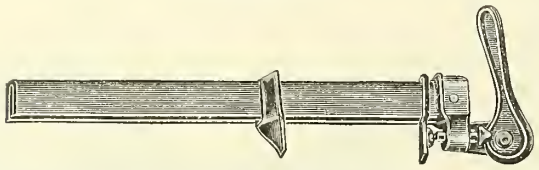
Number Eccentric	Number Screw	Opens Inches	Dozen
4210	4310	10	$10.00
4212	4312	12	10.80
4218	4318	18	12.60
4224	4324	24	14.40
4230	4330	30	16.20
4236	4336	36	18.00
4248	4348	48	21.60
4260	4360	60	25.20
4272	4372	72	28.80
4284	4384	84	32.40
4296	4396	96	36.00

Unless otherwise specified Eccentric will be furnished

Quick Acting Clamps

Colt Short Reach

Eccentric



Screw



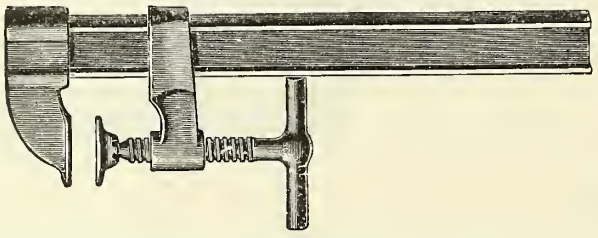
Made with 1¼-inch U-Bar. This clamp is designed for wide thin work from ¾ to 2 inches thick and has only ¾-inch reach. Placing the face of the clamp against the work prevents springing or buckling under pressure. Especially adapted to table, chair and all wide work of 2 inches thickness or less. The eccentric style we regularly furnish with cam with ⅜-inch draw for tight joints. We will furnish cam with ⅝-inch draw for tongue and groove joints if specified.

For the screw style we regularly furnish the bar screw unless the crank screw is specified.

Number Eccentric	Number Screw	Opens Inches	Dozen
4410	4510	10	$10.00
4412	4512	12	10.80
4418	4518	18	12.60
4424	4524	24	14.40
4430	4530	30	16.20
4436	4536	36	18.00
4448	4548	48	21.60
4460	4560	60	25.20
4472	4572	72	28.80
4484	4584	84	32.40
4496	4596	96	36.00

Colt Finishing

Screw



This clamp has a fixed jaw or foot and a movable head which on some kinds of work has advantages over a fixed head. Having a smooth end there is nothing to prevent the use of the auger or brace bit.

1¼-inch I-Bar, 2-inch Reach

Number Eccentric	Number Screw	Opens Inches	Dozen
1610	1710	10	$10.00
1612	1712	12	10.80
1618	1718	18	12.60
1624	1724	24	14.40
1630	1730	30	16.20
1636	1736	36	18.00
1648	1748	48	21.60
1660	1760	60	25.20
1672	1772	72	28.80
1684	1784	84	32.40
1696	1796	96	36.00

1⅞-inch I-Bar, 4-inch Reach

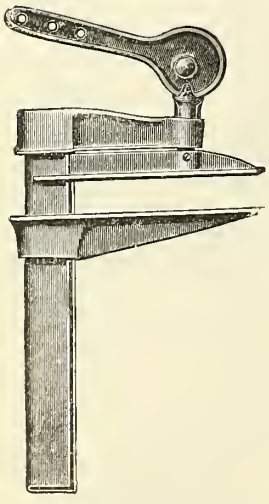
Screw Style Only

Number	Opens Inches	Dozen
1912	12	$17.30
1918	18	20.06
1924	24	22.82
1930	30	25.58
1936	36	28.34
1948	48	33.86
1960	60	39.38
1972	72	44.90
1984	84	50.42
1996	96	55.94

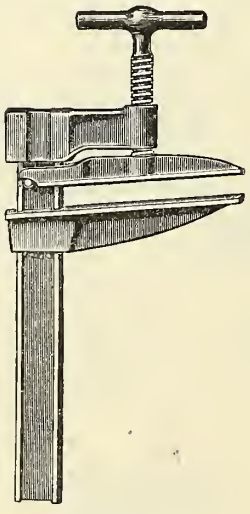
Unless otherwise specified Screw Style will be supplied

Colt Universal

Eccentric



Screw



This clamp has the broad jaw clamping surface of the wood hand screw and all the convenience of handling and quick acting advantages of Colt clamps. The clamping plate attached to the end of the plunger or screw finds its own bevel and parallel automatically, and may be used for a large variety of purposes including all forms of woodworking, cement-concrete, block and curb and foundry core making, as they do not injure moulds, veneering and all work requiring a long broad pressure.

Pattern Makers. 1-inch U-Bar. Jaws 3⅝ x 1⅜ inches

Number Eccentric	Number Screw	Opens Inches	Dozen
4604	4704	4	$6.00
4606	4706	6	7.80

Pattern Makers. 1⅛-inch U-Bar. Jaws 4½ x 1½ inches

Number Eccentric	Number Screw	Opens Inches	Dozen
4806	4906	6	$8.30
4808	4908	8	10.10
4810	4910	10	11.10
4812	4912	12	11.90

Universal. 1¼-inch Bar. Jaws 4½ x 1½ inches

I-Bar		U-Bar			
Number Eccentric	Number Screw	Number Eccentric	Number Screw	Opens Inches	Dozen
2012	2112	5012	5112	12	$11.90
2018	2118	5018	5118	18	13.70
2024	2124	5024	5124	24	15.50
2030	2130	5030	5130	30	17.30
2036	2136	5036	5136	36	19.10
2048	2148	5048	5148	48	22.70
2060	2160	5060	5160	60	26.30
2072	2172	5072	5172	72	29.90

Universal. 1⅞-inch Bar. Jaws 6½ x 2 inches

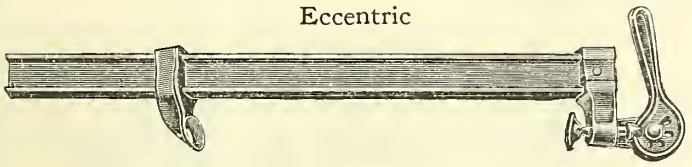
Eccentric made in U-Bar only; Screw in I-Bar only

Number Eccentric	Number Screw	Opens Inches	Dozen
5212	2312	12	$18.00
5218	2318	18	20.76
5224	2324	24	23.52
5230	2330	30	26.28
5236	2336	36	29.04
5248	2348	48	34.56
5260	2360	60	40.08
5272	2372	72	45.60

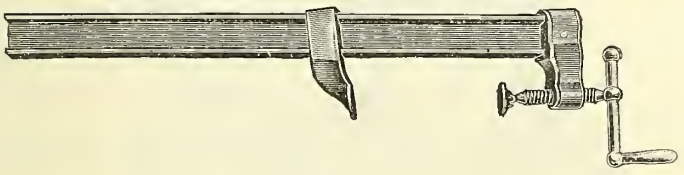
Quick Acting Clamps

Colt

Eccentric



Screw



Extra Heavy

The Extra Heavy Clamp is made from 1⅞-inch steel bar, one-half heavier than the Cabinet style, and is suitable for the heaviest work. The length of openings given indicates the size of work the jaws will grip.

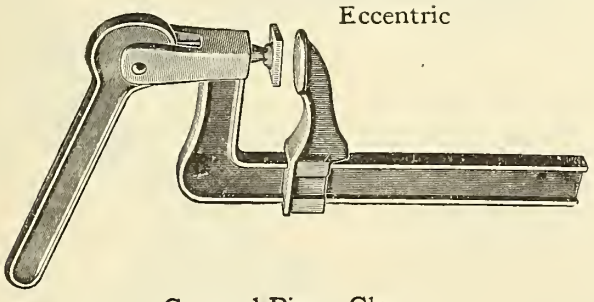
2-inch Reach. U-Bar made eccentric only.

I-Bar Number Eccentric	I-Bar Number Screw	U-Bar Number Eccentric	Opens Inches	Dozen
2412	2512	5412	12	$15.60
2418	2518	5418	18	18.36
2424	2524	5424	24	21.12
2430	2530	5430	30	23.88
2436	2536	5436	36	26.64
2448	2548	5448	48	32.16
2460	2560	5460	60	37.68
2472	2572	5472	72	43.20
2484	2584	5484	84	48.72
2496	2596	5496	96	54.24

4-inch Reach. Eccentric in U-Bar only. Screw in I-Bar only.

Number Eccentric	Number Screw	Opens Inches	Dozen
5612	2712	12	$17.30
5618	2718	18	20.06
5624	2724	24	22.82
5630	2730	30	25.58
5636	2736	36	28.34
5648	2748	48	33.86
5660	2760	60	39.38
5672	2772	72	44.90
5684	2784	84	50.42
5696	2796	96	55.94

Eccentric



Car and Piano Clamp

A powerful malleable iron clamp, having a 2½-inch double-flanged body with a double-flanged eccentric 14-inch lever supported between two ears. The eccentric operates a plunger having ¾-inch movement, and is attached to a self-adjusting clamping plate.

Has a movable jaw with a compound grip.

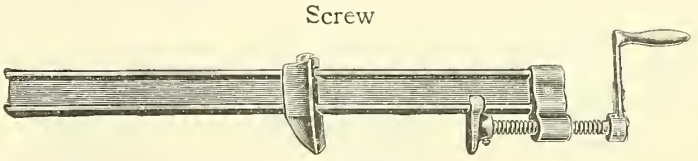
This clamp reaches 6 inches.

Adapted to car, piano, automobile work and boat-building.

Made only in 12-inch length.

No. 3212. dozen..... ....$30.00

Screw

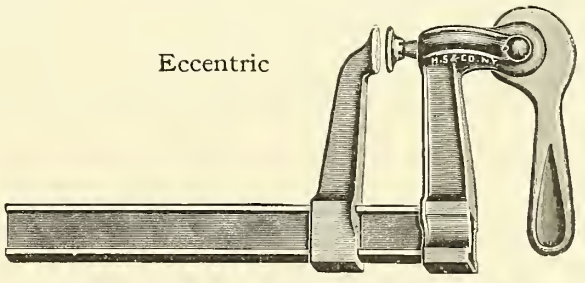


Vise Clamp

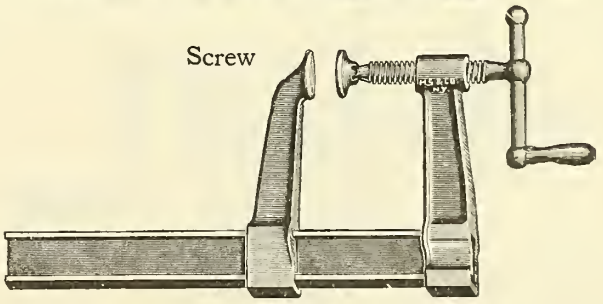
We especially recommend this clamp to all manufacturers of wood requiring a strong clamp for wide work. This clamp has the 1⅞-inch steel I-Bar and the clamping surface of the button and sliding foot is two inches square. It is operated by a ¾-inch steel screw. An improvement has been effected by making the crank and handle all one piece of malleable iron. This overcomes the difficulty of broken wood handles. The sliding foot we have made heavier to stand excessive pressure. It has our improved double-locking device of ribs and lugs and in addition we have placed a set screw through the back of the foot so adjusted that the foot will slide easily along the bar. This screw gives a grip on the bar just before the ribs engage the front and back. It is not to set the clamp with and should not be touched except a quarter turn to take up the wear if the clamp is continually used on one width of work.

I-Bar Number	U-Bar Number	Opens Inches	Dozen
2912	5912	12	$15.60
2918	5918	18	18.36
2924	5924	24	21.12
2930	5930	30	23.88
2936	5936	36	26.64
2948	5948	48	32.16
2960	5960	60	37.68
2972	5972	72	43.20
2984	5984	84	48.72
2996	5996	96	54.24

Eccentric



Screw



Long Reach Clamp

Especially adapted to carpentering and building, concrete construction and in the trades generally where pressure is required 6 inches from the edge of the work.

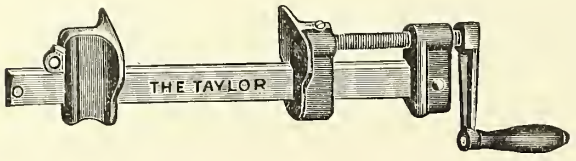
Number Eccentric	Number Screw	Opens Inches	Dozen
3012	3112	12	$18.00
3018	3118	18	20.76
3024	3124	24	23.52
3030	3130	30	26.28
3036	3136	36	29.04
3048	3148	48	34.56
3060	3160	60	40.08
3072	3172	72	45.60
3084	3184	84	51.12
3096	3196	96	56.64

Screw Clamps

Taylor Quick-Adjusting Self-Locking

In the gripping action of these clamps a wedge is employed to carry the gripping block. The head will not slip under any strain that can be applied, even when brought to bear directly at the base of the head close to, and in a direct line with the bar—the most severe test that can be made of it. In shifting the head, it is only necessary to grasp the projecting end between the thumb and second finger, the first finger pressing slightly against the head. This releases the wedge and the head is moved back any distance desired. To move head forward, simply push it along the bar to any point, and it grips instantly wherever it is left. The bars are all high-grade steel (120 per cent stronger than Bessemer) and the castings best refined malleable iron.

Cabinet No. 16



Distance from centre of screw to bar is only ½-inch, thus reducing the leverage and increasing the power, making a very stiff clamp for its weight.

Clamping Surface 1⅛ inches high, 1⅞ inches wide.

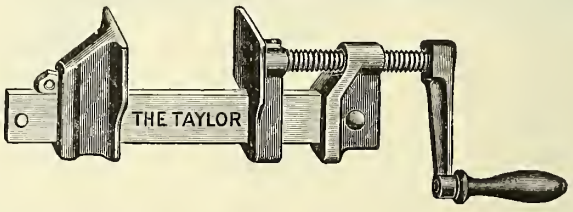
Steel bar 1x$\frac{5}{16}$ inch.

Steel screw 6x$\frac{9}{16}$ inches.

Tested to safe clamping strain of 5,500 pounds.

Opens Feet	Each	Opens feet	Each
1	$2.00	3	$2.50
1½	2.12	4	2.75
2	2.25	5	3.00
2½	2.38	6	3.25

Carpenters No. 25



Medium weight. Recommended for the general run of door and fixture work.

Clamping surface 2 inches high, 1¾ inches wide.

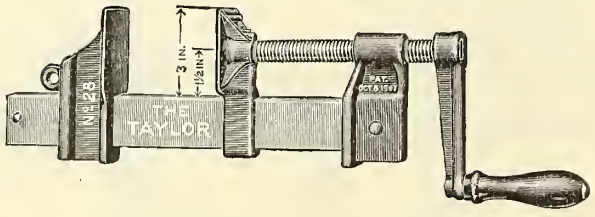
Steel bar 1½x¼ inches.

Steel screw 6½x$\frac{5}{8}$ inches.

Tested to safe clamping strain of 7,000 pounds.

Opens Feet	Each	Opens feet	Each
2	$2.75	4	$3.25
2½	2.88	5	3.50
3	3.00	6	3.75

No. 28



Having a 3-inch engagement, this clamp is particularly useful for work on pilasters, columns, parlor frames and all work requiring clamps with an extra deep engagement.

Clamping surface 3 inches high, 2 inches wide.

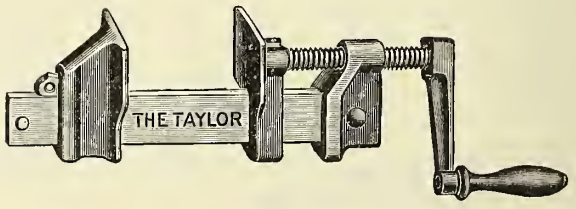
Steel bar 1¾x$\frac{5}{16}$ inches.

Steel screw 7½x¾ inches.

Tested to a safe clamping strain of 6,500 pounds.

Opens Feet	Each	Opens feet	Each
2	$3.10	6	$5.10
2½	3.35	7	5.60
3	3.60	8	6.10
4	4.10	9	6.60
5	4.60	10	7.10

Carpenters No. 30



Same design as No. 25, but much stronger. Well adapted for heavy door and hardwood work.

Clamping surface 2 inches high, 1¾ inches wide.

Steel bar 1¾x$\frac{5}{16}$ inches.

Steel screw 7½x¾ inches.

Tested to safe clamping strain of 10,000 pounds.

Opens Feet	Each	Opens feet	Each
2	$3.00	6	$5.00
2½	3.25	7	5.50
3	3.50	8	6.00
4	4.00	9	6.50
5	4.50	10	7.00

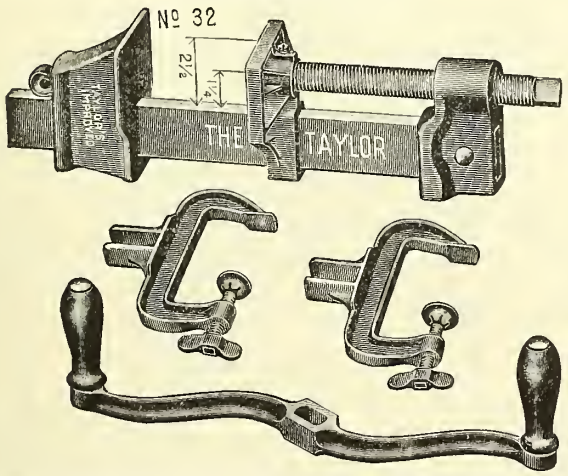
SEE DISCOUNT SHEET

Screw Clamps

Taylor Quick-Adjusting

Self-Locking, Improved

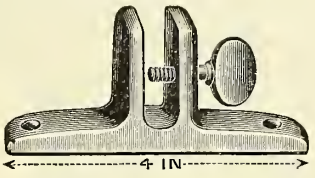
Carpenters No. 32



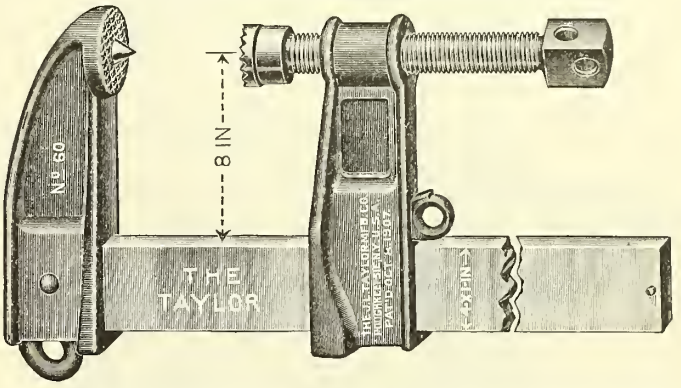
An extra powerful clamp for the heaviest class of hardwood work. Supports shown below clamp are designed to fasten to trestles. Steel bar 2x⅝ inches. Screw 1x9 inches.

Tested to safe clamping strain of 40,000 pounds.

Opens Feet	Each	Opens feet	Each
3	$5.50	8	$9.25
4	6.25	9	10.00
5	7.00	10	10.75
6	7.75	11	11.50
7	8.50	12	12.25



Dock and Construction No. 60



This Clamp is designed for the heaviest class of construction work. The bar of high-grade steel is 4x1 inches, and the steel screw 1¾x15 inches. The distance from the center of the screw to the bar is 8 inches.

The attachment to the stationary head enables workmen to run a rope through, thereby preventing clamp being lost when working in deep water—a decided advantage. The steel point on the stationary head, also the milled portion on the end of screw, gives a better grip on the wood, particularly when it is wet.

Tested to safe clamping strain of 26,400 pounds

	Each
18 inch opening	$28.00
24 inch opening	29.00
30 inch opening	30.00

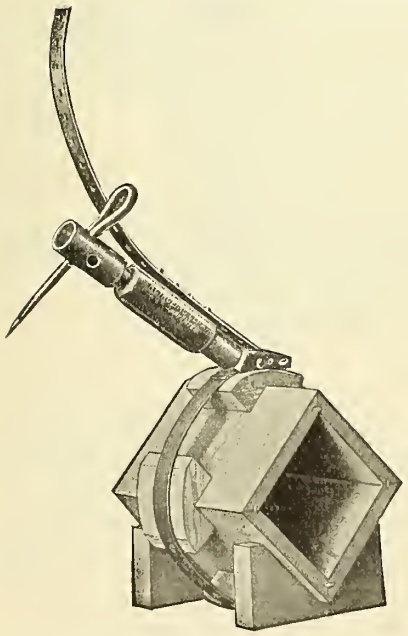
Supports

For securing Clamps on Benches or Trestles.
Will fit any clamp with bar not over 5/16-inch thick.

Pair ..... $ .35

Column or Encircling Clamps

Twentieth Century

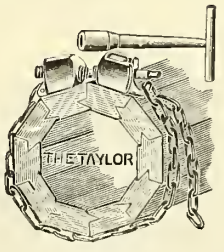


This clamp consists of a tubular metal body with a jawed foot at one end and an interior screw thread at the other. The body is within a metal sleeve which has protecting pins that engage perforations at one end of the encircling steel strap. The other end of the strap is fastened to the jawed foot. The loose end of the strap passes over a roller bearing in the jaw, hinged to permit its being thrown back for adjustment. The strap is tightened by a screw working on body, a collar preventing its working out of the sleeve.

With 5 foot compression belt, dozen $24.00

Longer belts at $ .10 per foot additional

Taylor



No. 47

With ¾-inch steel screw threaded right and left. Nuts have long bearings, making the clamp very durable.

With 4-foot chain.

Dozen	$27.00
Each	2.70
Extra chain, foot	.17

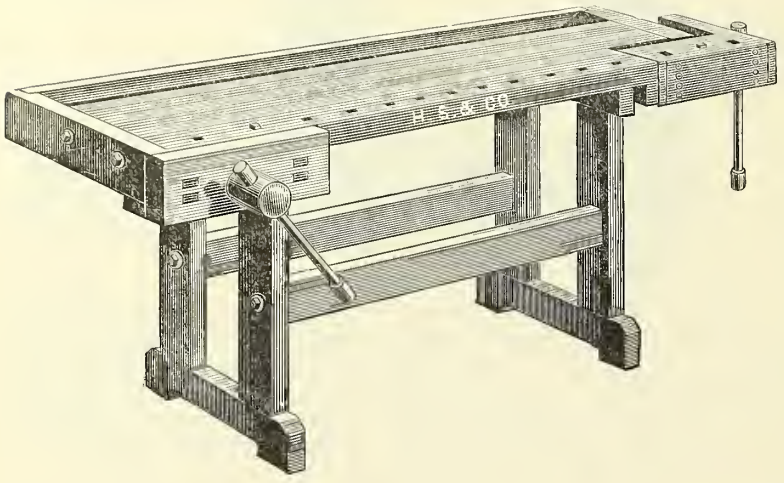
One wrench included with each half dozen clamps.

Extra Wrenches, each	.30

Cabinet Makers Benches

H. S. & Co.

We call attention to the superior quality of our Benches. They are not the ordinary kind made to sell in competition with the cheapest, but are made of thoroughly seasoned, kiln-dried stock, carefully and scientifically put together. The lumber is cut and prepared a long time before use, giving sufficient time to dry and cure, and will not warp or crack after a short period, as the inferior and cheaper-priced benches so often do.



Style B

Made of maple throughout, except the vise screws, which are second-growth hickory. The top, exclusive of vises, is 75 inches long, 24 inches wide, 2¾ inches thick, with 7 inches recess. Stands 33 inches high. Has two iron stops. Head vise is 18 inches wide, opens 12 inches. Tail vise is 6 inches wide, opens 10 inches. Vise screws 2⅜ x 17 inches. Oil rubbed. Weight 190 pounds, each $28.00

Style BB

Same as Style B except that it has 1¼ x 18 inches Iron Bench Screws, each $28.00

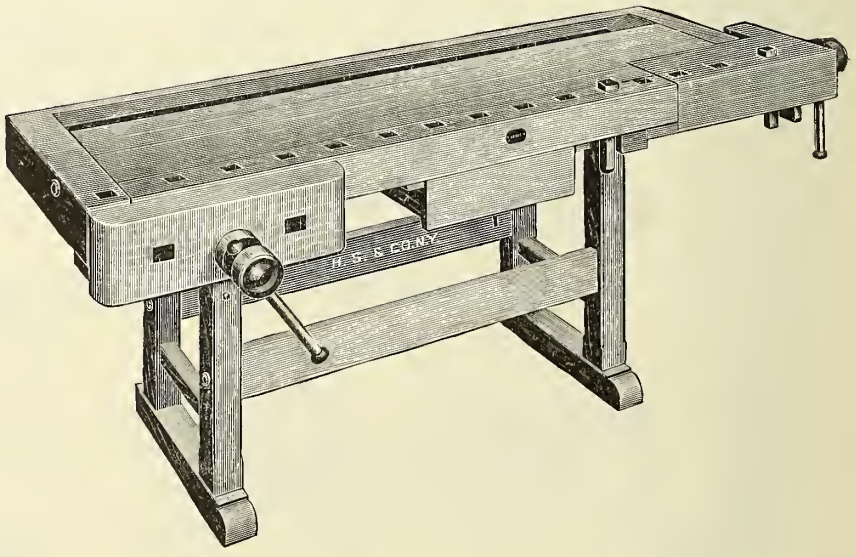
Style C

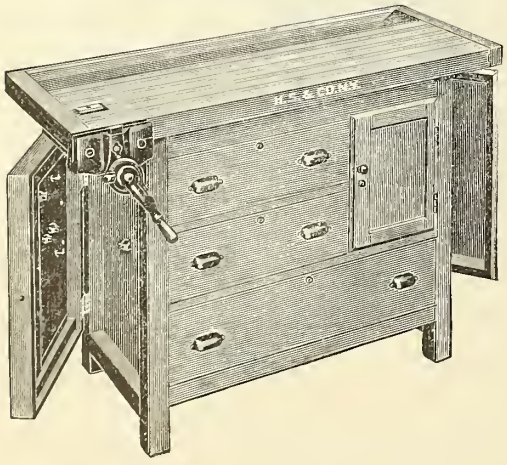
Same as Style B except that the length of the top is 64 inches. Weight 167 pounds, each $28.00

Style E

The construction of this Bench is very solid and heavy, the stands being made of 4-inch square timbers. The bolsters are bolted to the main portion of the tops.

Made of Austrian red beech, with white beech vise screws. Top, exclusive of vises, is 78 inches long, 24 inches wide, 2⅝ inches thick, with 4 inches front strip, 6 inches recess. Stands 33 inches high. Has two iron stops. Head vise is 22 inches wide, opens 10 inches and is provided with a device for equalizing the strain when work is clamped at one end of the vise. The vise jaw is kept absolutely at right angles to the screw. Tail vise is 6¼ inches wide, opens 9½ inches, with locked corners. Drawer is 15 inches wide, 15½ inches deep, 4½ inches high. Vise screws 2⅜x17 inches. Waxed finish. Weight 230 pounds, each $56.00





Combination Bench and Cabinet

H. S. & Co.

For Manual Training or Home Use

No. 075

The bench top is 50 inches long, 22 inches wide, 2¼ inches thick, made of strips of solid maple, tongued and grooved and glued together. Tool recess 7 inches wide. Stands 33½ inches high. Top is equipped with a rapid acting vise and adjustable metal planing stop.

The Cabinet is made almost entirely of oak, with solid brass hardware. The bottom drawer is fitted with saw racks and is 29½x16x6½ inches. The top and middle drawers are 18¾x16x6 inches, while the cupboard is 9½x16½x14 inches. The end tool racks are 14¼ inches wide and 22 inches high, inside measurements.

Approximate weights. Boxed, 275 pounds. Not boxed, 200 pounds.

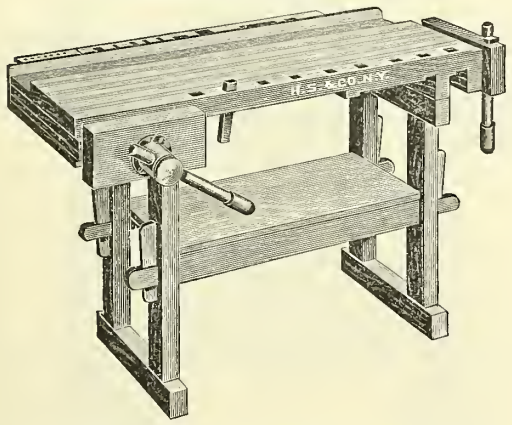
Each $60.00

Manual Training and Home Benches

H. S. & Co.

Styles J and R

Illustration shows Style J



This is our Standard School Bench, and since it has been on the market has met with extremely favorable reception. Our vise construction is the result of careful experiment, and as now made distributes the strain over the entire bench top. Bench is made of thoroughly seasoned lumber, carefully put together, all joints being glued where practicable.

Style J

Made of maple, except vise screws, which are second growth hickory. The top, exclusive of vises, is 48 inches long, 18 inches wide, 2 inches thick, with 6 inches recess. Stands 32 inches high. Has two wooden stops. Head vise 12 inches wide, opens 8½ inches. Tail vise 12 inches wide, opens 10 inches. Vise screws 2x17 inches. Weight 105 pounds.

Each..... $25.00

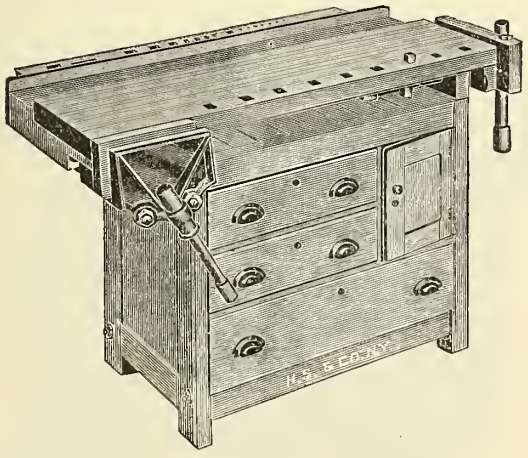
Style R

Same as Style J, except head vise is a No. 230, size 2, maple faced rapid acting vise.

Each..... $34.00

Styles P and S

Illustration shows Style S.



Style P

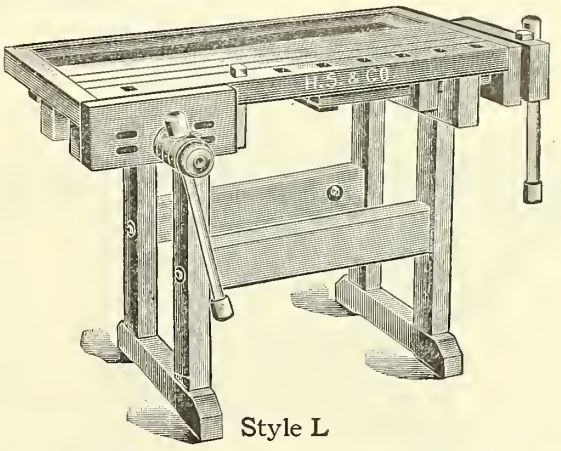
This Bench is the Style J Bench, with drawers and cupboard added.
Top drawer, 18 inches wide, 15½ inches deep, 4½ inches high.
Middle drawer, 18 inches wide, 15½ inches deep, 4½ inches high.
Bottom drawer, 29 inches wide, 15½ inches deep, 6¼ inches high.
Cupboard, 10 inches wide, 16 inches deep, 11¼ inches high.
Weight 155 pounds.

Each..... $31.50

Style S

Same as Style P, except that head vise is a No. 230, size 2, maple faced rapid acting vise.

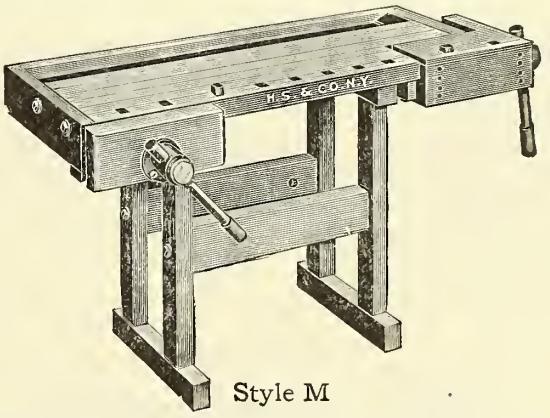
Each..... $40.00



Style L

This Bench, while it is designed to meet the demand for a low-priced article and is of light construction, is still well-made and serviceable. Made of maple, except vise screws, which are hickory. Top, exclusive of vises, is 42 inches long, 20 inches wide, 2 inches thick, with 6 inches recess. Stands 32 inches high. Has two wooden stops. Head vise 12 inches wide, opens 10 inches. Tail vise 12 inches wide, opens 8 inches. Vise screws 2x17 inches. Weight 90 pounds.

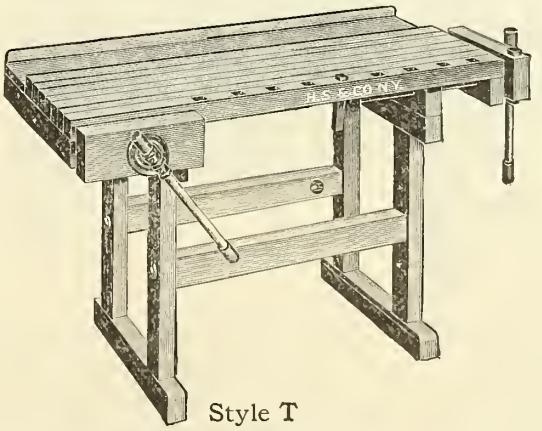
Each..... $15.00



Style M

The Style M Bench is built on practically the same lines as our Style B Cabinet Makers Bench, but smaller. Made of maple with hickory vise screws. Top, exclusive of vises, is 51 inches long, 20 inches wide, 2⅛ inches thick, with 6 inches recess. Stands 33 inches high. Has two wooden stops. Vise screws 2x17 inches. Head vise 14 inches wide, opens 12 inches. Tail vise 6 inches wide, opens 6½ inches. Weight 115 pounds.

Each..... $20.00



Style T

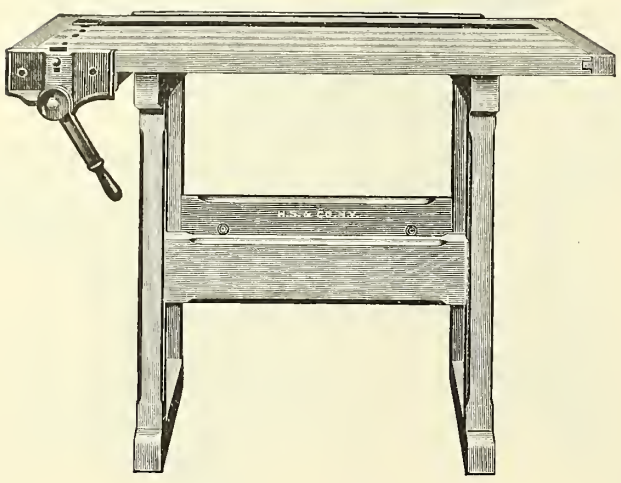
This Bench is made of thoroughly seasoned maple, with 1⅛x15 inches iron screws on both head and tail vises. Top exclusive of vises, is 48 inches long, 22 inches wide, 2 inches thick, with 7½ inches recess. Stands 32 inches high. Has two wooden stops. Both vises are 12 inches wide and open 10 inches. Weight 115 pounds.

Each..... $19.00

Manual Training Benches

H. S. & Co.

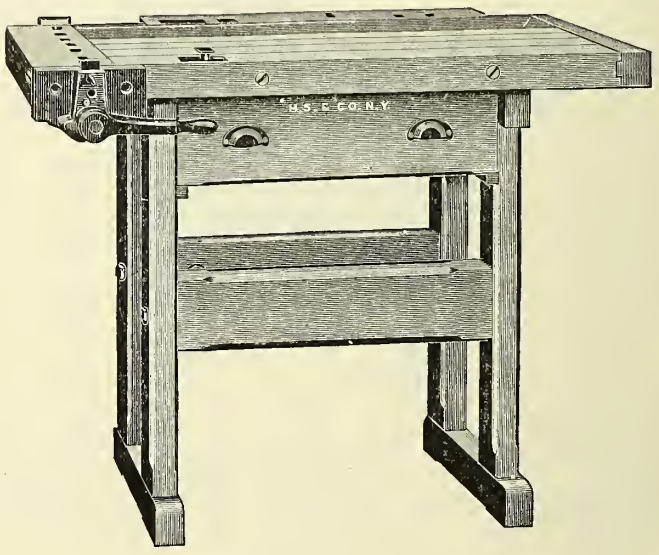
Nos. 101 and 102



This Bench is designed primarily for the home work shop. It is made of well seasoned maple throughout and is regularly fitted with No. 3 Rapid-Acting Vise, but can be supplied with No. 10 Vise if desired. Steel Bench Dog. Top is 42 inches long, 22 inches wide, $1\frac{3}{4}$ inches thick, with 7 inches recess. Weight, 90 pounds without drawer. Drawer is $5\frac{1}{2}$ inches high, 22 inches wide, and 19 inches deep.

No. 101	Without drawer	$15.00
No. 102	With drawer	17.00

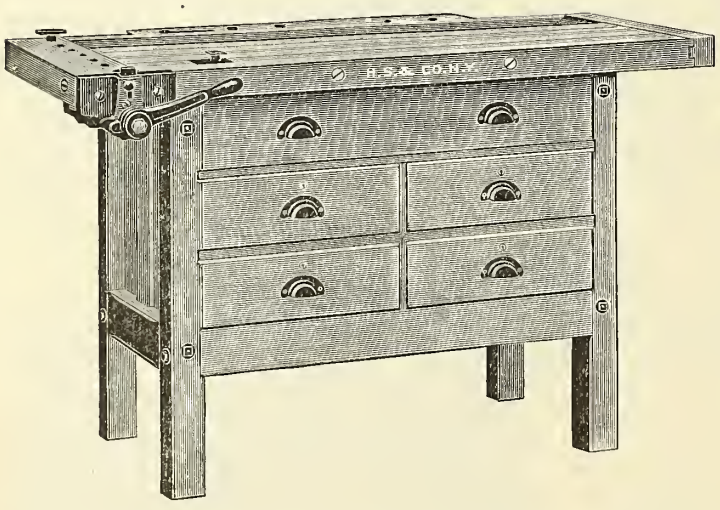
No. 103



Made of thoroughly seasoned maple. Top is 42 inches long, 22 inches wide, and $2\frac{1}{4}$ inches thick, with 7 inches recess. Stands 32 inches high. Drawer is $5\frac{1}{2}$ inches high, 22 inches wide, 19 inches deep. Fitted regularly with No. 3 Rapid-Acting Vise, but No. 10 is optional in its place. Steel Dog and Malleable Bench Stop. Weight without drawer 115 pounds.

With drawer	$21.00
Without drawer	18.50
With Quick Acting Tail Vise, add net	7.50

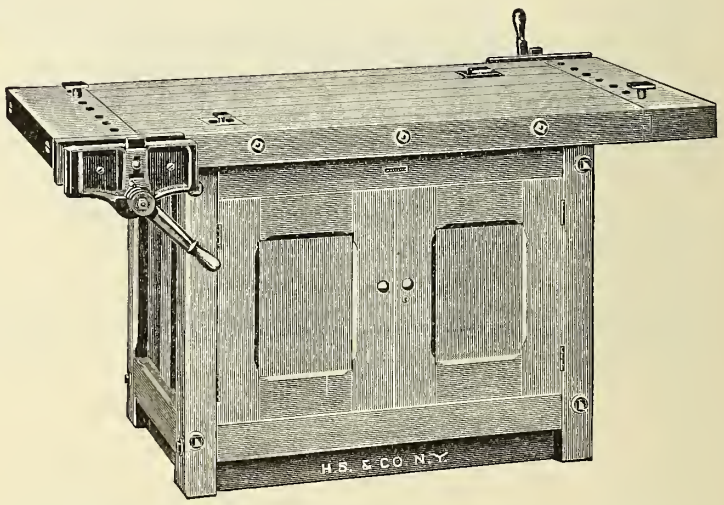
No. 104



This Bench supplies the need for a bench that will contain the pupils individual equipment. It is made of maple and the construction throughout is sturdy. The top is 52 inches long, 22 inches wide, $2\frac{1}{4}$ inches thick, with 7 inches recess. The drawers measure 5 inches high, 17 inches deep, and 32 and $15\frac{1}{2}$ inches long. Stands 32 inches high. Fitted with No. 3 Rapid Acting or No. 10 Continuous Screw Vise, Steel Dog and Malleable Bench Stop. Weight, 215 pounds.

Each $36.00

No. 105

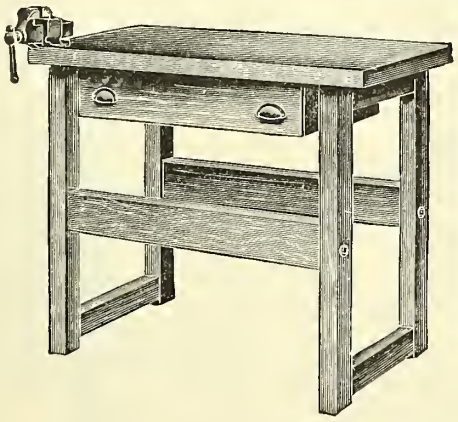


This Bench is intended for the use of two pupils and is economical in floor space. The tool cabinets are ample and convenient. The top is 56 inches long, 26 inches wide, $2\frac{3}{4}$ inches thick. The Cabinet is 30 inches long, 21 inches high and 10 inches deep. Stands 32 inches high. Fitted with two No. 6 Rapid Acting or No. 12 Continuous Screw Vises, two Steel Dogs and two Malleable Bench Stops. Weight, 310 pounds.

Each $60.00

Machinists Benches

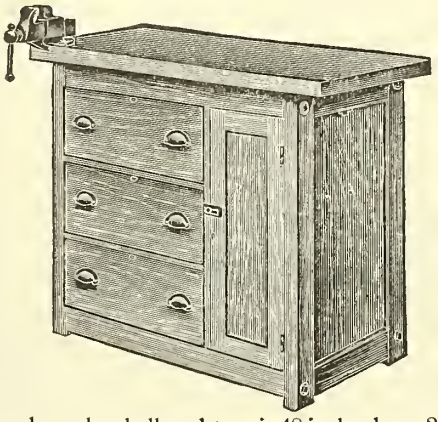
H. S. & Co.



Made of hard maple shellaced. The top is 48 inches long, 23 inches wide, and 2 inches thick. Stands 38 inches high. Drawer is 30 inches wide, 17½ inches deep, 5 inches high.

No. 27 Without vise $18.00

No. 27V. with Parker No. 102 Eclipse Vise, 3 inches Jaw, opens 4 inches, each $24.50



Made of hard maple, shellaced top, is 48 inches long, 23 inches wide and 2 inches thick. Stands 38 inches high. Three drawers, each 23 inches wide, 19 inches deep, 8 inches high. Cupboard, 30 inches high, 20 inches deep and 10½ inches wide.

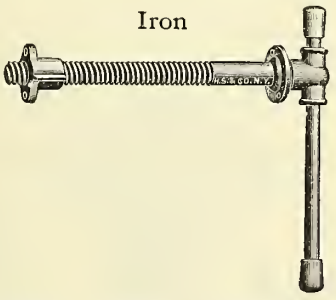
No. 28 Without vise $31.00

No. 28V, with Parker No. 102 Eclipse Vise, 3 inches Jaw, opens 4 inches, each $37.50

Bench Screws

H. S. & Co.

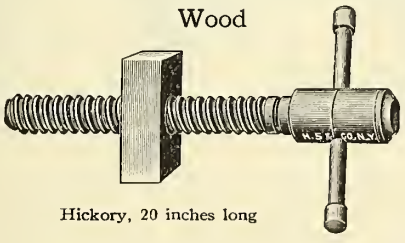
Iron



No. 50 Wrought iron screw, wooden handle with loose collar.

Diameter of screw, inches.	1	1	1⅛	1⅛	1⅛	1¼	1¼	1¼
Length of screw, inches..	15	18	15	18	20	15	18	20
Dozen	$9.00	13.00	10.00	15.00	16.00	12.00	17.00	19.00

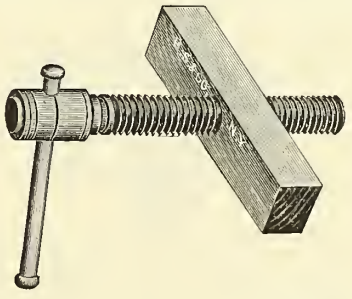
Wood



Hickory, 20 inches long

Numbers	20	19	18	17
Diameter of screw, inches	1½	1¾	2	2⅜
Dozen	$18.33	20.00	21.67	30.00
Extra Nuts, dozen				$4.17
Extra Handles, dozen				4.17

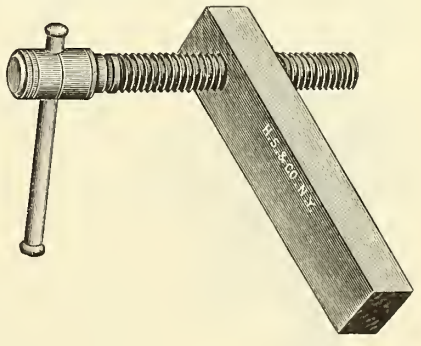
O. K. Head Screw



Hickory screw, with 3x4x20 inches maple nut.

Numbers	79½	79
Diameter of screw, inches	2	2⅜
Length of screw, inches	20	20
Dozen	$33.33	36.67

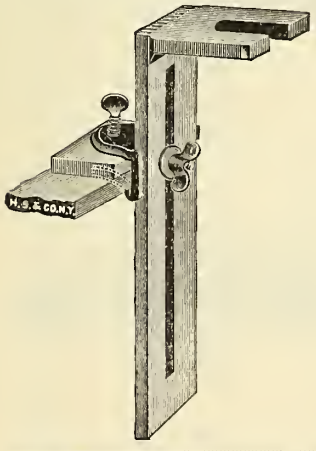
O. K. Tail Screw



Hickory screw, with 3x5x30 inches maple nut.

No. 80½ 2x20 inches screw, dozen $40.00

No. 80 2⅜x20 inches screw, dozen $43.33



Fret Saw Table

Pierce

For Manual-Training Work

This Table is particularly commendable for two features: First, it is adjustable to any height above desk from 3 to 20 inches, permitting the student to work in a sitting or standing position; second, it can be instantly attached to any school desk.

It is designed to meet the popular demand for a saw table, low in price, quick and easy of adjustment, and simple enough in construction to enable the younger students to attach or detach it without difficulty.

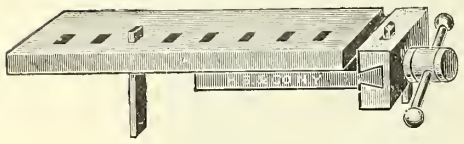
It most admirably combines these features and is recommended where an inexpensive but thoroughly practicable saw table is wanted.

Each $1.90

Bench Appliances

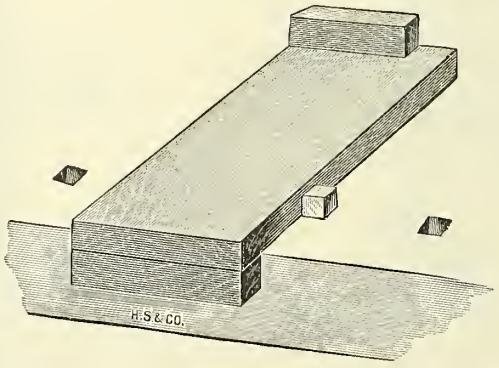
H. S. & Co.

Wood-Carvers Bench



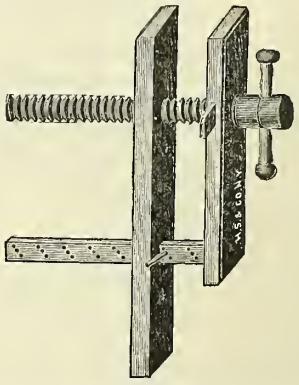
Made of selected maple, with 1½x18 inches hickory screw. It is 37½ inches long over all, 8½ inches wide, and opens 11 inches. With stops.
Each $5.00

Bench Hook



Made of selected maple. For odd sawing and chiselling, so that the bench will not be marred. 4½x12 inches.
Dozen $4.00

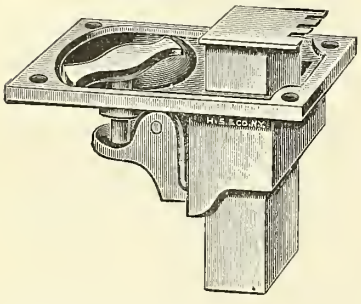
Wood-Carvers Vise



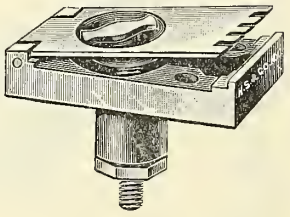
Made of selected maple, with 2⅜x19 inches hickory screw. It is 44 inches long, 6 inches wide, and opens 14 inches.
Each $3.25

Bench Stops

Weston No. 1

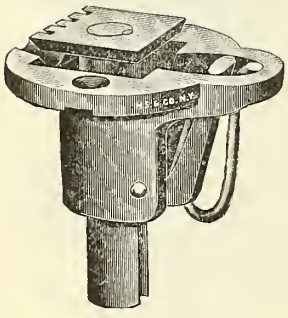


Weston No. 2

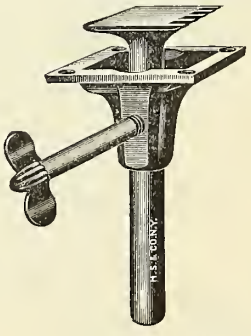


Weston No. 1, dozen $8.70
Weston No. 2, dozen 6.70

Sheldon Quick Set

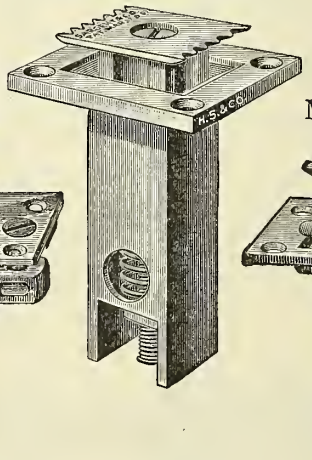


B. M. Co. Swivel

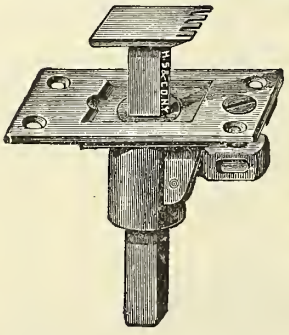


Sheldon Quick-Set, each ..... $ .80
B. M. Co. Swivel, each 1.00

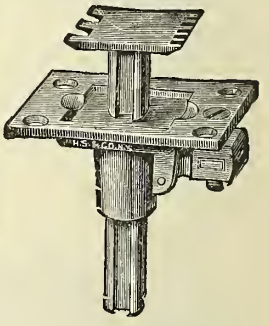
Sargent No. 41



Morrill No. 1



Morrill No. 2



Morrill No. 1, each $1.00
Morrill No. 2, each 1.40
Sargent No. 41, dozen 4.50

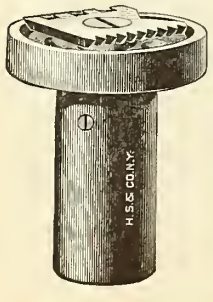
H. S. & Co.



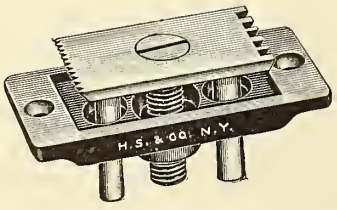
Wrought Iron

	Small	Medium	Large
Thickness, inches	¾x⅞	⅞x1	⅞x1
Length, inches	6½	7½	9
Dozen pairs	$11.00	13.00	15.00

M. F. Co. No. 56



Smith No. 1



M. F. Co., No. 56, dozen $6.50
Smith, No. 1, dozen 8.00

H. S. & Co.



Style L

Style J

Style L, 6 inches long, Maple, dozen pairs $2.40
Style J, 6 inches long, Maple, dozen pairs 2.40

SEE DISCOUNT SHEET

Manual Training Outfits

On this and the following pages we give descriptions of several outfits of tools for Manual Training and Technical Schools.
We wish to impress upon all who are interested in Manual Training Work, that the tools in these various outfits are all of the highest grade. Our hobby since 1848 has been to handle only the best, and our extended experience has proven time and again that only the best tools obtainable should be used for Manual Training. In the hands of beginners, tools are usually put to severe and undue strain and unless quality is there they are bound to give way. Every tool is warranted to be perfect. The various outfits as listed are not intended to cover all requirements, but were carefully planned to form a nucleus or start which may be enlarged as necessary.

Woodworkers Tools

Equipment for Class of 10 Pupils

Individual Tools

10 Buck Bros. Handled and Sharpened Firmer Chisels, ¼-inch.
10 Buck Bros. Handled and Sharpened Firmer Chisels, ½-inch.
10 Buck Bros. Handled and Sharpened Firmer Gouges, ⅜-inch.
10 Disston Back Saws, No. 4, 10 inches.
10 Hammond Adze Eye Hammers, No. 3.
10 Stanley Iron Block Planes, No. 9½.
10 Stanley Iron Smooth Planes, No. 3.
10 Stanley Iron Spokeshaves, No. 53.
10 Imported Gimlet Bits, $\frac{3}{16}$-inch.
10 Imported Gimlet Bits, ¼-inch.
10 Russel Jennings Genuine Dowel Bits, ⅜-inch.
10 Russell Jennings Genuine Dowel Bits, ½-inch.
10 Barber Nickel-plated Braces, No. 223, 8 inches.
10 Disston Hardened Blade Try Squares, No. 5½, 6 inches.
10 Stanley Beech Marking Gauges, No. 64½.
10 New Century Screwdrivers, 4 inches.
10 Stanley Boxwood Rules, No. 18, 2 foot, 2 fold.
10 Round Hickory Mallets, No. 4.
10 H. S. & Co. Maple Bench Hooks.
10 H. S. & Co. Handled Brad Awls, 1¼-inch.
10 P. S. & W. Winged Dividers, No. 35, 6 inches.
10 Bench Dusters, No. 10.
10 H. S. & Co. Knurled Nail Sets.
10 H. S. & Co. Sloyd Knives, No. 7.

Class Tools

1 Buck Bros. Handled and Sharpened Firmer Chisel ¾-inch.
1 Buck Bros. Handled and Sharpened Firmer Chisel, 1-inch.
1 Buck Bros. Handled and Sharpened Firmer Gouge, ¾-inch.
1 Disston Crosscut Saw, No. 7, 22 inches.
1 Disston Rip Saw, No. 7, 22 inches.
1 M. F. Co. Turning Saw, 14 inches with blade.
1 Stanley Wood Jack Plane, No. 26.
1 Stanley Iron Rabbet and Fillester Plane, No. 78.
1 Russel Jennings Genuine Dowel Bit, ⅝-inch.
1 Russel Jennings Genuine Dowel Bit, ¾-inch.
1 Handled K. & F. Flat Bastard File, 8 inches.
1 Handled K. & F. Half-round Bastard File, 8 inches.
1 Handled K. & F. Round Bastard File, 8 inches.
1 Handled K. & F. Square Bastard File, 8 inches.
2 Rose Countersinks, No. 10, ⅝ inch.
2 Medium India Oil Stones, No. 29, mounted in iron box.
1 Disston sliding T-Bevel, No. 2, 8 inches.
12 Jorgensen Hand Screws, 10 inches.

		Each
No. 20	Includes above list of tools with 10 Manual Training School Benches, Style J (see page 451)	$210.00
No. 20A	Includes above list of tools with 10 Manual Training School Benches, Style R (see page 451)	290.00
No. 21	Includes above list of tools with 10 Manual Training School Benches, Style P (see page 451)	275.00
No. 21A	Includes above list of tools with 10 Manual Training School Benches, Style S (see page 451)	325.00

Individual Equipments

While designed primarily for Manual Training use, they make excellent outfits for home use. The tools are all of the highest grade, fully guaranteed. The benches are well made of selected and thoroughly seasoned maple, very rigid and strong, and we take pleasure in recommending them.

We are often asked to suggest a moderate-priced Bench Outfit. If conditions are normal and the appropriation limited, we invariably advise No. 24. This outfit includes our standard "J" Bench, Bench Hook, and 26 best quality tools as listed—an assortment which contains all the necessary tools for a general equipment for all around work.

One Buck Bros. Handled and Sharpened Firmer Chisel, ¼-inch.
One Buck Bros. Handled and Sharpened Firmer Chisel, ½-inch.
One Buck Bros. Handled and Sharpened Firmer Gouge, ⅜-inch.
One Disston Back-Saw, No. 4, 10 inches.
One Disston Hand Saw, No. 7, 22 inches.
One Hammond Adze Eye Hammer, No. 3.
One Stanley Iron Block Plane, No. 9½.
One Stanley Iron Smooth Plane, No. 3.
One Imported Gimlet Bit, $\frac{3}{16}$-inch.
One Imported Gimlet Bit, ¼-inch.
One Russell Jennings Genuine Dowel Bit, ⅜-inch.
One Russell Jennings Genuine Dowel Bit, ½-inch.
One Barber Nickel-plated Brace, No. 223, 8 inches.
One Rose Countersink, No. 10, ⅝-inch.
One Disston Hardened Blade Try-square, No. 5½, 6 inches.
One Stanley Beech Marking Gauge, No. 64½.
One New Century Screwdriver, 4 inches.
One Stanley Boxwood Rule, No. 18, 2 foot, 2 fold.
One Round Hickory Mallet, No. 4.
One H. S. & Co. Handled Brad Awl, 1¼-inch.
One P. S. & W. Winged Dividers, No. 35, 6 inches.
One Bench Duster, No. 10.
One H. S. & Co. Knurled Nail Set.
One H. S. & Co. Sloyd Knife, No. 7.
One Stanley Iron Spokeshave, No. 53.
One India Oil Stone, No. 29, in iron box.
One H. S. & Co. Maple Bench Hook.

		Each
No. 24	Includes above list of tools with Manual Training School Bench, Style J (see page 451)	$22.50
No. 24A	Includes above list of tools with Manual Training Bench, Style R (see page 451)	27.00
No. 25	Includes above list of tools with Manual Training School Bench, Style P (see page 451)	25.75
No. 25A	Includes above list of tools with Manual Training School Bench, Style S (see page 451)	30.00

For illustration of outfit No. 25A see page 461

Manual Training Outfits

Woodworkers Tools

Individual Equipments

For those desiring a less expensive equipment than the No. 24, we suggest outfits Nos. 22, 22A or 22B. The tools and benches are of fine quality and the difference in price is due principally to the quantity and not to quality. These outfits contains bench, bench hook, and 17 tools and are the smallest equipments we recommend for practical work.

1 Hammond Adze Eye Hammer, No. 3.
1 Stanley Block Plane, No. 120.
1 Buck Bros. Handled and Sharpened Firmer Chisel, ¼-inch.
1 Buck Bros. Handled and Sharpened Firmer Chisel, ½-inch.
1 Back Saw, No. 1, 10-inch.
1 Russel Jennings Genuine Dowel Bit, ⅜-inch.
1 Imported Gimlet Bit, $\frac{3}{16}$-inch.
1 Barber Nickel-plated Brace, No. 223, 8-inch.
1 Disston Hardened Blade Try-square, No. 5½, 6-inch.
1 Stanley Beech Marking Gauge, No. 64½.
1 New Century Screwdriver, 4-inch.
1 H. S. & Co. Knurled Nail Set.
1 Round Hickory Mallet, No. 4.
1 Stanley Boxwood Rule, No. 18, 2 foot, 2 fold.
1 H. S. & Co. Sloyd Knife, No. 7.
1 India Oil Stone, No. 29, mounted in iron box.
1 Bench Duster, No. 10.
1 H. S. & Co. Maple Bench Hook.

			Each
No. 22	Includes above list of tools, with Manual Training School Bench.	Style L (see page 451)	$13.00
No. 22A	Includes above list of tools, with Manual Training School Bench.	No. 101 (see page 452)	13.00
No. 22B	Includes above list of tools, with Manual Training School Bench.	No. 102 (see page 452)	14.00

Sloyd

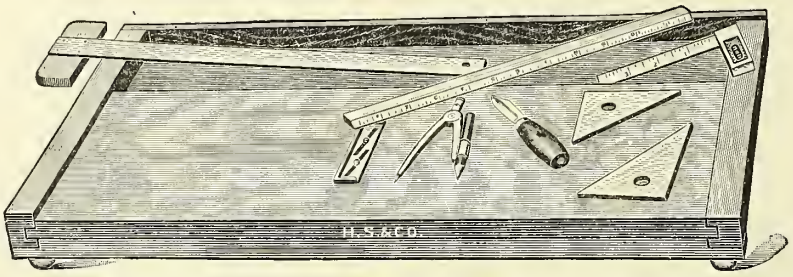
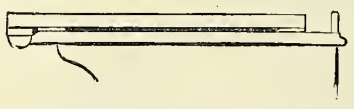


Illustration shows the H. S. & Co. Improved Whittling Tray, with complete tool outfit.



Showing tray on an inclined desk top



Showing tray on a straight desk top

Individual Elementary

The following set is especially adapted for elementary knife work, and includes our standard No. 7 Sloyd Knife and an assortment of 6 other tools approved by well-known manual training authorities.

1 Whittling Tray.
1 H. S. & Co. No. 7 Sloyd Knife.
1 Eagle Compass.
1 Triangle, No. 100, 30x60 degree, 4½ inches, Maple.
1 Triangle, No. 101, 45x45 degree, 3 inches, Maple.
1 Desk Rule, No. 150, 12 inches.
1 T-square, No. 300, 13½ inches, Maple.
1 Disston Try-square, No. 4½, 4 inches.

No. 31 Dozen $17.50
Each 1.75

Whittling Tray Only

12½ inches wide, 22 inches long, with a recess 4 inches wide. It is provided with a unique and very practicable clamp which will hold a block up to 9 inches in width. Now being used by prominent schools all over the country, has come to be standard for use in elementary knife work. It is designed for use on the lap or as a desk or bench top, and is so constructed that it will not slip or mar the desk when in use.

Dozen $9.00
Each ..... .90

Equipment for a Class of Ten Pupils

10 H. S. & Co. Whittling Trays, 22 inches.
10 H. S. & Co. Sloyd Knives, No. 7.
10 Eagle Compasses.
10 Triangles, No. 100, 30x60 degrees, 4½ inches, Maple.
10 Triangles, No. 101, 45x45 degrees, 3 inches, Maple.
10 Desk Rules, No. 150, Maple.
10 T-squares, No. 300, 13½ inches, Maple.
10 Disston Try-squares, No. 4½, 4-inch.
10 H. S. & Co. Handled Brad Awls, 1-inch.
2 Stanley Iron Smooth Planes, No. 3.
2 Stanley Iron Block Planes, No. 9½.
2 Disston Back Saws, No. 4, 10 inches.
2 H. S. & Co. Carvers Knives, No. 3.
4 Hammond Bell Face Claw Hammers, No. 15.
1 India Oil Stone, No. 29, mounted in iron box.
1 Copperized Steel Oiler, No. 12.
6 Jorgensen Hand Screws, 8 inches.

No. 32 For 10 pupils $26.00

Books

Handwork in Wood

By William Noyes

A handbook for teachers and a textbook for normal school and college students. Covering logging, sawmilling, seasoning and measuring, hand tools, wood fastenings, equipment and care of the shop, the common joints, types of wood structures, principles of joinery and wood finishing. 304 illustrations. Excellent pen drawings and many photographs.

Each $2.00

Wood and Forest

By William Noyes

A companion volume to "Handwork in Wood," by the same author. Especially adapted as a reference book for teachers of woodworking. Treats of wood, distribution of American forests, life of the forest, enemies of the forest, destruction, conservation and uses of the forest, with a key to the common woods by Filibert Roth. Describes 67 principal species of wood with maps of the habitat, leaf drawings, life size photographs and micro-photographs of sections. Profusely illustrated with photographs by the author. 309 pages.

Each $3.00

Design and Construction in Wood

By William Noyes

A companion volume to the above, being an elementary course in woodworking, giving details in handling of tools and some practice in the simpler designs. As the lessons or chapters progress, the exercises become slightly more difficult and during the lessons simple exercises in copper are introduced as relative to woodworking and the subject of finishing and polishing is taken up in the proper place. 159 pages.

Each $1.50

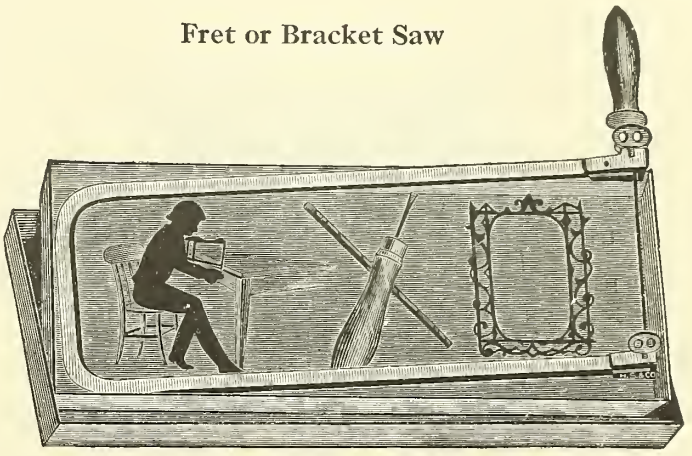
Manual Training Outfits

Fret or Scroll Saw

1 Pierce Saw Table.
1 H. S. & Co. Bracket Saw Frame, No. 20, 10-inch.
1 dozen Fret Saw Blades, No. 1.
1 dozen Fret Saw Blades, No. 3.
1 M. F. Co. Plain Sleeve Brace, No. 223.
1 Russell Jennings Dowel Bit, $\frac{3}{16}$-inch.
1 Russell Jennings Dowel Bit, $\frac{1}{4}$-inch.
1 Russell Jennings Dowel Bit, $\frac{3}{8}$-inch.
1 Forstner Dowel Bit, $\frac{1}{4}$-inch.
1 Forstner Dowel Bit, $\frac{3}{8}$-inch.
1 H. S. & Co. Handled Brad Awl, $\frac{7}{8}$-inch.
1 H. S. & Co. Handled Brad Awl, $1\frac{1}{4}$-inch.
1 Hammond Adze-Eye Bell Face Claw Hammer, No. 14, 5-ounce.
1 H. S. & Co. Flat Plier, No. 20, $4\frac{1}{2}$-inch.
1 H. S. & Co. Round Plier, No. 21, $4\frac{1}{2}$-inch.
1 H. S. & Co. Cutting Nipper, No. 1306 A. Y., $4\frac{1}{2}$-inch.
1 K. & F. Handled Round Bastard File, 4-inch.
1 K. & F. Handled Round Bastard File, 8-inch.
1 Jersey Clamp Vise, No. 765.
1 Stanley Boxwood Rule, No. 61, two-foot.
1 dozen sheets 3-ply Wood, $\frac{3}{16}$x16x24 inches.
3 Birch Dowels, $\frac{3}{16}$x36 inches.
3 Birch Dowels, $\frac{1}{4}$x36 inches.
3 Birch Dowels, $\frac{3}{8}$x36 inches.
1 pound Brads, $\frac{1}{2}$-inch, No. 20.
1 pound Nails, $\frac{1}{2}$-inch, No. 20.
1 tube LePage Glue.
1 dozen steel Thumb Tacks, $\frac{1}{2}$-inch.
$\frac{1}{2}$ dozen sheets Sandpaper, No. 1.
$\frac{1}{2}$ dozen sheets Sandpaper, No. $1\frac{1}{2}$.
1 Bowman Book of Designs, Part I.

No. 35 Set $12.00

Fret or Bracket Saw



This set contains a Spring Steel Saw Frame, 12 inches; 3 sheets of designs, embracing a great variety of fancy and useful articles; 12 Saw Blades; 1 Awl and 1 sheet of Impression Paper.

No. 2 In paper box, per set $1.25

Wood Turners

1 Buck Bros. Handled and Sharpened Turning Gouge, No. 20, $\frac{3}{8}$-inch.
1 Buck Bros. Handled and Sharpened Turning Gouge, No. 20, $\frac{3}{4}$-inch
1 Buck Bros. Handled and Sharpened Round Point Turning Chisel, No. $19\frac{1}{4}$, $\frac{1}{4}$-inch.
1 Buck Bros. Handled and Sharpened Skew Point Turning Chisel, No. 19, $\frac{3}{8}$-inch.
1 Buck Bros. Handled and Sharpened Skew Point Turning Chisel, No. 19, $\frac{3}{4}$-inch.
1 Buck Bros. Handled and Sharpened Skew Point Turning Chisel, No. 19, 1-inch.
1 Buck Bros. Handled and Sharpened Square Point Turning Chisel, No. $19\frac{1}{2}$, $\frac{1}{4}$-inch.
1 Buck Bros. Handled and Sharpened Parting Tool, $\frac{3}{4}$-inch.
1 Boxwood Rule, No. 61, 2-foot, 4-fold.
1 Pair Winged Calipers, 6-inch.
1 Bench Duster, No. 10.
1 India Oil Stone, No. 29, mounted in iron box.
1 Washita Oil Slip, Round Edge, No. 13.
1 Copperized Steel Oiler, No. 13.

No. 38 ..... $6.50

Mechanical Drawing

1 Drawing Board, No. 444, 18x24 inches.
1 Mahogany, Ebony Lined T-square, No. 371, 24 inches.
1 Mahogany, Ebony Lined Triangle, No. 133, 8 inches, 45x45 degrees.
1 Mahogany, Ebony Lined Triangle, No. 132, 11 inches, 30x60 degrees.
1 Triangular Scale, No. 575, 12 inches, white edge.
1 Manual Training Rule, No. 1, Boxwood, 12 inches.
1 Ebony Shifting Parallel Rule, No. 200, 12 inches.
1 Irregular Curve, No. 174x3.
1 Irregular Curve, No. 174x8.
1 German Silver Protractor, No. 1262.
1 dozen Brass Thumb Tacks, No. 15, $\frac{5}{8}$-inch.
1 set Drawing Instruments, No. 209, Bar-lock, velvet lined case.
6-inch Compass with fixed needle point and with pen and pencil points and lengthening bar, 2 shoulder needles.
6 inches Hair Spring Dividers.
$3\frac{1}{2}$ inches Steel Spring Dividers.
$3\frac{1}{2}$ inches Steel Spring Bow Pen with Needle Point.
$3\frac{1}{2}$ inches Steel Spring Pencil, with Needle Point.
$4\frac{1}{2}$ inches Drawing Pen, with Joint.
$5\frac{1}{2}$ inches Drawing Pen, with Joint.
Box of Leads.

No. 40 ..... $11.50

We have embodied in this outfit only high-grade instruments. They will do accurate work.

1 Drawing Board, No. 442, 18x24 inches.
1 Cherry T-square, No. 363, 24 inches.
1 Cherry Triangle, No. 125, 45x45 degrees, 8 inches.
1 Cherry Triangle, No. 124, 30x60 degrees, 11 inches.
1 Triangular Scale, No. 489, 12 inches, Boxwood.
1 Manual Training Rule, No. 3, Boxwood, 12 inches.
1 Ebony Shifting Parallel Rule, No. 200, 6 inches.
1 Irregular Curve, No. 174, No. 3.
1 Irregular Curve, No. 174, No. 8.
1 Brass Protractor, No. 1266.
1 dozen Steel Thumb Tacks, No. 12, $\frac{1}{2}$-inch.
1 Set Drawing Instruments, No. $207\frac{1}{2}$, containing: 6-inch Compass, with Fixed Needle Point, Pen, Pencil Point and Lengthening Bar.
$5\frac{1}{2}$-inch Dividers.
$3\frac{1}{4}$-inch Spring Bow Pen, with Needle Point.
$5\frac{1}{4}$-inch Drawing Pen, upper Blade with Spring.
Box of Leads.

No. 41 ..... $5.50

This is an excellent outfit for beginners. Good quality at moderate price.

Manual Training Outfits

Carving Tools in Sets

S. J. Addis

For full line of Wood-Carving Tools, see index. These sets contain the well-known S. J. Addis, London make tools ground sharp, but not honed. The sizes and sweeps are those generally used by practical wood carvers. Each tool is carefully selected and the sets are put up in nicely finished oak cases.



Sets Nos. 13 and 14 contain 6 Handled and Sharpened (not honed) Carving Tools, in nicely finished oak case.

No. 1, 3/8 inch; No. 3, 1/2 inch; No. 5, 1/4 inch; No. 6, 5/16 inch; No. 10, 1/8 inch; No. 45, 1/4 inch.

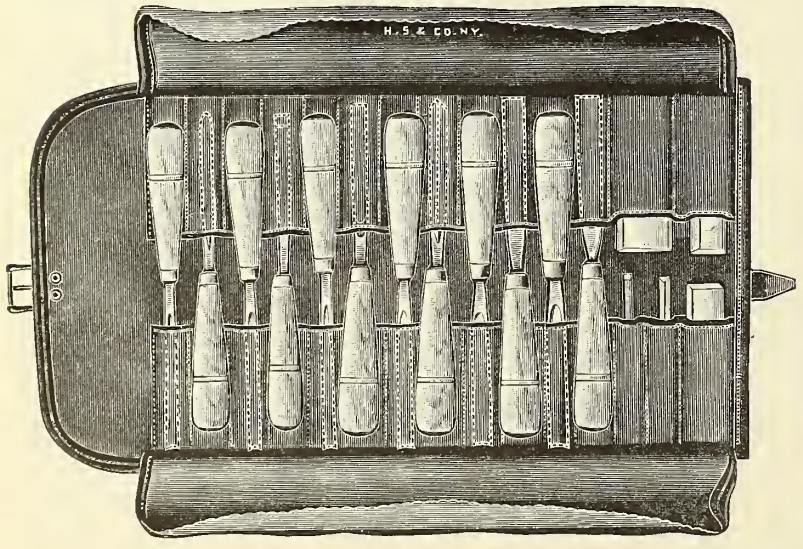
1 Washita Oil Stone, No. 26.

1 Special Arkansas Carving Tool Slip, No. 15.

1 Carvers Marker, No. 8.

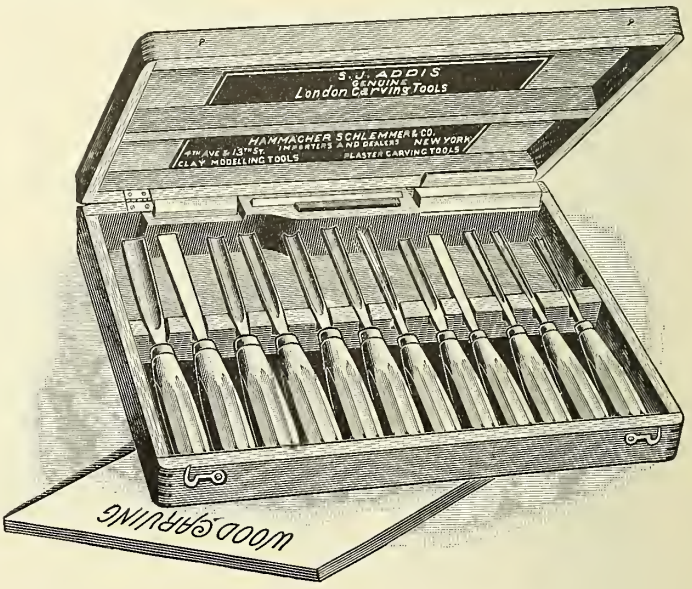
1 Illustrated Book of Instructions.

Set No. 13 With Round Maple Handles, each $3.00
Set No. 14 With New Style Octagon Maple Handles, each 3.25



The assortments of tools in these sets are the same as shown above, excepting that they are contained in a strong canvas roll in place of a wooden case. The roll is made of selected canvas, leather edged and a separate pocket is provided for each tool. This makes a very compact and convenient carrying case.

		Each
Set No. 21	Same assortment as No. 11	$5.50
Set No. 22	Same assortment as No. 12	5.75
Set No. 23	Same assortment as No. 13	3.50
Set No. 24	Same assortment as No. 14	3.75



Sets Nos. 11 and 12 contain 12 Handled and Sharpened (not honed) Carving Tools, in nicely finished oak case.

No. 1, 1/4 and 1/2 inch; No. 3, 3/8 and 5/8 inch; No. 5, 1/4 and 1/2 inch; No. 6, 1/4 and 1/2 inch; No. 7, 7/16 inch; No. 8, 1/4 inch; No. 10, 1/8 inch; No. 45, 1/4 inch.

1 Washita Oil Stone, No. 26.

1 Washita Round-Edge Slip, No. 11.

1 Arkansas Triangular Stick, No. 20.

1 Special Arkansas Carving-Tool Slip, No. 15.

1 Carvers Marker, No. 8.

1 Illustrated Book of Instructions.

Set No. 11 With Round Maple Handles, each $5.00
Set No. 12 With New Style Octagon Maple Handles, each 5.25

Set No. 11A special, contains 12 handled and sharpened (not honed) Carving Tools. In nicely finished oak case.

No. 1, 1/4, 3/8 and 1/2 inch; No. 2, 5/16 inch; No. 3, 1/2 inch; No. 5, 1/4 inch; No. 6, 5/16 inch; No. 8, 3/16 inch; No. 9, 1/16 inch; No. 10, 1/8 inch; No. 11, 5/64 inch; No. 41, 5/16 inch.

1 Special Arkansas Slipstone, No. 15.

1 Arkansas Triangular Stick, No. 20.

1 Washita Oilstone, No. 26.

1 Washita Round-Edge Slip, No. 11.

1 Carvers Marker, No. 8.

Set No. 11A Special, with round Maple handles, each $3.50

Book on Wood Carving

Containing 91 pages, devoted to Wood Carving, with suggestions in Chip Carving. Contains many illustrations and fully describes the wood, tools, etc., and also devotes an entire chapter to the sharpening and management of tools. Postpaid, 50 cents.

Manual Training Outfits

Venetian Bent Iron Work

Venetian Iron Work as a light form of manual training is becoming more popular every year. Owing to the low cost of the following outfits, they have proven very acceptable to school boards and purchasing agents as an initial equipment, which may be increased as necessary.

Individual

1 pair H. S. & Co., Flat-Nose Pliers, No. 20, 5 inch.
1 pair H. S. & Co., Round-Nose Pliers, No. 21, 5 inch.
1 Stanley Boxwood Rule, No. 18, 2-foot, 2-fold.
1 Jersey Clamp Vise, No. 765.
1 H. S. & Co., Riveting Hammer, No. 2-0.
1 pair Reliance Snips, No. 9.
½-pound Lead Wire.
1 coil Venetian Iron, ¼ inch.
100 Binders, ¼ inch.

No. 34 ..... $4.00

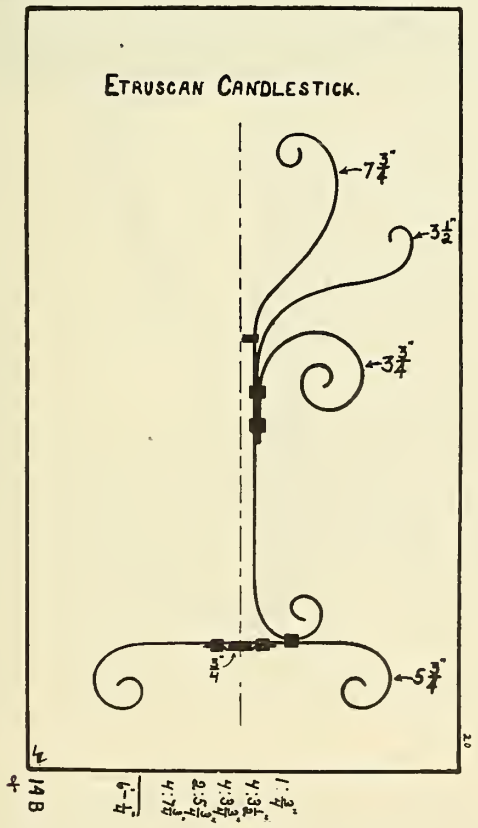
Equipment for Class of Ten Pupils

10 pairs H. S. & Co., Flat-Nose Pliers, No. 20, 5-inch.
10 pairs H. S. & Co., Round-Nose Pliers, No. 21, 5-inch.
10 Stanley Boxwood Rules, No. 18, 2-foot, 2-fold.
5 Jersey Clamp Vises, No. 765.
3 H. S. & Co., Riveting Hammers, No. 2-0.
3 H. S. & Co., Riveting Hammers, No. 1.
5 pairs Reliance Snips, No. 9.
1 Rolling Cutter Shear, No. 11.
1 pound Lead Wire.
5 coils Venetian Iron, ¼ inch.
500 Binders, ¼ inch.

No. 36 ..... $27.00

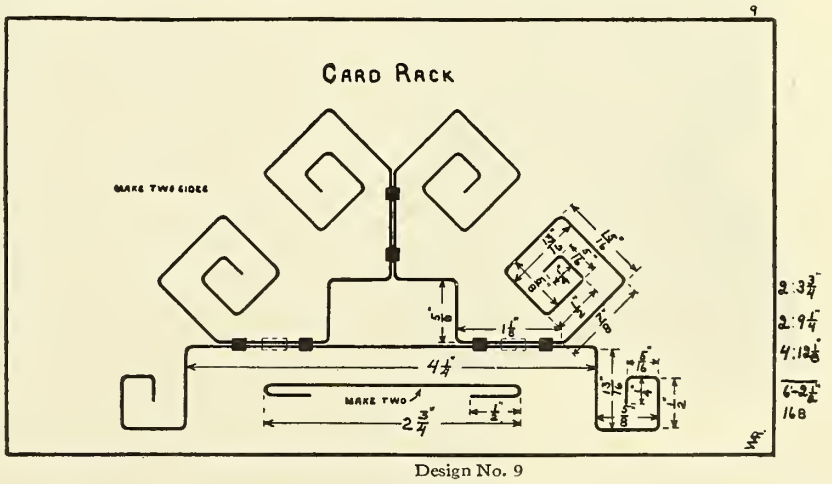
Designs

The following combined exercises and designs form an elementary course adopted by many schools. After the student has mastered the work sufficiently to produce these, he is generally able to proceed along his own lines, developing as he produces various other articles and in proportion with his own natural and artistic instincts. There is scarcely any limit to the articles that may be made, as a visit to almost any antique shop (especially those handling oriental goods) will prove.



Design No. 20

For this design there is required 1 strip of iron (width optional) ¾-inch long, 4 strips 3½ inches long, 4 strips 3¾ inches long, 2 strips 5¾ inches long, 4 strips 7¾ inches long and 14 binders.



Design No. 9

For this design there is required 2 strips of iron (width optional) 3¾ inches long, 2 strips 9¼ inches long, 4 strips 12⅛ inches long and 16 binders.

No. 1 *Exercise.
No. 2 Exercise.
No. 3 Exercise.
No. 4 Exercise.
No. 5 Exercise.
No. 6 Pen Rack.
No. 7 Easel.
No. 8 Mat.
No. 9 Card Rack (as illustrated.)
No. 10 Exercise.
No. 11 Exercise.
No. 12 Exercise.
No. 13 Test-Tube Holder.
No. 14 Egg Boiler.
No. 15 Exercise.
No. 16 Photograph Rack.
No. 17 Details of Test-Tube Rack.
No. 18 Ink Stand.
No. 19 Ink Stand, double.
No. 20 Etruscan Candlestick (as illustrated.)
No. 21 Candlestick.
No. 22 Wall Candle Bracket.
No. 23 } Design for 5-light Can-
No. 24 } delabrum.

*No. 1: First exercise also shows the method of attaching binders,

Either number, dozen $1.00
Each ..... $ .10 Set (1 each of above) 2.00

Supplies

Iron in strips in coils of 50 feet	⅛	3/16	¼	⅜
Coil	$ .16	.18	.21	.25

Binders in sizes ⅛, 3/16, ¼ and ⅜ inch.
Hundred ..... $ .10

Paint, fine ivory black, in 1-pound cans.
Each ..... .40

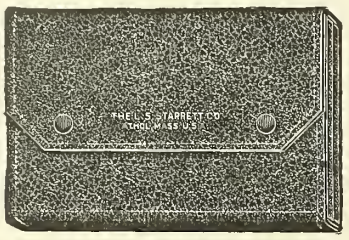
Lead wire, soft and pliable, for measuring length of iron required.
3 foot strips ..... $ .05

Book of Instructions by T. Vernette Morse, illustrated with working designs.
Each ..... $ .25

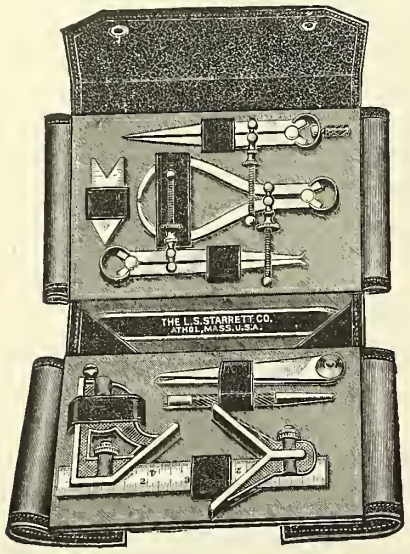
Manual Training Outfits

Machinists

Starrett No. 900



In folding leather case. Size of case folded, 7 inches x 4¾ inches x 1⅜ inches.



This set consists of the folding leather case and the following tools:

No. 11 6-inch Combination Square, complete.
No. 117B Center Punch.
No. 321 6-inch Flexible Steel Rule in pocket case.
No. 390 Center Gage.
No. 241 4-inch Caliper.
No. 79 4-inch Outside Caliper with solid nut.
No. 73 4-inch Inside Caliper with solid nut.
No. 83 4-inch Divider with solid nut.

Each $6.00

H. S. & Co. No. 28

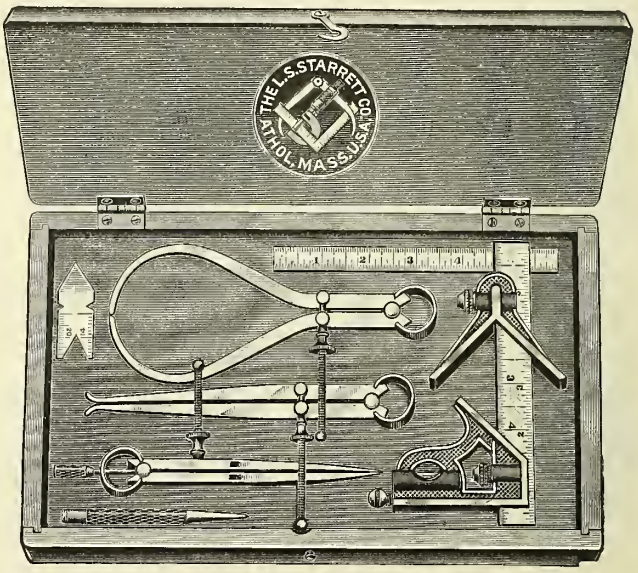
Users of machinists tools know that the Brown & Sharpe and Starrett tools are considered to be the best on the market. Outfit No. 28 contains tools of both of these makes.

This outfit is not intended to cover a full equipment, but is only suggested to those who wish the necessary tools for a start and who intend to increase the equipment as further tools are needed.

1 Parker Eclipse Vise, No. 102.
1 Hammond Ball Pein Machinists Hammer, No. 0.
1 Starrett Combination Square, with Center Head, No. 11, 9-inch.
1 Starrett Nickel-plated Hack Saw Frame, No. 140, with blade.
1 pair Brown & Sharpe Rex Spring Dividers, No. 810, 4-inch.
1 pair Brown & Sharpe Firm Joint Outside Calipers, No. 821, 6 inches.
1 pair Brown & Sharpe Firm Joint Inside Calipers, No. 822, 4 inches.
1 Brown & Sharpe Spring Tempered-Steel Rule, No. 300 6 inches.
1 Starrett Steel Scriber, No. 70A.
1 H. S. & Co. Knurled Prick Punch.
1 H. S. & Co. Knurled Center Punch, No. 10, ⅜ inch.
1 H. S. & Co. Cold Chisel, ⅝-inch.
1 H. S. & Co. Cape Chisel, ½-inch.
1 Handled K. & F. Flat Bastard File, 10 inches.
1 Handled K. & F. Hand Second-Cut File, 10 inches.
1 Handled K. & F. Half-Round Second-Cut File, 10 inches.
1 Handled K. & F. Half-Round Smooth File, 6 inches.
1 Handled K. & F. Round Second Cut File, 6 inches.

Each $10.50

Starrett No. 901



In nicely finished wooden case. Size of case, 12 inches x 7 inches x 1½ inches.

Set No. 901 consists of the wooden case and the following tools:
No. 11 6-inch Combination Square, complete.
No. 321 6-inch Flexible Steel Rule in pocket case.
No. 117B Center Punch.
No. 390 Center Gage.
No. 77 5-inch Divider with solid nut.
No. 79 6-inch Outside Caliper with solid nut.
No. 73 6-inch Inside Caliper with solid nut.

Each $6.15

Blacksmiths

1 Champion Agricultural Lever Forge, No. 151.
1 Hay-Budden Anvil, 70 pounds.
1 pair Straight-Lipped Blacksmiths Tongs, No. 1332, 16 inches.
1 pair Single Pick-up Tongs, No. 2091, 18 inches.
1 Hardie, to fit anvil, No. 1200.
1 Bottom Fuller, to fit anvil, No. 1180, ⅝ inches.
1 Bottom Swedge, to fit anvil, No. 1140, ¾ inches.
1 Flatter, No. 1190, 2 inches, with handle.
1 Top Fuller, No. 1170, ⅝-inch, with handle.
1 Top Swedge, No. 1130, ¾-inch, with handle.
1 Atha Engineers Hammer, No. 3.
1 Atha Ball Pein Machinists Hammer, No. 1.
1 Handled K. & F. Flat Bastard File, 10 inches.
1 Stanley Boxwood Rule, No. 61, 2-feet, 4-fold.

No. 30 ..... $20.00

Books by Robert H. Smith

Instructor of Machine Tool Work at Massachusetts Institute of Technology

Operations in machining, standard and typical problems in machine construction, are given in condensed schedules which name the material, operations, machines, speeds, feeds, jigs, fixtures and tools. Calculations are supplied by condensed rules and formulas. Facts and principles are supplied which a student or apprentice in school or shop must rediscover or obtain from instructor or foreman.

Text-Book of the Principles of Machine Work. Prepared for students in technical, manual training, and trade schools, and for the apprentice in the shop. 434 ill., 5¼x8¼, 342 pp $3.00

Abstract of contents: Engine and Speed Lathes, Drilling and Grinding Machines, Carbon and High-Speed Steel-Cutting Tools, Measuring, Turning, Fitting, Threading, Chucking, Drilling, Reaming, Jigs, Fixtures, Cylindrical Grinding.

Text-Book of the Elements of Machine Work. Prepared for students in technical, manual training, and trade schools, and for the apprentice in the shop. 204 ill., 5¼x8¼, 192 pp $2.00

Abstract of contents: Laying Out Work, Chipping, Filing, Scraping, Hardening and Tempering, Carbon and High-Speed Steels, Testing Hardness, Pipe Fitting, Soldering, Brazing, Lacing, Belts Aligning Shafting, Installing Machines.

Manual Training Outfit

H. S. & Co.



No. 25A

This illustration shows one of our most desirable manual training wood-working outfits. Complete list of tools contained therein appears on page 455. Our other outfits for manual training are listed on pages 455 to 460 inclusive. All our benches are substantially built of well-seasoned maple and can be had either with the old style wooden vises having hickory screws or the improved metal continuous screw or rapid-acting vises. The tools are all high grade and are made by well known reliable manufacturers. We have planned these outfits after years of experience, but realizing that many manual training directors have their own ideas, we are always pleased to quote on special requirements.

Tool Outfits

H. S. & Co.

In Patented Combination Bench and Tool Cabinets

See Following Page



No. 100

This Combination Bench Cabinet is unique in construction. The illustration showing fully its many desirable features, among which are its conveniently arranged drawer and closet space. End opening and hinged top. The bench top is made of seasoned maple, and is absolutely rigid. Supported by strong uprights which rest directly on the floor. When the cabinet is closed, the bench top as well as all tools are inside, thus making it a fine piece of polished solid oak furniture. Trimmed throughout with solid brass locks and handles. The cabinet dimensions are as follows: Length, 47 inches; width, 19 inches, height, 35 inches. The outfits contain about 100 different tools, each of the highest grade, as may be noted from the detailed list on next page.

Outfit No. 100 has a wooden vise with 1¾-inch screw, and double bench stop, and the bench top is arranged for their adjustment.

Outfit No. 200 is fitted with a quick action iron vise and double stop in place of the wooden vise. The iron vise has one movable and two stationary jaws, which can be operated at either the head or tail.

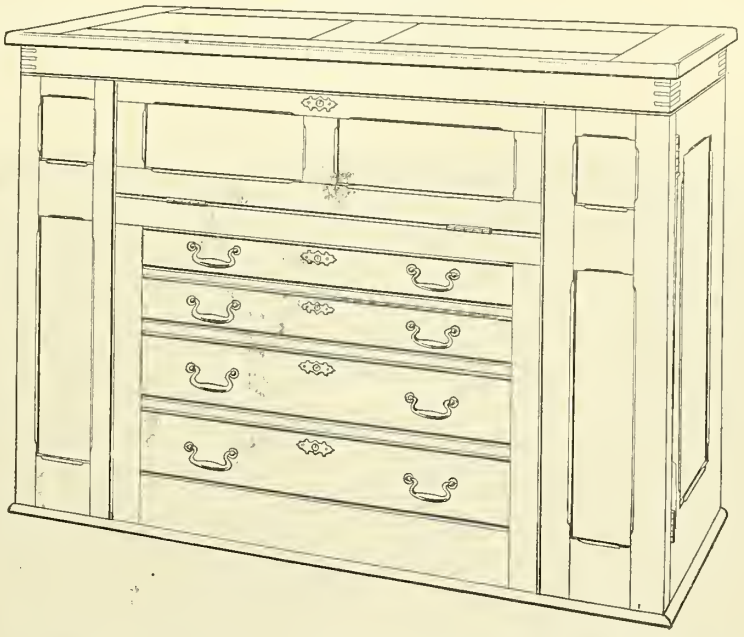
Outfit No. 400 is the same as No. 200 in every respect excepting the cabinet is made of solid mahogany instead of oak, and the hardware and vise are finished in old brass.

Tool Outfits

H. S. & Co.

In Patented Combination Bench and Tool Cabinets

See Preceding Page



List of Tools for Outfits Nos. 100, 200 and 400

Buck Bros. Handled and Sharpened Firmer Chisels, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4 and 1 inch.
Buck Bros. Handled and Sharpened Firmer Gouges, 3/8, 1/2, 3/4 inch.
Russell Jennings Auger Bits, Nos. 4, 5, 6, 7, 8, 9, 10 and 12.
Clark Expansive-Bit, 7/8 to 3 inches.
Imported Gimlet Bits, Nos. 2, 3, 4, 5, 6, 7 and 8.
H. S. & Co. Extra Quality Crosscut Saw, 22 inches.
H. S. & Co. Extra Quality Rip Saw, 22 inches.
H. S. & Co. Back Saw, 10 inches.
H. S. & Co. Compass Saw, 10 inches.
Disston Iron Pad Keyhole Saw, No. 10.
Hammond Adze-Eye Nail Hammer, No. 2.
H. S. & Co. Riveting Hammer, No. 1.
Round Lignum-vitæ Mallet, No. 4.
Stanley Iron Jack Plane, No. 5.
Stanley Iron Smooth Plane, No. 4.
Stanley Iron Rabbet and Filletster Plane, No. 78.
Stanley Iron Block Plane, No. 18.
Barber Nickel-plated Ball-bearing Ratchet Brace, No. 33, 8 inches.
M. F. Co. Hand Drill, No. 1.
Disston Sliding T-Bevel, 8 inches, No. 3.
Disston Hardened Blade Try Squares, No. 5 1/2, 6 and 8 inches.
Sargent Steel Nickel-plated Square, No. 35N, 18x12 inches.
Stanley Two-Foot Boxwood Folding Rule, Brass Bound, No. 54.
Stanley Marking Gauge, No. 64 1/2.
H. S. & Co. New Century Screwdriver, No. 100, 2 1/2, 4 and 6 ins.
P. S. & W. Winged Divider, No. 35, 6 inches.
H. S. & Co. Sloyd Knife, No. 6.
M. F. Co. Spokeshave, No. 2.
H. S. & Co. Cabinet Scraper, 3x6 inches.
H. S. & Co. Handled Brad Awl, 1 3/8 inches.
Perfection Sandpaper Holder.
H. S. & Co. Flat Nose Pliers, No. 1906 1/2, 5 1/2 inches.
H. S. & Co. Round Nose Pliers, No. 1906 3/4, 5 1/2 inches.
Combination Pliers, No. 1880, 7 inches.
Trimo Pipe Wrench, 10 inches.
Standard Vise, No. 78.
Reliance Tinners Snips, No. 10.
H. S. & Co. Carpenters Pincers, 6 inches.
Perfect Handle Monkey Wrench, 8 inches.
Set of Bit Stock Drills, 1/8, 5/32, 3/16, 7/32, 1/4, 5/16 and 3/8 inch (for metal).
K. & F. Handled Double Ender Saw File, 8 inches.
K. & F. Handled Warding Bastard File, 4 inches.
K. & F. Handled Flat Bastard File, 6 and 8 inches.
K. & F. Handled Half Round Bastard File, 6 and 8 inches.
K. & F. Handled Round Bastard File, 6 and 8 inches.
K. & F. Handled Square Bastard File, 6 inches.
K. & F. Handled Cabinet File, 8 inches.
K. & F. Handled Cabinet Rasp, 8 inches.
Stanley Adjustable Level, No. 3, 22 inches.
Jacob Mitre Box, No. 4.
Brass Plumb Bob, No. 5, with one hank No. 6 Linen Line.
Starrett Nickel-plated Hack Saw Frame, No. 140, with six 8 inch Blades.
Glass Cutter, No. 2.
Bench Duster, No. 10.
B. M. Co. Screwdriver Bit, No. 10, 3/8-inch.
India Oil Stone, mounted in iron box, No. 29, Combination.
B. M. Co. Rose Countersink, No. 10, 5/8-inch.
H. S. & Co. Knurled Nail Set, No. 2.
B. M. Co. Square Reamer, No. 40.
Coppered Steel Oiler, No. 12.
Buck Bros. Scratch Awl.
H. S. & Co. Knurled Center Punch, No. 10, 5/16-inch.
Hammond Half Hatchet, No. 30, Size No. 1.

No. 100 Complete **$95.00**
No. 0100 Cabinet only, without Racks or Tools **55.50**
No. 0100 Cabinet only, with Racks, but without Tools **57.00**

Approximate weights: No. 100, complete, boxed, 375 pounds; not boxed, 290 pounds.

Approximate weights: No. 0100, Cabinet only, without Racks or Tools, boxed, 275 pounds; not boxed, 205 pounds.

Approximate weights: No. 0100, Cabinet only, with Racks, but without Tools, boxed, 280 pounds; not boxed, 210 pounds.

No. 200 Complete **$105.00**
No. 0200 Cabinet only, without Racks or Tools **62.50**
No. 0200 Cabinet only, with Racks, but without Tools **64.00**

Approximate weights: No. 200, complete, boxed, 400 pounds; not boxed, 315 pounds.

Approximate weights: No. 0200, Cabinet only, without Racks or Tools, boxed, 300 pounds; not boxed, 230 pounds.

Approximate weights: No. 0200, Cabinet only, with Racks, but without Tools, boxed, 305 pounds; not boxed, 235 pounds.

No. 400 Complete **$125.00**
No. 0400 Cabinet only, without Racks or Tools **85.50**
No. 0400 Cabinet only, with Racks, but without Tools **87.00**

Approximate weights: No. 400, complete, boxed, 380 pounds: not boxed, 295 pounds.

Approximate weights: No. 0400, Cabinet only, without Racks or Tools, boxed, 280 pounds; not boxed, 210 pounds.

Approximate weights: No. 0400, Cabinet only, with Racks, but without Tools, boxed, 285 pounds; not boxed, 205 pounds.

The boxed weights may vary to some extent owing to difference in weight of lumber.

Tool Outfits

H. S. & Co.

See Following Page



No. 55



Left-end View



No. 75

Tool Outfits

H. S. & Co.

See Preceding Page

No. 55

The cabinet for this outfit is made of solid oak, with iocked corners; is trimmed in brass, well finished, and high grade in every detail. The outside dimensions are 33 inches in height, 22 inches wide, and 10 inches deep, and the door is divided to open in the center. When open, the width across entire front is 44½ inches. There is room in the drawer for the utility box No. 10, a small tray divided into compartments for holding an assortment of nails, tacks, staples and screws, and this box, filled, is included with each outfit. The illustration shows the 52 different tools and their compact arrangement, and we append an exact list detailing each, so their high quality may be appreciated, as the makes represent names known in the tool world as the best that are made.

No. 55 Complete ..... $36.00 No. 055 Cabinet only $12.50

Approximate weights, No. 055, Cabinet only, boxed, 70 pounds; not boxed, 50 pounds.
Approximate weights, No. 55, complete, boxed, 125 pounds; not boxed, 95 pounds.
The boxed weights may vary to some extent owing to difference in weight of lumber.

List of Tools in Outfits Nos. 55 and 75

H. S. & Co. Crosscut Saw, 22 inches.
H. S. & Co. Rip Saw, 22 inches.
H. S. & Co. Back Saw, 10 inches.
Disston Iron Pad Keyhole Saw, No. 10.
H. S. & Co. Hack Saw Frame, No. 100, with half dozen H. S. & Co. 8-inch blades.
Hammond A. E. Hammer, No. 2.
H. S. & Co. Riveting Hammer, No. 0.
Hammond Half Hatchet, No. 30, size No. 1.
Round Second Growth Hickory Mallet, No. 4.
H. S. & Co. Nail Set, No. 2.
Pair H. S. & Co. Carpenters Pincers, 6 inches.
H. S. & Co. New Century Screwdriver, No. 120, 3½ inches, slim.
H. S. & Co. New Century Screwdriver, No. 100, 5 inches.
B. M. Co. Screwdriver Bit, No. 10, ⅜ inch.
Stanley Iron Jack Plane, No. 5.
Stanley Iron Block Plane, No. 18.
Iron Spokeshave, No. 91, adjustable.
Witherby Carpenters Draw Knife, No. 115, 6 inches.
Buck Bros. Handled and Sharpened Chisel, No. 2, ¼ inch.
Buck Bros. ditto, No. 2, ½ inch.
Buck Bros. ditto, No. 2, 1 inch.
Buck Bros. Gouge, No. 8, ⅜ inch.
H. S. & Co. Handled Scratch Awl, 2 inches.
H. S. & Co. Handled Brad Awl, 1⅜ inches.
M. F. Co. Hand Drill, No. 1.
Barber Nickel-plated Ball-bearing Ratchet Brace, No. 33, 8 inches.
Imported Gimlet Bit, ⅛ inch.
Imported Gimlet Bit, $\frac{3}{16}$ inch.
Genuine Russell Jennings Auger Bit, ¼ inch.
Genuine Russell Jennings Auger Bit, ⅜ inch.
Genuine Russell Jennings Auger Bit, ½ inch.
Clark Small Expansive Bit, ½ inch to 1½ inches.
B. M. Co. Square Reamer, No. 40.
B. M. Co. Rose Countersink, No. 10, ⅝ inch.
Sargent Nickel-plated Steel Carpenter Square, No. 10-N, 8 inches.
Disston Try Square, No. 1, 6 inches.
Stanley Tee Bevel, No. 25, 8 inches.
Stanley Level, No. 104, 18 inches.
Stanley Marking Gauge, No. 64½.
P. S. & W. Winged Dividers, No. 35, 6 inches.
Stanley Boxwood Rule, No. 53, 2 feet.
Perfect Handle Monkey Wrench, 8 inches.
Genuine Trimo Pipe Wrench, 10 inches.
H. S. & Co. Combination Pliers, No. 1880, 7 inches.
K. & F. Half Round Bastard File, 8 inches, handled.
K. & F. Warding Bastard File, 4 inches, handled.
K. & F. Slim Taper Saw File, 5½ inches, handled.
K. & F. Cabinet Rasp, 8 inches, handled.
Standard Steel Jaw Bench Vise, No. 6.
Carborundum Oil Stone, No. 122, mounted in Oak Case.
Coppered Steel Oiler, No. 12.
Glass Cutter, No. 2.
Utility Box, No. 10, of Brads, Nails, Tacks and Screws.

No. 75

This Outfit is contained in a Combination Bench Cabinet, 33½ inches high, with a bench top 50 inches long, 22 inches wide, 2¼ inches thick, having a tool recess at back 7 inches wide. The top is made of strips of thoroughly seasoned hard maple, having heavy bolsters at each end; tongued and grooved joints, bolted and glued together. Has rapid-acting vise and adjustable metal planing stop. The cabinet is made almost entirely of oak, with solid brass hardware. The top and middle drawers are 18¾x16x6 inches; the bottom drawer measures 29½x16x6½ inches and is fitted with tool racks. The cupboard is 9½ inches wide, 16½ inches deep, 14 inches high. The end tool racks have inside space, available for tools, 14¼ inches wide, 22 inches high and 3 inches deep.

No. 75 Complete ..... $55.00 No. 075 Cabinet only $30.00

Approximate weights, No. 075, Cabinet only, boxed, 275 pounds; not boxed, 200 pounds.
Approximate weights, No. 75, complete, boxed, 330 pounds; not boxed, 255 pounds.
The boxed weights may vary to some extent owing to difference in weight of lumber.

Tool Outfits

H. S. & Co.

See Following Pages



No. 52

These are the same polished quartered oak, portable Cabinets as those contained in the No. 47 outfit, see page 468. This outfit, however, contains 24 different tools, some of which are higher grade than those in the No. 47. The assortment is naturally more complete and is the best small portable set that can be purchased. The detailed list of tools given on next page shows the high quality of each.



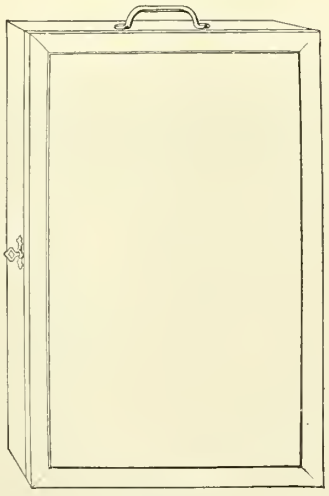
No. 54

These Cabinets are substantially made of polished quartered oak, the same as those of Outfit No. 53, see page 468. Outside dimensions are 29½ inches in height, 18 inches in width, and 8½ inches in depth. Owing to size and weight they are not suitable for a portable outfit, but No. 54 is a most complete and high-grade set of tools in every detail. Contains 40 different tools of the very best quality, among them being a Barber Ball-bearing Brace, Stanley Iron Planes, etc. The detailed list on the next page shows the very high quality of each item.

Tool Outfits

H. S. & Co.

See Preceding Page



No. 52

Disston Crosscut Saw, No. 7, 16 inches.
Buck Bros. Handled and Sharpened Chisel, No. 2, ¼ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, ½ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, ¾ inch.
Hammond Adze-eye Hammer, No. 2.
H. S. & Co. New Century Screwdriver, No. 100, 4 inches.
Imported Gimlet Bit, ⅛ inch.
Imported Gimlet Bit, $\frac{3}{16}$ inch.
Russell Jennings Auger Bit, No. 6.
Russell Jennings Auger Bit, No. 8.
Barber Nickel-plated Ratchet Brace, No. 323, 8 inches.
H. S. & Co. Combination Pliers, No. 25, 5½ inches.
H. S. & Co. Handled Brad Awl, 1⅜ inches.
B. M. Co. Rose Countersink, No. 10, ½ inch.
H. S. & Co. Knurled Nail Set.
Stanley Boxwood Folding Rule, No. 61, two foot.
Disston Hardened Blade Try-square, No. 5½, 6 inches.
Stanley Iron Block Plane, No. 9½.
B. M. Co. Screwdriver Bit, No. 10, ⅜ inch.
Best Quality Rosy Red Oil Stone, 6 inches. mounted.
P. S. & W. Winged Dividers, 6 inches.
Stanley Iron Spokeshave, No. 53.
K. & F. Handled Half-round Bastard File, 6 inches.
Coppered Steel Oiler, No. 12.

Contains 24 Different Tools

No. 52 Complete $12.00
No. 052 Cabinets only 4.50

Approximate weights: No. 052, Cabinet only, boxed, 20 pounds; not boxed, 17 pounds.

Approximate weights: No. 52, complete, boxed, 35 pounds; not boxed, 32 pounds.

Unless otherwise specified, the Cabinets only are supplied with Tool Racks.

No. 54

H. S. & Co. Extra Quality Crosscut Saw, 20 inches.
H. S. & Co. New Century Screwdriver, No. 100, 4 inches.
H. S. & Co. New Century Screwdriver, No. 100, 6 inches.
Barber Nickel-plated Ball-bearing Ratchet Brace, No. 33, 8 inches.
Stanley Iron Block Plane, No. 18.
Stanley Iron Jack Plane, No. 5.
Coppered Steel Oiler, No. 12.
India Oil Stone, No. 2, mounted in iron box.
Hammond Adze-eye Hammer, No. 2.
Disston Hardened Blade Try-square, No. 5½, 6 inches.
Stanley Iron Spokeshave, No. 53.
Buck Bros. Handled and Sharpened Chisel, No. 2, ¼ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, ½ inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, ¾ inch.
Buck Bros. Handled and Sharpened Gouge, No. 8, ⅜ inch.
K. & F. Handled Flat Bastard File, 8 inches.
H. S. & Co. Best Quality Riveting Hammer, No. 0.
M. F. Co. Hand Drill, No. 1.
Russell Jennings Auger Bit, No. 4.
Russell Jennings Auger Bit, No. 6.
Russell Jennings Auger Bit, No. 8.
Clark Expansive Bit, ½ to 1½ inches.
Imported Gimlet Bit, ⅛ inch.
Imported Gimlet Bit, $\frac{3}{16}$ inch.
H. S. & Co. Handled Brad Awl, 1⅜ inches.
B. M. Co. Rose Countersink, No. 10, ½ inch.
H. S. & Co. Knurled Nail Set.
Stanley Beech Marking Gauge, No. 64½.
Stanley Sliding T-Bevel, No. 2, 8 inches.
Perfect Handle Monkey Wrench, 6 inches.
Stanley Boxwood Folding Rule, No. 61, two foot.
P. S. & W. Winged Dividers, No. 35, 6 inches.
Bernard Nickel-plated Cutting Pliers, No. 102, 5½ inches.
Burner Pliers, No. 118, 6 inches.
Disston Iron Pad Keyhole Saw, No. 2.
K. & F. Handled Half-round Bastard File, 6 inches.
K. & F. Handled Warding Bastard File, 4 inches.
Jersey Vise, No. 741.
B. M. Co. Square Reamer, No. 40.
B. M. Co. Screwdriver Bit, No. 10, ⅜ inch.

Contains 40 Different Tools

No. 54 Complete $23.00
No. 054 Cabinets only 7.50

Approximate weights: No. 054, Cabinet only, boxed, 45 pounds; not boxed, 30 pounds.

Approximate weights: No. 54, complete, boxed, 72 pounds; not boxed, 57 pounds.

Unless otherwise specified, the Cabinets only are supplied with Tool Racks.

Tool Outfits

H. S. Co.

See Following Page



No. 47

These Cabinets are made of polished quartered oak, substantially built, but light enough in construction to permit the outfit to be easily portable, and are provided with convenient handle for carrying. When closed, the cabinets form an attractive piece of furniture. Outside dimensions are 22 inches in height, 14 inches in width, and 6 inches in depth. Each outfit contains 21 high-grade tools. Made by reliable manufacturers, as shown in detailed list on next page. These tools were carefully selected to give as complete an assortment as possible where a small portable outfit is required. They are excellent for general home use or for the boy who wants to make a beginning in wood-working



No. 53

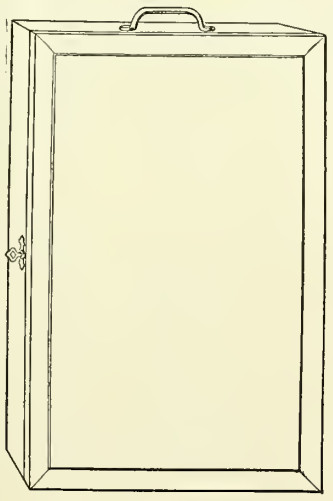
These Cabinets are larger and better finished than those containing assortments Nos. 47 above, and 52, see page 466, the outside dimensions being 29½ inches in height, 18 inches in width, and 8½ inches in depth. On account of their weight these outfits are not suitable where portable sets are required, but we recommend them for all cases where a medium-sized outfit of excellent quality is desired. No. 53 contains 36 different tools, made by the best manufacturers, as may be noted from detailed list on next page.

Tool Outfits

H. S. & Co.

See Preceding Page

No. 47



Crosscut Saw, 16 inches.
Hammond Adze-eye Hammer, No. 2.
Stanley Adjustable Iron Block Plane, No. 120.
Barber Nickel-plated Brace, No. 223, 8 inches.
Blued Auger Bit, 3/8 inch.
Blued Auger Bit, 1/2 inch.
Imported Gimlet Bit, 1/8 inch.
Imported Gimlet Bit, 3/16 inch.
Screwdriver Bit, No. 10 1/2, 3/8 inch.
Buck Bros Handled and Sharpened Chisel, No. 2, 1/4 inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, 1/2 inch.
New Century Screwdriver, No. 100, 4 inches.
Disston Hardened Blade Try-square, No. 5 1/2, 6 inches.
O. K. Nail Set.
Stanley Boxwood Folding Rule, No. 61, two foot.
P. S. & W. Winged Dividers, 6 inches.
Burner Pliers, No. 118, 5 inches.
H. S. & Co. Flat-nose Pliers, No. 20, 5 inches.
K. & F. Handled Half-round Bastard File, 6 inches.
Rose Countersink, No. 10 1/2, 1/2 inch.
H. S. & Co. Handled Brad Awl 1 3/8 inches.

Contains 21 Different Tools

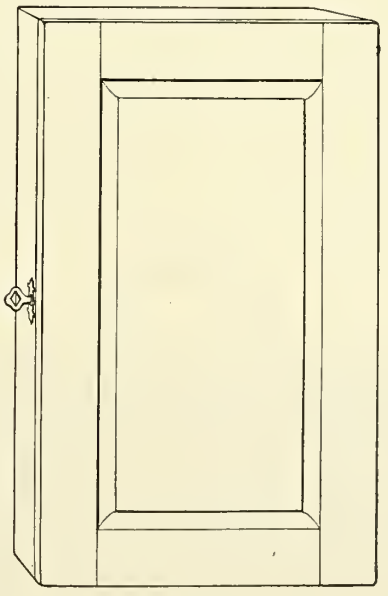
No. 47 Complete..... $9.00 No. 047 Cabinet only, with Tool Racks..... $4.50

Approximate weights: No. 047 Cabinet only, boxed, 20 pounds; not boxed, 17 pounds. No. 47 Complete, boxed, 30 pounds; not boxed, 27 pounds.

Unless otherwise specified, the Cabinets only are supplied with Tool Racks.

No. 53

Barber Nickel-plated Ratchet Brace, No. 323, 8 inches.
Buck Bros. Handled and Sharpened Chisel, No. 2, 1/4 inch.
Buck Bros. Handled and Sharpened Chisel, No. 2 1/2 inch.
Buck Bros. Handled and Sharpened Chisel, No. 2, 3/4 inch.
H. S. & Co. New Century Screwdriver, No. 100, 4 inches.
H. S. & Co. New Century Screwdriver, No. 100, 6 inches.
Disston Hardened Blade Try-square, No. 5 1/2, 6 inches.
Stanley Wood Jack-plane, No. 26.
Stanley Iron Block Plane, No. 9 1/2.
Hammond Adze-eye Hammer, No. 2.
Stanley Boxwood Folding Rule, No. 61, two foot.
K. & F. Handled Flat Bastard File, 8 inches.
K. & F. Handled Half-round Bastard File, 6 inches.
K. & F. Handled Warding Bastard File, 4 inches.
Buck Bros. Handled and Sharpened Gouge, No. 8, 3/8 inch.
Disston Crosscut Saw, No. 7, 18 inches.
Disston Iron Pad Keyhole Saw, No. 2.
Stanley Iron Spokeshave, No. 53.
Stanley Beech Marking Gauge, No. 64 1/2.
Russell Jennings Auger Bit, No. 4.
Russell Jennings Auger Bit, No. 6.
Russell Jennings Auger Bit, No. 8.
Russell Jennings Auger Bit, No. 10.
Imported Gimlet Bit, 1/8 inch.
Imported Gimlet Bit, 3/16 inch.
H. S. & Co. Handled Brad Awl, 1 3/8 inches.
B. M. Co. Rose Countersink, No. 10, 1/2 inch.
B. M. Co. Screwdriver Bit, No. 10, 3/8 inch.
H. S. & Co. Knurled Nail Set.
P. S. & W. Winged Dividers, No. 35, 6 inches.
India Oil Stone, No. 2, mounted in iron box.
Coppered Steel Oiler, No. 12.
H. S. & Co. Combination Pliers, No. 25, 5 1/2 inches.
Perfect Handle Monkey Wrench, 6 inches.
Disston Sliding T-Bevel, No. 2, 8 inches.
B. M. Co. Square Reamer, No. 40.



Contains 36 Different Tools

No. 53 Complete..... $18.00 No. 053 Cabinet only, with Tool Rack..... $7.50

Approximate weights: No. 053 Cabinet only, boxed, 45 pounds; not boxed, 30 pounds. No. 53 Complete, boxed, 67 pounds; not boxed, 52 pounds.

Unless otherwise specified, the Cabinets only are supplied with Tool Racks.

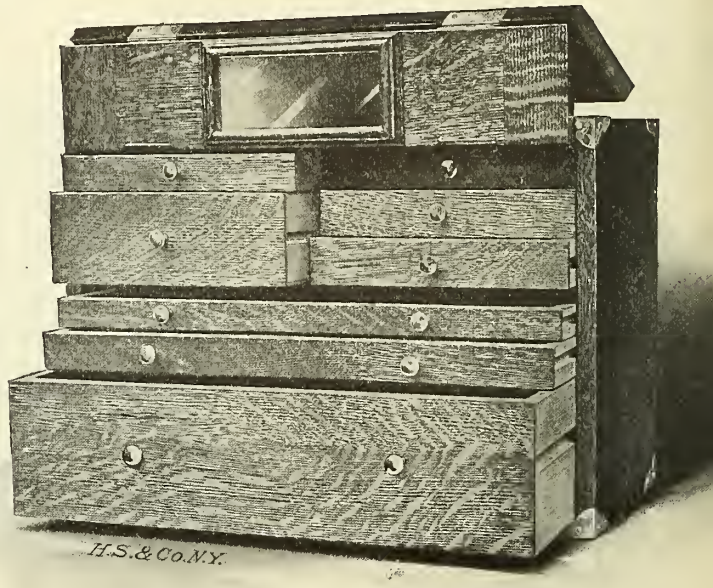
Machinists Portable Tool Cases

H. S. & Co.

The most practical portable Tool Cases for machinists. The drawers are so arranged that every available inch can be utilized, and tools may be so distributed that each one can quickly and easily be found without first handling a number of other tools which have hurriedly been placed on top of the one wanted. With the exception of the bottoms and sides of drawers, they are made throughout of thoroughly kiln-dried solid (not veneered) oak or mahogany, which will not warp nor twist, and very carefully and handsomely polished and finished; the corners are dovetailed and the workmanship is of the very best. The trimmings are of polished brass. Each case has a brass spring lock with two flat steel keys and a comfortable leather handle for convenience in carrying.

The drawers run on hardwood slides, have brass polished knobs, and bottoms are lined with genuine felt.

Machinists will find the little mirror which is placed on the inside of the case a very handy and convenient addition.



Showing Case Open and Drawers Exposed

Made in Two Sizes as Follows

No. 120, Oak. No. 125, Mahogany.

Outside dimensions when closed: 15⅝ inches long, 8 inches deep, 10¾ inches high.

Inside dimensions of the drawers:

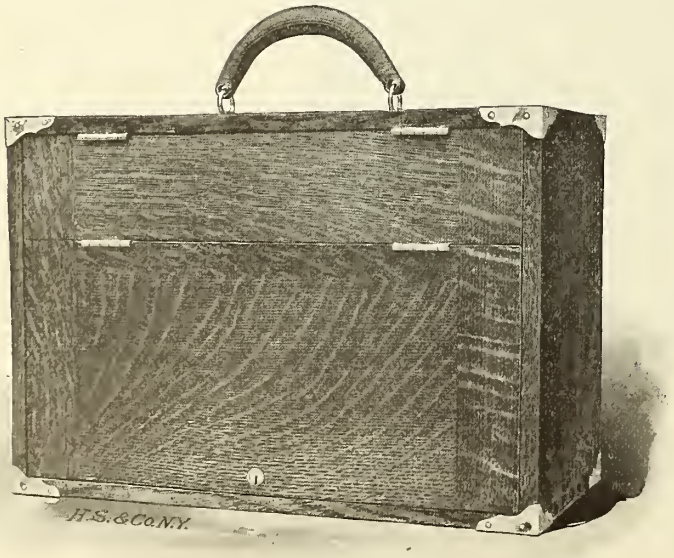
First	6½ inches long, 6⅛ inches deep, ¾ inch high
Second	6½ inches long, 6⅛ inches deep, 2 3/16 inches high
Third	6½ inches long, 6⅛ inches deep, ¾ inch high
Fourth	6½ inches long, 6⅛ inches deep, 1 inch high
Fifth	6½ inches long, 6⅛ inches deep, 15/16 inch high
Sixth	14⅛ inches long, 6⅛ inches deep, ½ inch high
Seventh	14⅛ inches long, 6⅛ inches deep, 1 inch high
Eighth	14⅛ inches long, 6⅛ inches deep, 3 3/16 inches high

No. 121, Oak. No. 126, Mahogany.

Outside dimensions when closed: 20 inches long, 8 inches deep, 10¾ inches high.

Inside dimensions of the drawers:

First	8¾ inches long, 6⅛ inches deep, ¾ inch high
Second	8¾ inches long, 6⅛ inches deep, 2 3/16 inches high
Third	8¾ inches long, 6⅛ inches deep, ¾ inch high
Fourth	8¾ inches long, 6⅛ inches deep, 1 inch high
Fifth	8¾ inches long, 6⅛ inches deep, 15/16 inch high
Sixth	18½ inches long, 6⅛ inches deep, ½ inch high
Seventh	18½ inches long, 6⅛ inches deep, 1 inch high
Eighth	18½ inches long, 6⅛ inches deep, 3 3/16 inches high



Showing Case Closed and Locked

		Each
No. 120	Oak, 15⅝ inches long	$20.00
No. 125	Mahogany, 15⅝ inches long	20.00
No. 121	Oak, 20 inches long	30.00
No. 126	Mahogany, 20 inches long	30.00

Approximate weights:

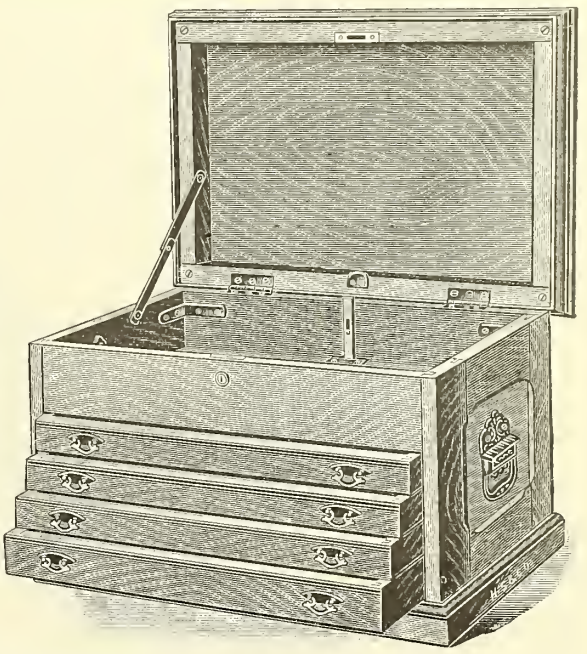
No. 120 Oak, packed for shipment, 20 pounds.
No. 120 Oak, not packed for shipment, 14½ pounds.
No. 125 Mahogany, packed for shipment, 19½ pounds.
No. 125 Mahogany, not packed for shipment, 14 pounds.
No. 121 Oak, packed for shipment, 25 pounds.
No. 121 Oak, not packed for shipment, 17¾ pounds.
No. 126 Mahogany, packed for shipment, 24¼ pounds.
No. 126 Mahogany, not packed for shipment, 17 pounds.

Machinists Tool Chests

H. S. & Co.

These Chests are all carefully made of selected wood, are nicely finished in every respect, have nickel-plated trimmings, flat-keyed locks and automatic device for locking all drawers. We recommend particularly the No 4 as most excellent value.

		Each
No. 1	Quartered Oak, with 2 drawers	$10.63
No. 2	Quartered Oak, with 3 drawers	11.25
No. 4	Quartered Oak, with 4 drawers	10.63
No. 4	Gumwood, with 4 drawers	7.64



Number	Outside Inches	Receptacle Under Lid Inches	First Drawer Inches	Second Drawer Inches	Third Drawer Inches	Fourth Drawer Inches
1	20¾x12⅝x11¼	18x10⅛x3⅛	17⅛x 8⅞x1⅜	17⅛x 8⅞x2⅝		
2	23¾x14⅝x12⅞	21x11¾x3⅛	20 x10½x1	20 x10½x1½	20 x10½x2½	
4	18⅞x12¾x11⅝	16x10⅛x2½	15⅛x 8⅞x 15/16	15⅛x 8⅞x 15/16	15⅛x 8⅞x 15/16	15⅛x8⅞x1 5/16

Machinists Tool Outfits

Starrett

These three sets of machinists tools have been very carefully selected to meet all requirements and we recommend each one for the purpose indicated. The No. 904 set is for use by a beginner; the No. 903 for a practical workman and No. 902 set forms a basis for tools required for the most exact work. None of the sets cover all requirements, but form excellent initial equipments, which may be increased as necessary.

Apprentice No. 904

No. 603	6-inch Rule	$ .65
No. 390	Center gage	.25
No. 11	12-inch Combination Square	2.00
No. 3	Micrometer	6.00
No. 40	Screw Pitch Gage	1.00
No. 146	Hack Saw Frame	1.00
No. 70A	Scriber	.25
No. 79	3-inch Caliper with solid nut	.70
No. 79	6-inch Caliper with solid nut	.85
No. 73	3-inch Caliper with solid nut	.70
No. 83	5-inch Divider with solid nut	.80
No. 42	6-inch Calipers	1.15
No. 117C	Center Punch	.20
No. 13	4-inch Double Square	1.65
No. 26	6-inch Calipers	.65
No. 27	6-inch Calipers	.65
No. 57B	Surface Gage	2.85
Set		21.35

Machinists No. 903

No. 603	3-inch Rule	$ .35
No. 603	6-inch Rule	.65
No. 300	12-inch Rule	1.25
No. 419	6-inch Hook Rule	1.00
No. 391	Center Gage	.35
No. 9	12-inch Combination Set	4.00
No. 13	4-inch Complete Double Square	1.65
No. 63	6-inch Square	3.50
No. 3	Micrometer	6.00
No. 72	Thickness Gage	1.50
No. 46A	Depth Gage	1.25
No. 268C	Drill Blocks and Clamps	1.50
No. 146	Hack Saw Frame	1.00
No. 67	Complete Scriber	.50
No. 57B	Surface Gage	2.85
No. 77	3-inch Divider with spring nut	1.15
No. 77	6-inch Divider with spring nut	1.75
No. 75	3-inch Caliper with spring nut	1.15
No. 75	6-inch Caliper with spring nut	1.50
No. 74	3-inch Caliper with spring nut	1.15
No. 74	6-inch Caliper with spring nut	1.50
No. 26	12-inch Caliper	1.00
No. 27	12-inch Caliper	1.00
No. 42	6-inch Caliper	1.15
No. 185	Drill Gage	1.75
No. 132	12-inch Level	1.75
No. 161D	Clamps (pair)	2.00
No. 65	Center tester	$2.50
No. 510-50	Steel Tape	4.00
No. 4	Screw Pitch Gage	1.25
Set		51.95

Toolmakers No. 902

No. 320	6-inch Rule	$ .65
No. 603	6-inch Rule	.65
No. 300	12-inch Rule	1.25
No. 422	6-inch Narrow Hook Rule	.90
No. 391	Center Gage	.35
No. 9	9x12-inch Combination Set	4.00
No. 14C	Double Square	2.60
No. 20	1½-inch Steel Square	1.75
No. 20	4½-inch Steel Square	3.50
No. 122	6-inch Vernier Caliper	15.00
No. 3	Micrometer	6.00
No. 2	Micrometer	6.50
No. 124A	Micrometer with case	5.25
No. 364A	Bevel Protractor	10.50
No. 15	Bevel	1.50
No. 6	Screw Pitch Gage	1.50
No. 172A	Thickness Gage	1.00
No. 446A	Micrometer Depth Gage	4.50
No. 161A	Parallel Clamps (pair)	1.25
No. 161C	Parallel Clamps (pair)	1.75
No. 160	2-inch Steel Clamps (pair)	1.75
No. 271C	Drill Blocks and Clamps	2.75
No. 145	Hack Saw Frame	1.25
No. 70A	Scriber	.25
No. 56A	Surface Gage	3.00
No. 257B	Surface Gage	3.35
No. 277	2-inch Dividers	1.00
No. 277	4-inch Dividers	1.50
No. 275	2-inch Calipers	1.00
No. 275	4-inch Calipers	1.50
No. 274	2-inch Calipers	1.00
No. 274	4-inch Calipers	1.50
No. 42	6-inch Calipers	1.15
No. 89	Divider	1.75
No. 91A	Tap Wrench	.75
No. 117A	Center Punch	.20
No. 117D	Center Punch	.20
No. 185	Drill Gage	1.75
No. 18A	Center Punch	2.00
No. 36	6-inch Calipers	1.50
No. 37	6-inch Calipers	1.50
No. 64	Complete Test Indicator	3.50
Set		104.55

Steel Tool Chests

Vanderman

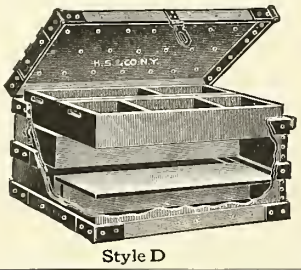
Made from $\frac{1}{16}$-inch cold-rolled sheet steel with malleable iron corner pieces and hard-wood braces, and fitted with heavy wrought iron hinges and hasp, with cover so arranged as to be held open by support from the back of chest. Each chest is furnished with a first-class brass lock and two keys, and bolts to screw down cover at front corners. They are lighter and cheaper than any first-class make of wood chest, and will outwear several wood chests. They are painted, well proportioned and ornamental in design, and make a first-class tool chest for steam fitters, gas fitters, plumbers and other trades where a light and strong tool chest is required. The size of chests as given are inside measurements of sheet-steel body. Covers are two inches deep. Measurements of cover are not included in depth of chest. Any special size made to order. The price of any intermediate size would be the same as the largest size that it would be ordered between.



Style A

Showing one-drawer style.

Number	Depth Inches	Width Inches	Length Inches	With One Drawer Each	With Two Drawers Each
1	11	12	24	$12.50	$14.00
2	14	15	30	17.00	18.50
3	16	17	36	19.00	20.50
4	19	20	42	22.00	23.50
5	20	22	48	25.00	26.50



Style D

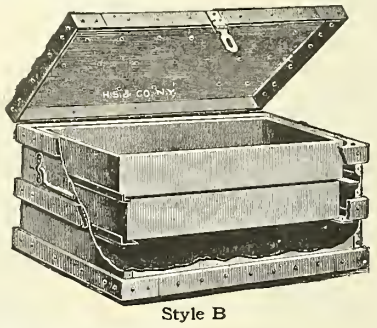
Number	Depth Inches	Width Inches	Length Inches	Each
1	11	12	24	$15.50
2	14	15	30	21.00
3	16	17	36	23.00
4	19	20	42	26.00
5	20	22	48	29.00



Electricians

This illustration shows a special box made to meet electrical firms and other tradesmens special constructed box. The upper part of the division is of wood construction, and the lower part is of metal construction. We would be pleased to furnish estimates on any special construction of box. Price quoted on application.

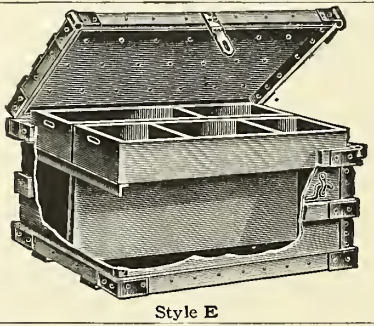
12 inches deep, 11 inches wide.	Each
No. 1 24 inches long, 1 tray	$24.00
No. 2 25 inches long, 1 tray	26.00
No. 3 30 inches long, 1 tray	28.00



Style B

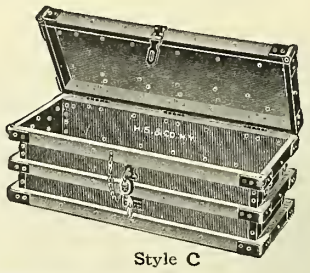
Showing two-tray style.
Sent with two trays unless ordered with one.

Number	Depth Inches	Width Inches	Length Inches	With One Tray Each	With Two Trays Each
1	11	12	24	$13.00	$13.50
2	14	15	30	18.50	19.00
3	16	17	36	20.50	21.00
4	19	20	42	23.00	24.00
5	20	22	48	26.00	27.00



Style E

Number	Depth Inches	Width Inches	Length Inches	Each
1	11	12	24	$14.50
2	14	15	30	20.00
3	16	17	36	22.00
4	19	20	42	25.00
5	20	22	48	28.00



Style C

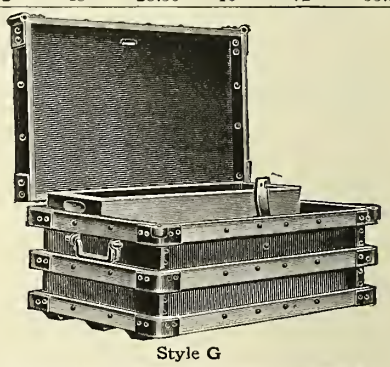
11 inches deep, 12 inches wide.

		Each
No. 0	Length 24 inches	$10.50
No. 1	Length 30 inches	12.50
No. 2	Length 36 inches	15.00
No. 3	Length 42 inches	17.00
No. 4	Length 48 inches	20.00
No. 5	Length 54 inches	23.00
No. 6	Length 60 inches	25.00
No. 7	Length 66 inches	27.00
No. 8	Length 72 inches	30.00

Special Style C

With two drawers, for special long tools.
11 inches deep, 12 inches wide.

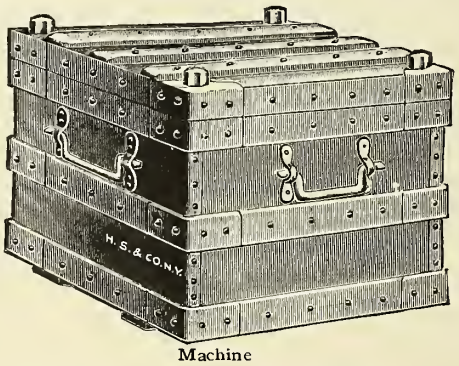
Number	Length Inches	Each	Number	Length Inches	Each
9	30	$14.50	13	54	$27.00
10	36	18.00	14	60	29.50
11	42	20.25	15	66	32.00
12	48	23.50	16	72	35.00



Style G

Made especially wide in proportion to length, and has a special Hasp so constructed that the Chest will be locked by means of the Hasp coming through the cover of the Chest.

10 inches deep, 17 inches wide.	Each
No. 1 24 inches long	$15.50
No. 2 31 inches long	20.00
No. 3 36 inches long	23.00
No. 4 42 inches long	26.00



Machine

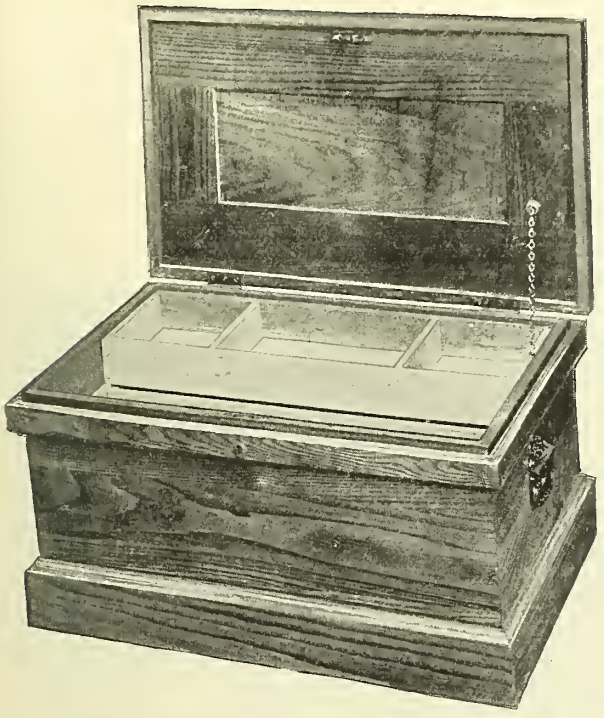
Handles put on two sides only, unless ordered on four sides.
The cover is not hinged on these Boxes but is held by four corner bolts.

Length Inches	Width Inches	Depth Inches	Each	Length Inches	Width Inches	Depth Inches	Each
17	12	12	$16.00	20	20	20	20.00
15	15	20½	18.00	27	26	19	28.00
16	16	19	18.00	20	20	30	26.00
20	20	13	19.00	27	22	24½	23.00
18	18	16	20.00	28	23	23½	28.00
18	18	18	20.00	20	20	21	21.00
23	21½	18	24.00				

Machine Boxes for holding No. 2 and 3 Toledo Pipe-Threading Machine

No. 2 Size, 27x27x11 inches high, each	$20.00
No. 3 Size, 27x27x20 inches high, each	26.00

Special sizes or styles furnished to meet special requirements. Prices on application.



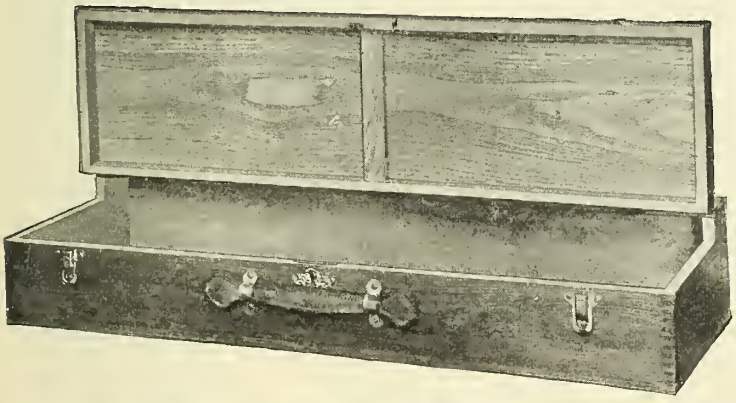
Carpenters Tool Chests

These Chests are made of selected chestnut, substantially constructed with heavy hardwood mouldings, varnish finish. Are fitted with lock and key and drop handles, and have removable sliding trays. Nos. 240 to 270 have dovetailed corners. Nos. 260 and 270 have saw racks.

Number	Approximate Sizes Inside Long Wide Deep Inches	Number of Trays	Each
220	18x 8½x 6	1	$2.25
240	22x10½x 8½	2	4.25
250	25x12½x 9½	2	5.10
260	28x15 x14	2	8.25
270	32x18 x16	2	10.50

House Framers Tool Chests

Suit Case Pattern



These Chests are strongly made of ash, with locked corners and leather handles and are conveniently shaped for carrying. All tops are divided as in illustration except style A, which is hinged at back in regular way.

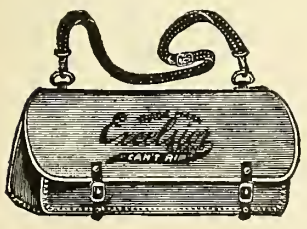
Style	Approximate Dimensions Inside Long Inches	Wide Inches	Deep Inches	Each
A	31	10	5	$4.00
B	31	10	5	4.00
2B	25	10	5	3.60
XB	31	11½	6	5.00

Shoulder Pattern



These Chests are well made throughout of chestnut, and finished in dark wood filler and shellac. Have strong locks, brass elbows to hold covers up, and drop handles. Are designed especially for holding a set of house-framers tools, having rack on inside of cover for saws. They are so shaped as to be conveniently carried upon the shoulder.

Number	Approximate Dimensions Inside Long Inches	Wide Inches	Deep Inches	Each
10	25	8	8	$3.40
20	31	8	8	3.75



Electricians Tool Bags

Used by Electricians and Inside Wiremen and Plumbers.

Made of heavy russet grain leather. Has shoulder strap and pad connected to bag by plated snaps and rings which can be detached in an instant. Has two small straps to buckle on the side. Sewed on a hot-wax, lock-stitch machine and cannot rip unless every stitch is cut.

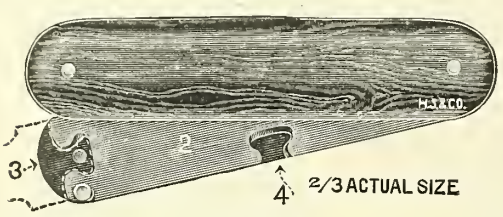
		Each
No. 41	16 inches long x 6½ inches wide x 8 inches high	$5.40
No. 42	18 inches long x 7 inches wide x 8 inches high	5.80
No. 43	20 inches long x 7 inches wide x 9 inches high	6.30
No. 44	22 inches long x 7 inches wide x 10 inches high	7.20

Pocket Tool Kits

Zinn Improved

These sets are furnished in best quality Black-Seal Leather making them neat and attractive. All tools are heavily nickel-plated and any found defective will be replaced free of charge.

Handle



Directions—Spread handles 1 and 2 apart and place desired tool in recess marked 3, then bring the handles together and tool becomes firmly fastened and is ready for use.

For tools requiring a rotary movement use recess marked 4. The tool is held firmly from all sides, and no matter from what direction the pressure is exerted, the tools remain firmly fixed and cannot come out while in use.

No. 2

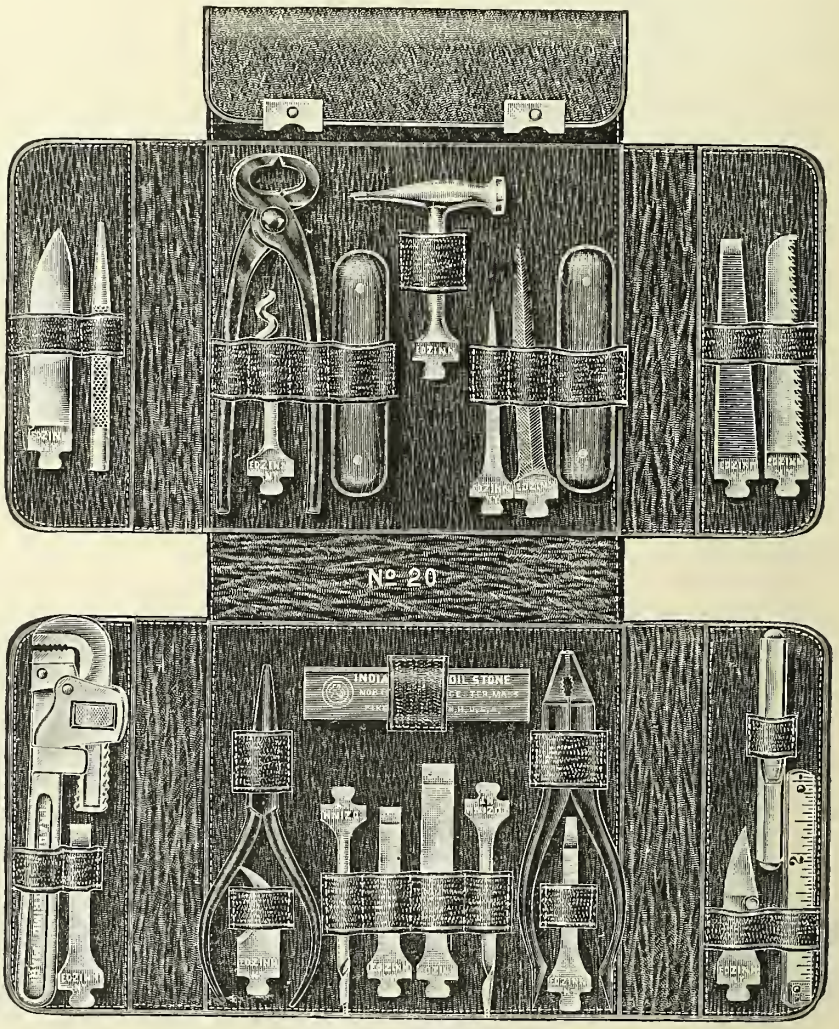
Contains Tool Handle, Knife Blade, Hammer, Gimlet, Punch, File, Screwdriver ⅛ inch, Saw.
Each $3.00

No. 4

Contains Tool Handle, Can Opener, Knife Blade, Hammer, Wire Cutter, File, Saw, Chisel ½ inch, Punch, Corkscrew, Screwdriver ⅛ inch, Flat-Nose Pliers, Soft and Hard-Wood Gimlets.
Each $5.00

No. 5

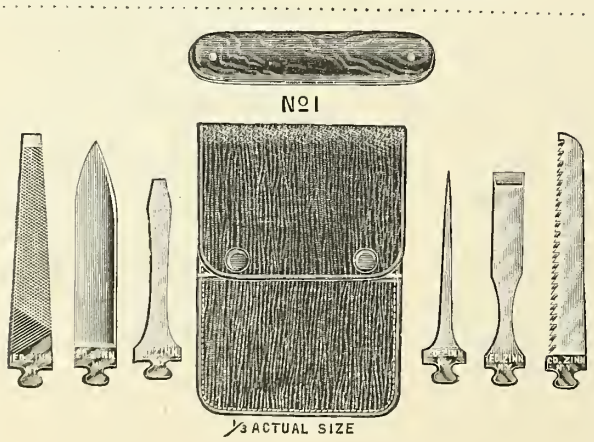
Contains Tool Handle, Flat File, Rat-Tail File, Can Opener, 2 Screwdrivers, each ⅛ and ¼ inch, Hammer, Chisel ½ inch, Saw, Corkscrew, Knife Blade Flat-Nose Pliers, Side-cutting Pliers, End-cutting Pliers, Punch, Gimlet.
Each $8.00



⅓ Actual Size of No. 20

No. 6

Contains Tool Handle, Saw, Knife Blade, Hammer, Can Opener, File, Screwdriver ¼ inch, Chisel ½ inch, Gimlet, Punch.
Each $3.50



Tool-Kit No. 1

Contains Tool Handle, Saw, File, Knife Blade, Punch, Screwdriver ¼ inch, Chisel ½ inch.
Each $2.00

No. 8

Contains Tool Handle, Flat and Three-cornered Files, Saw, Gun Metal Long-Nose Pliers, Gun Metal Side-cutting Pliers, Gun Metal End-cutting Pliers, Chisel ½ inch, Corkscrew, Hammer, Knife Blade, Wire Cutter, Gimlets for Hard and Soft-Wood, Punch, 2 Screwdrivers, each ⅛ and ¼ inch, Can Opener.
Each $10.00

No. 13

Contains Tool Handle, Knife Blade, Punch, Chisel ½ inch, Saw, Flat File, Screwdriver ⅛ inch, Hammer, Gimlet, Corkpuller, Can Opener, Scraper, Flat-Nose Pliers, 2-Foot Folding Rule, Nail Set,
Each $6.50

No. 19

Contains 2 Tool Handles, Knife Blade, Punch, 2 Screwdrivers, each ⅛ and ¼ inch, 2 Chisels, each ⅜ and ½ inch, Saw, Hammer, 2 Gimlets, Corkpuller, Can Opener, Scraper, Flat and Three-cornered Files, Gun Metal Long-Nose Pliers, Gun Metal Side-cutting Pliers, Gun Metal End-cutting Pliers, Nail Set, 2-Foot Folding Rule, India Oil Stone, Spirit Level.
Each $12.00

No. 20

Contains 2 Tool Handles, Knife Blade, Punch, 2 Screwdrivers, each ⅛ and ¼ inch, 2 Chisels, each ⅜ and ½ inch, Saw, Hammer, 2 Gimlets, Corkpuller, Can Opener, Scraper, Flat and Three-cornered Files, Gun Metal Long-Nose Pliers, Gun Metal Side-Cutting Pliers, Gun Metal End-cutting Pliers, 6-inch "Trimo" Pipe Wrench, Nail Set, 2-Foot Folding Rule, India Oil Stone, Spirit Level.
Each $15.00

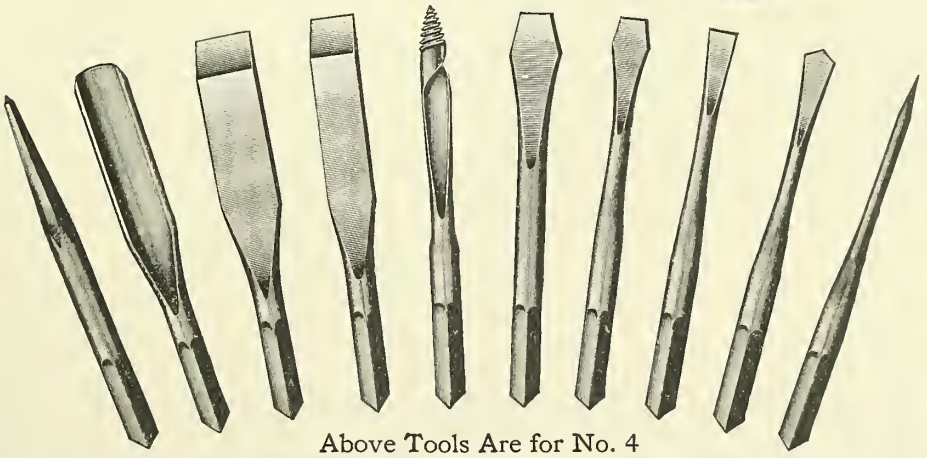
SEE DISCOUNT SHEET

Tool Holders

M. F. Co.



No. 4



Above Tools Are for No. 4



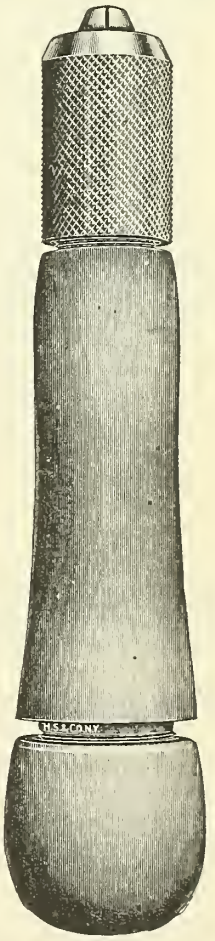
No. 5

Beautifully polished and finished rare tropical wood; heavily nickeled shell and jaws.
Hollow handle, containing tools and closed with a screw cap.
Jaws holding with vise-like grip tools, as shown in illustrations, also a variety of other kinds of shanks.
Socket and shell threads carefully cut so as to mesh perfectly and prevent shell from working loose and allowing tools to disengage themselves from jaws.
Tools made from best steel and carefully tempered and finished and honed to a fine cutting edge.

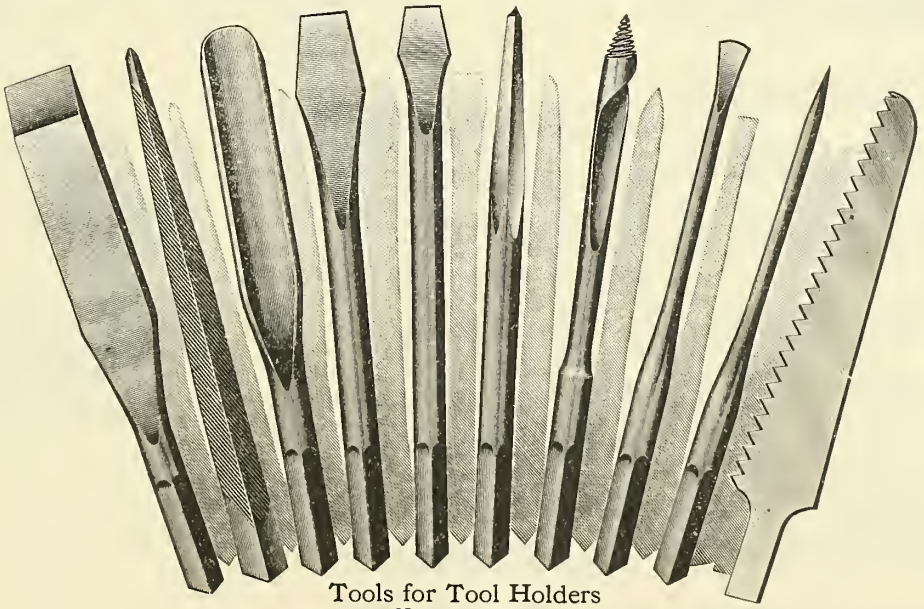
Numbers	4	5	6
Length of handle, inches	6¼	7½	4¾
Number of tools	10	10	12
Length of tools, inches	2½	4	1¾
Dozen	$14.75	19.00	10.00

No. 500

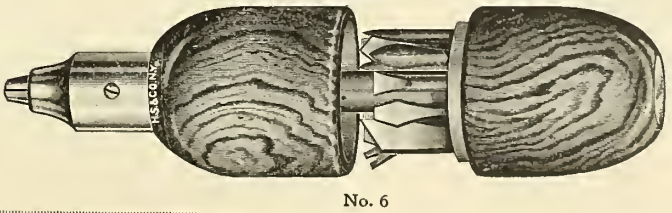
The same as Tool Holder No. 5, described above, except that the handle is birch stained to imitate cocobola and that the tools are polished without blue finish. The handle cap has no inserted metal plate.
Dozen $14.40



No. 500



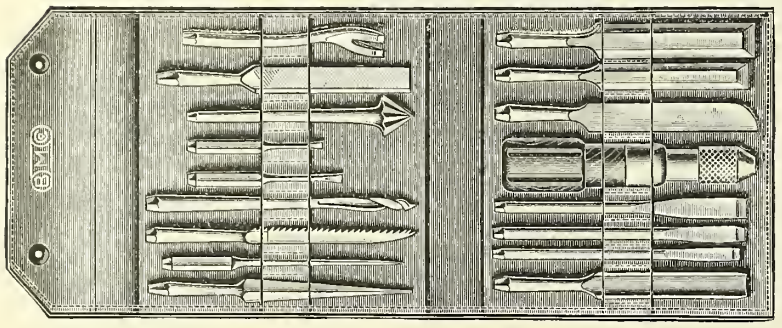
Tools for Tool Holders
Nos. 5 and 500



No. 6

Combination Tool Set

B. M. Co.



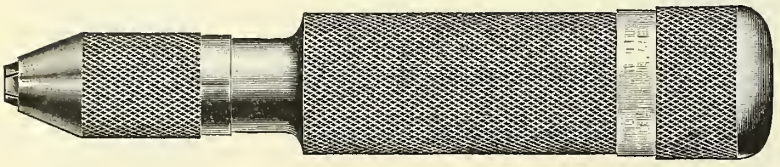
Consists of one round grooved rosewood handle, with chuck, and sixteen useful tools as follows: 2 Wood Chisels, 1 Wood Gouge, 1 Knife, 3 Screwdrivers, 1 Tack Claw, 1 File, 1 Countersink, 1 Reamer, 2 Brad Awls, 1 Gimlet Bit, 1 Saw and 1 Scratch Awl.

Tool and handle measures about 8 inches over all. Best material is used throughout.

No. 1 Set..... $7.00

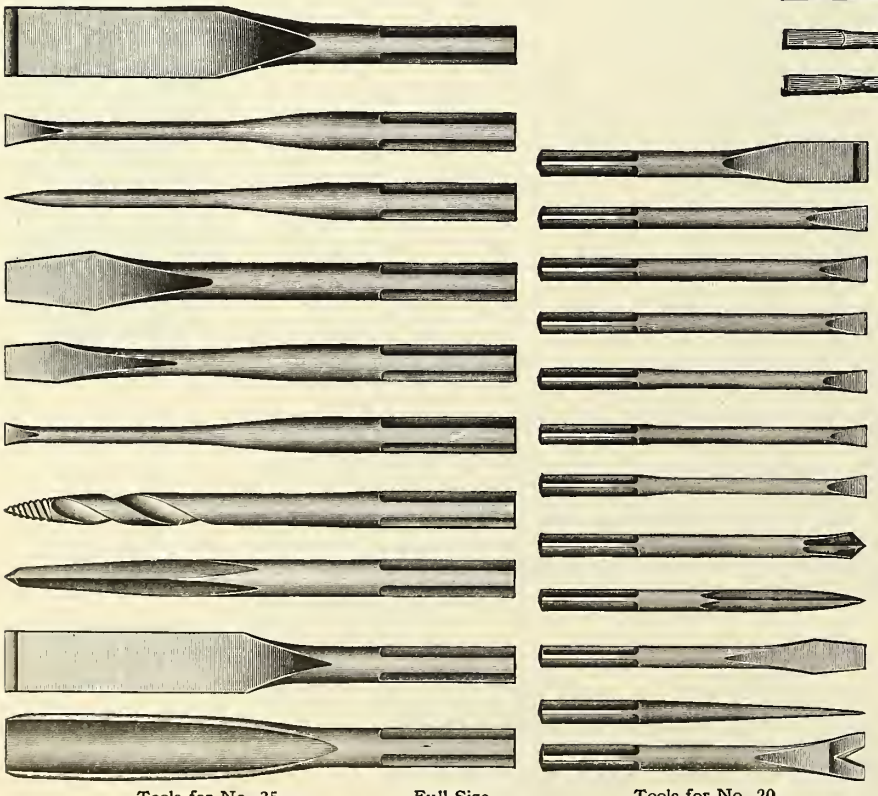
Tool Holders

All Steel



Nos. 20 and 35

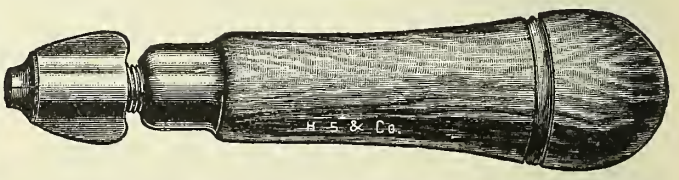
The Chuck has no loose parts or springs to get lost or out of order.
Handles are light, strong and indestructible.
All Parts are machined from screw steel.
The screw cap will not crack, split or break.



Tools for No. 35 — Full Size — Tools for No. 20

		Dozen
No. 20	4⅜ inches long	$9.00
No. 35	5¼ inches long	12.00

Buell

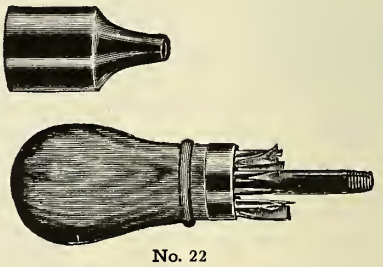


These goods are finely tempered, highly finished and warranted. They are compact in form, useful and have a large sale.

No. 4 Cocobolo Handle, 10 Tools, dozen..... $7.50



Henry Pattern



No. 22

Made of Cocobolo, finely polished, with Nickel-plated Metal Cap.

Contains twelve tools made of the best Tool Steel, tempered and finished in the most workmanlike manner.

One Chisel, One Screwdriver, One Reamer, One Tack Puller, One Pegging Awl, One Marking Awl, Six Brad Awls, Assorted.

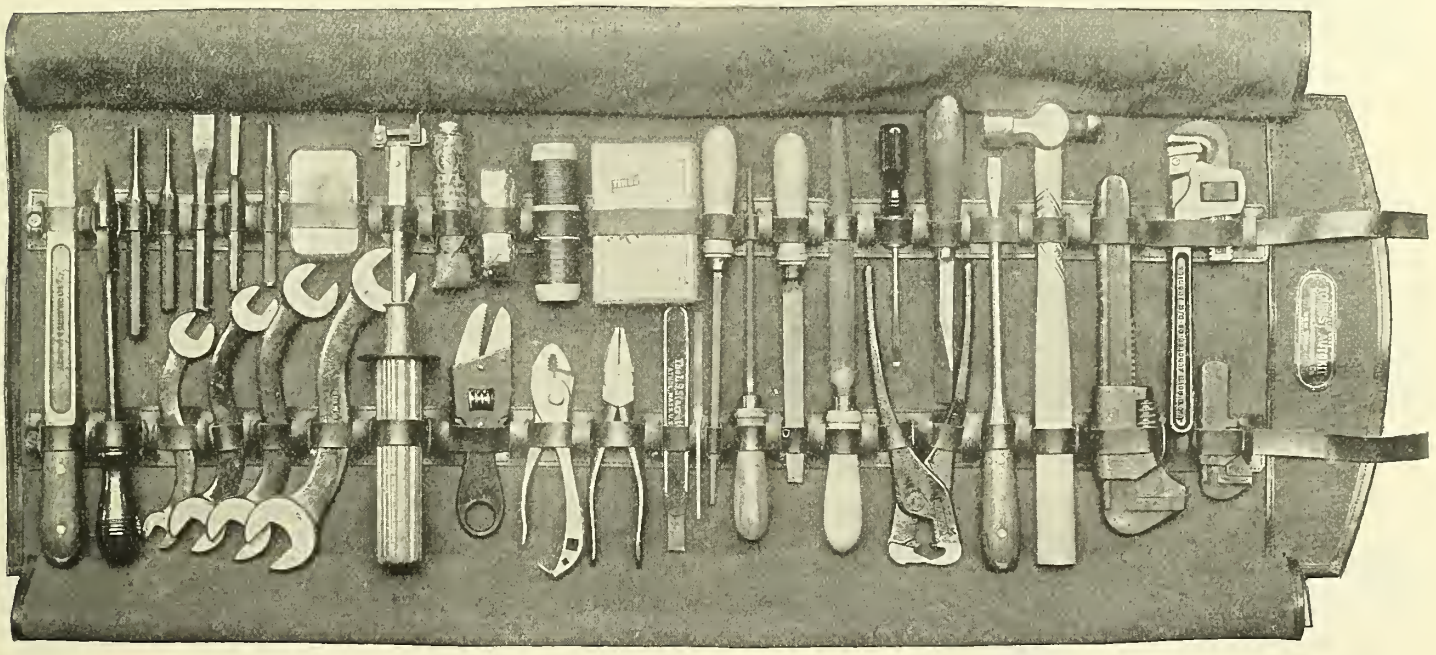
4 inches in length and can be easily carried in the pocket. Being made of solid wood it is not liable to split.

The tools stand upright in holes under the metal cap facilitating selections.

Dozen..... $9.00

Automobile Repair Outfit

H. S. & Co. "Tourist Autokit"



The H. S. & Co. Tourist Autokit is contained in a heavy serviceable canvas roll, edged with leather.

Every tool is especially selected with reference to its quality and adaptability for use in an automobile kit, and we believe we are justified in asserting that the "Tourist" embodies every possible permanent and emergency value that can be included in a kit of this size.

Itemized list of contents is as follows;

Perfect Handle Tire Tool.

Bearing Scraper, No. 7, 8 inches, 3-square hollow ground.

English and Metric Measure, 2-foot, 4-fold.

Adjustable Alligator Pipe Wrench, 7 inches, black finish, grips pipe up to ¾ inch and rods and nuts up to 1 inch.

Williams Drop-Forged S Wrench, S. A. E. Standard, ¼ and $\frac{5}{16}$ inch.

Williams Drop-Forged S Wrench, S. A. E. Standard, ⅜ and $\frac{7}{16}$ inch.

Williams Drop-Forged S Wrench, S. A. E. Standard, ½ and $\frac{9}{16}$ inch.

Williams Drop-Forged S Wrench, S. A. E. Standard, ⅝ and $\frac{11}{16}$ inch.

H. S. & Co. Side-Cutting Pliers, No. 1050, 7 inches.

Knight Combination Auto Pliers, No. 50, 7 inches, nickle-plated, suitable for use as screwdriver, wire cutter, pipe wrench, gas and air-tank keys, cotter pin puller and tap wrench.

Starrett Steel Rule, No. 320, 6 inches, graduated in 32nds and 64ths.

Nicholson Coil File.

K. and F. Square Bastard File, 7 inches.

K. and F. Round Bastard File, 7 inches.

K. and F. Flat Bastard File, 6 inches.

K. and F. Half-Round Bastard File, 8 inches.

H. S. & Co. Tire Chain Tool.

Perfect Handle Screwdriver, 7 inches, No. 609.

Perfect Handle Machinists Screwdriver, No. 9½, 4½-inch blade with square for wrench.

New Century Screwdriver, No. 120, 3½-inch slim.

Atha Ball Pein Machinist Hammer, No. 00, 12 ounces.

Billings Automobile Wrench, semi-finish, No. 3, 10 inches, opens 2 inches.

Billings Model 97 4-inch Pocket Wrench, opens 1⅜ inches.

Trimo Pipe Wrench, 10 inches, grips pipe ⅛ to 1 inch.

Tinol Soldering Outfit.

¼-pound Electricians Tape.

¼-pound Spool No. 18 Copper Wire.

¼-pound Spool No. 20 Copper Wire.

Carborundum Valve Grinding Paste, in tube.

B. M. Co. Valve Grinding Tool, complete.

Box of assorted Spring Cotters.

H. S. & Co. Cold Chisel, ½ inch.

H. S. & Co. Cape Chisel, ⅜ inch.

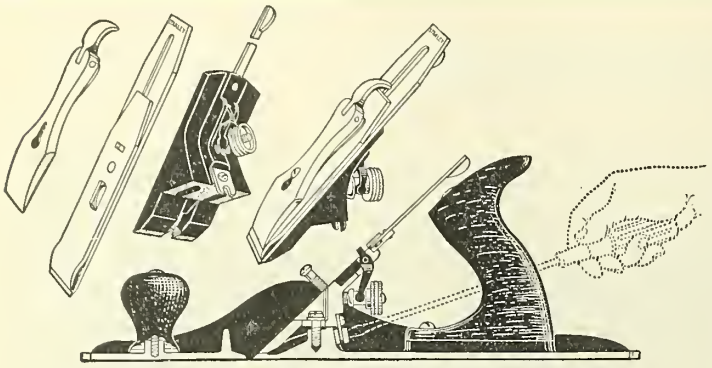
H. S. & Co. Octagon Center Punch, ⅜ inch.

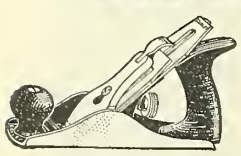
B. M. Co. Pin Punch, $\frac{5}{32}$ inch.

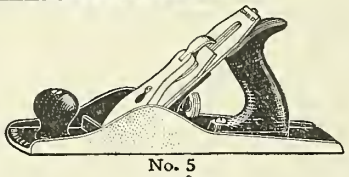
B. M. Co. Pin Punch, ¼ inch.

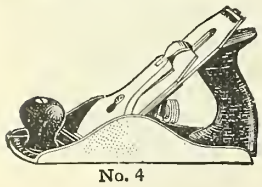
Set complete $25.00

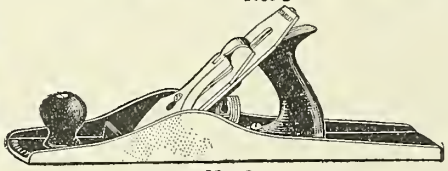
Roll only 7.50

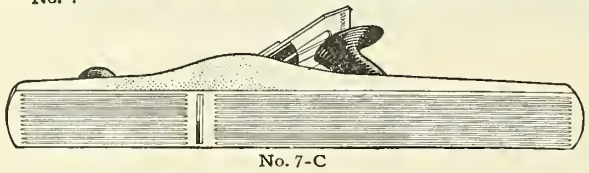


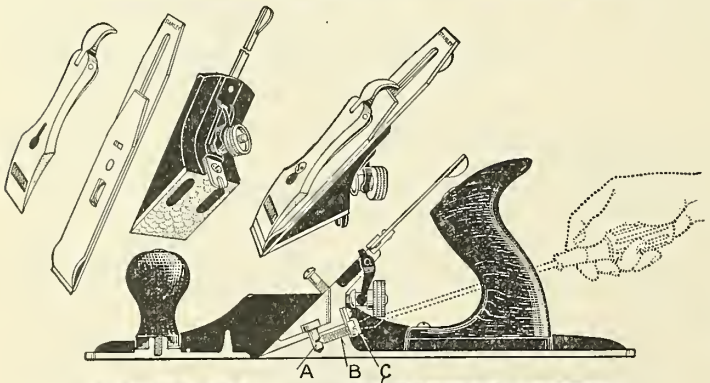

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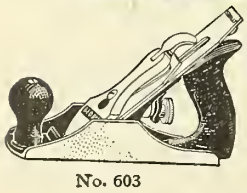

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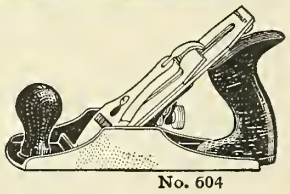

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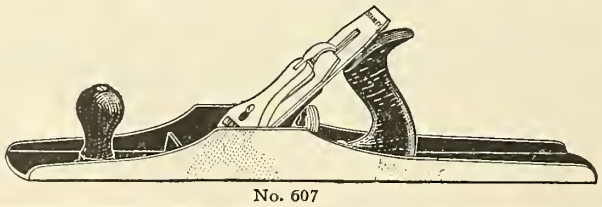

No. 6


No. 7-C




No. 603


No. 604


No. 607

Adjustable Iron Planes

Bailey

The Planes described below, generally known as Bench Planes, are divided into four classes, namely: Smooth, Jack, Fore and Jointer.

A Smooth Plane is for finishing or smoothing off flat surfaces. Where the uneven spots are of slight area, its short length will permit it to locate these irregularities, leaving the work with a smooth surface when finished.

A Jack Plane is used to true up the edges of a board in the rough and prepare it for the Fore or Jointer.

A Fore Plane is simply a short Jointer, and being lighter, is preferred by some workmen to the longer plane.

A Jointer is a finishing Plane for large surfaces and is invariably used to true up the edges of boards so that they can be closely fitted or joined together.

"Bailey" Iron Planes have been in use for nearly fifty years and are the recognized standard for planes of this type. While retaining all the original features, many valuable improvements in construction have been added from time to time. Only the finest materials and the best workmanship are used in their manufacture.

In the illustration the detail of construction is very clearly shown. Note that the frog has a support directly at the rear of the mouth, making practically one solid piece from the cap to the bottom. The sides and bottom of the plane are stiffened by means of the cross ribs. The screw bosses on each side of the center rib are very deep, allowing a number of threads to engage, thereby securely holding the frog. The design prevents the plane being drawn out of true when the face of the frog is screwed up hard.

The width of the mouth may be regulated and made wider or narrower as coarse or fine work may require. First remove the lever and cutter and loosen the two frog screws that fasten the frog to its seat. With a screwdriver turn the center adjusting screw (see cut) to the right to close the mouth, and to the left to open it. When the frog is in the position desired, tighten the frog screws and replace the cutter and lever.

The cutter, which is thin and of uniform thickness, is a prominent feature of the "Bailey" Plane.

Briefly, its advantages are: 1. Ease in grinding. 2. Less grinding, as a thin cutter can be kept in condition by honing. 3. Less tendency to "stub off" the cutting edge when honing, hence the original bevel is kept much longer.

The cutter is adjustable endwise by means of the adjusting wheel at the back of the frog. It is also adjustable sidewise by lever located near the top and at the back of the cutter.

It is made of the finest quality English steel, tempered and ground by an improved process, and honed ready for use.

The handle and knob are made of highly-finished, thoroughly-seasoned rosewood.

Planes with bottoms either flat or corrugated (see cut 7C) furnished as desired. The number with a "C" designates Corrugated Bottom.

Numbers		Length Inches	Cutter Inches	Weight Pounds	Each
1	Smooth	5½	1¼	1¼	$1.50
2 or 2 C	Smooth	7	1⅝	2¼	2.00
3 or 3 C	Smooth	8	1¾	3⅛	2.10
4 or 4 C	Smooth	9	2	3¾	2.20
4½ or 4½C	Smooth	10	2⅜	4¾	2.50
5 or 5 C	Jack	14	2	4¾	2.50
5½ or 5½C	Jack	15	2¼	6¾	3.00
6 or 6 C	Fore	18	2⅜	7¾	3.25
7 or 7 C	Jointer	22	2⅜	8⅛	3.75
8 or 8 C	Jointer	24	2⅝	9¾	4.50

Packed one in box.

Stanley Bed Rock

This Plane, owing to its solidity and variety of adjustments, surpasses all others for fine work on all woods.

The cutter, frog and bottom are so designed, machined and fitted that they are practically one solid piece of metal, thus preventing any chance of vibration.

Particular attention is called to the shape of the sides. This new and distinctive feature adds greatly to the strength of the plane as well as affording large bearing surfaces when the plane is used on its sides.

The frog may now be adjusted either forward or backward without removing the lever and cutter; simply slacken the tension of the two frog-clamping screws "B", and with a screwdriver adjust the frog as desired by means of the frog-adjusting screw "C" in the center, and then tighten the frog-clamping screws. (See cut).

The frog is held to its seat by means of two pins "A" of large diameter, each of these has a tapered hole near the lower end. The two frog-clamping screws "B" have tapered points. These points fit in the holes in the pins "A." The center of the tapered hole in these pins is slightly above the center line of the frog-clamping screws, so that when these screws are driven in, they produce the effect of a wedge, drawing the pins downward and clamping the frog absolutely rigid in its place.

The cutter is the regular "Bailey" cutter and is adjustable both endwise and sidewise.

The handle and knob are of well-seasoned rosewood.

Planes with bottoms either flat or corrugated will be furnished as desired. The number with a "C" designates Corrugated Bottom.

Numbers		Length Inches	Cutter Inches	Weight Pounds	Each
602 or 602 C	Smooth	7	1⅝	2¼	$2.20
603 or 603 C	Smooth	8	1¾	3¼	2.30
604 or 604 C	Smooth	9	2	3⅝	2.50
604½ or 604½C	Smooth	10	2⅜	4¾	3.00
605 or 605 C	Jack	14	2	4½	3.00
605½ or 605½C	Jack	15	2¼	6½	3.50
606 or 606 C	Fore	18	2⅜	7⅜	3.75
607 or 607 C	Jointer	22	2⅜	8¾	4.40
608 or 608 C	Jointer	24	2⅝	9¾	5.25

Packed one in Box.

Planes

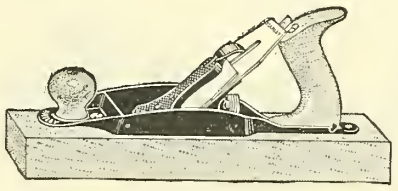
Bailey Wood

Every Carpenter needs two or more wood planes in his kit for rough outside work Bailey Wood Planes supply the demand for a wood plane of superior quality. The bottom, handle, and knob are made from selected and well-seasoned beech. The cutters are the regular Bailey type and are adjustable both endwise and sidewise.

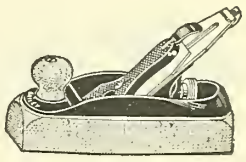
The frog is held in place by two machine screws which pass through the top iron and screw into two brass lugs. These lugs are screwed and securely pinned into the wood bottom. This is far superior to other methods of fastening, as it holds together firmly the wood bottom, the top iron which strengthens the wood bottom and the frog.

Numbers		Length Inches	Cutter Inches	Weight Pounds	Each
21	Smooth	7	1¾	2½	$1.50
22	Smooth	8	1¾	2½	1.50
23	Smooth	9	1¾	2½	1.50
24	Smooth	8	2	2⅞	1.50
25	Block	9½	1¾	2½	1.50
35	Handle Smooth	9	2	3¼	1.90
36	Handle Smooth	10	2⅜	4	2.05
37	Jenny Smooth	13	2⅝	5	2.20
26	Jack	15	2	3¾	1.65
27	Jack	15	2⅛	4	1.90
27½	Jack	15	2¼	4¾	1.95
28	Fore	18	2⅜	5½	2.05
29	Fore	20	2⅜	6¼	2.10
30	Jointer	22	2⅜	6¼	2.20
31	Jointer	24	2⅜	6½	2.25
32	Jointer	26	2⅝	7⅝	2.40
33	Jointer	28	2⅝	8⅜	2.45
34	Jointer	30	2⅝	8½	2.60

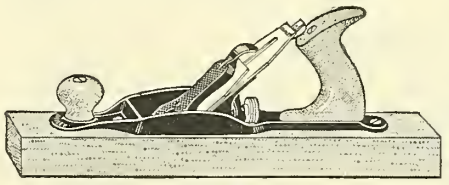
Nos. 21, 22, 23, 24, 25, 35 and 36 packed one in Box, other Nos. one in Paper Package.



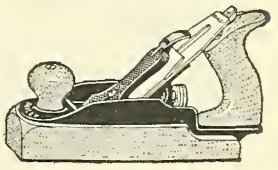
No. 27



No. 24



No. 28



No. 35

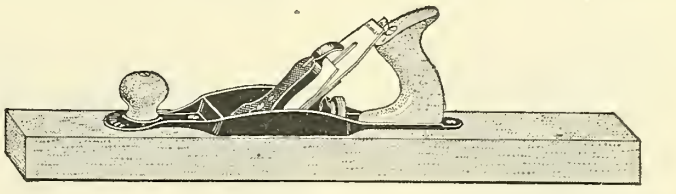
Stanley Adjustable Steel

These Planes are much in demand for outdoor work where tools are apt to get knocked around and are subjected generally to more or less rough usage. The bottoms and sides are one piece of pressed steel, making them practically non-breakable. They weight considerably less than iron planes, and for light work on soft woods will be found very useful. The cutters are of the double type and are adjustable endwise by means of the small lever shown in the cut. The handles and knobs are made of rosewood.

No. 104 Smooth, 9 inches long, 2⅛-inch cutter, weight, 3⅛ pounds..... $2.05

No. 105 Jack, 14 inches long, 2⅛-inch cutter, wieght, 3⅞ pounds..... 2.60

Packed one in Box.



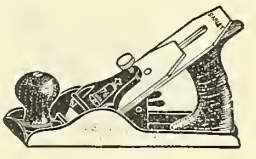
No. 32

Bailey Adjustable Block

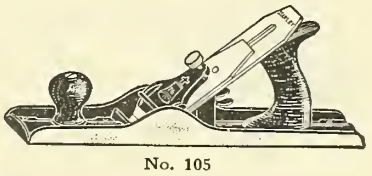
Bailey Block Planes are the highest type of Block Planes manufactured. All numbers have the most improved form of adjustment, which enables the user to accurately adjust the cutter either endwise or sidewise. The cutter rests on its seat at an angle of 20 degrees as against 45 degrees in the ordinary Bench Plane, and the cutter bevel is made on the upper instead of on the lower side. All have adjustable throats which permit of the opening or closing of the mouth as coarse or fine work may require. To close the throat, loosen the thumb screw on the front of the plane, move eccentric plate to right as far as desired, then tighten screw. To open throat move plate to left. The thumb screw also acts as a finger rest while using the plane.

Nos. 9¾ and 15½ have an iron handle with rosewood knob extending from the rear (see cut). This enables the user to conveniently work the Plane with both hands if he so desires.

Nos. 18 and 19 are distinctive in the method of fastening the cutter. The knuckle joint in the cap makes it also a lever, and placing the cap in position clamps the cutter securely to its seat.



No. 104



No. 105

Numbers	Length Inches	Cutter Inches	Trimmings	Weight Pounds	Each
9½	6	1⅝	Japan	1½	$1.10
15	7	1⅝	Japan	1⅝	1.20
16	6	1⅝	Nickel	1½	1.25
17	7	1⅝	Nickel	1⅝	1.35
9¾	6	1⅝	Japan, Rosewood Handle	1⅝	1.30
15½	7	1⅝	Japan, Rosewood Handle	1⅞	1.40
18	6	1⅝	Nickel, Knuckle Joint	1½	1.30
19	7	1⅝	Nickel, Knuckle Joint	1⅝	1.40

Packed one in Box.



Nos. 9½ and 16



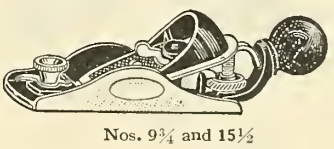
Nos. 15 and 17

Stanley Double-End Block No. 130

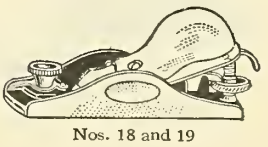
Has two slots and two cutter seats. The center seat and slot to be used for ordinary block-plane work, the other slot and seat for use when it is desired to work same as a bull-nose plane. The plane has a hardwood knob.

No. 130 8 inches long, 1⅝-inch cutter, Japan trimmings, weight 1⅝ pounds, each..... $ .75

Packed one in Box.



Nos. 9¾ and 15½



Nos. 18 and 19

Stanley Adjustable Double-End Block No. 131

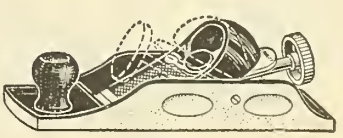
Is a combination block and bull-nose plane. It has two slots and a movable cutter seat. Use center cutter seat and slot for ordinary block-plane work. For use as a bull-nose plane remove the cap and cutter, reverse the cutter seat by throwing over the adjusting wheel (see dotted lines in cut), replace the cap and cutter in the new position. The plane has the "Hand-y" feature, a rosewood knob, and the cutter is adjustable endwise.

No. 131 8 inches long, 1⅝-inch cutter, Japan trimmings, weight 1½ pounds, each..... $1.50

Packed one in Box.

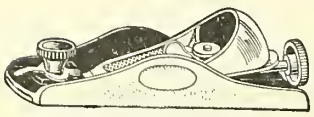


No 130



No. 131

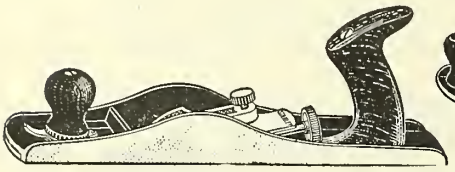
Planes



No. 65 and 65½



No. 60 and 60½



No. 62



No. 61



No. 203



No. 220



No. 103



No. 120



No. 101



No. 100



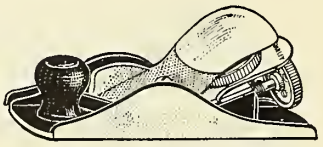
No. 102



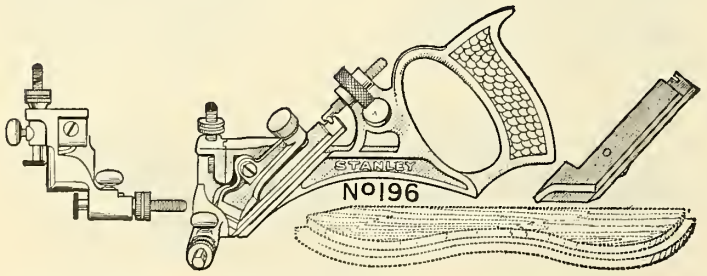
No. 110



No. 75



No. 140



Stanley Low-Angle Block

These Planes are designed to meet the demand for Block Planes having the cutters lying at a still lower angle than 20 degrees.

In the Low-Angle Planes the cutter rests on its seat at an angle of only 12 degrees. This angle permits of great ease in working across the grain on hard woods.

The small planes, designed to be operated with one hand, have the "Hand-y" feature. All cutters are made of high-grade steel and are adjustable endwise by means of the adjusting wheel at the rear of the plane.

No. 61 is similar to the No. 60½ as regards size and trim, but the throat is not adjustable. The cutter is adjustable endwise and the plane is fitted with the "Hand-y" feature

Numbers	Length Inches	Cutter Inches	Trimmings	Weight Pounds	Each
65	7	1⅝	Nickel	1⅜	$1.35
65½	7	1⅝	Japan	1⅜	1.20
60	6	1⅜	Nickel	1¼	1.25
60½	6	1⅜	Japan	1¼	1.10
62	14	2	Japan	3⅝	2.85
61	6	1⅜	Japan	1¼	1.10

Packed one in Box.

Stanley Adjustable Block

The first plane listed, No. 203, is designed especially for manual training use. The bottoms and sides are ground and it is fitted with the "Hand-y" feature, which aids very materially in providing a firm grip for the hand of the user. The cutter is secured in its place by a lever fastened with a cam. It is adjustable endwise by means of the thumb screw shown at the rear of the plane. The knob is of rosewood and serves as a finger rest.

No. 220 is ground on both bottom and sides. The cutter is made of high grade steel, is fastened by a lever and cam, and is adjustable endwise by a screw adjustment operated from the rear of the plane. The finger rest on the front of the plane is rosewood.

No. 103 is for light work. The cutter is adjustable endwise, the form of adjustment being known as the lever adjustment. The small boss cast on the front of the plane serves as a convenient finger rest for the operator. The bottom is ground true and the sides neatly japanned.

No. 120 is similar in design to the No. 103, having the same form of cutter adjustment and cutter-fastening device. The sides are ground, care being taken to have them parallel and, instead of the iron boss on the front of the plane, it is fitted with a rosewood knob which forms a convenient finger rest.

Numbers	Length Inches	Cutter Inches	Adjustment	Weight Pounds	Each
203	5½	1⅜	Screw	1⅛	$ .85
220	7½	1⅝	Screw	1½	.75
103	5½	1⅜	Lever	⅞	.55
120	7½	1⅝	Lever	1⅜	.75

Packed one in Box.

Stanley Non-Adjustable Block

The cutters in all numbers are of a high grade of steel, and are as carefully tempered and ground as are those in the more expensive planes of this class.

No. 101, only 3½ inches in length, is a very handy little plane for household use and many mechanics carry one in their kits for odds and ends of light work. The boss on the front acts as a finger rest. The bottom is ground and the sides japanned.

No. 100 is the same in all respects as the No. 101, except that it has an iron handle which just fits nicely into the palm of the hand, insuring the workman a firmer grip than is possible with the No. 101.

No. 102 is a light, serviceable, plane, 5½ inches long. The bottom is ground and the sides japanned.

No. 110 is the most popular of all the non-adjustable block planes. Both the bottoms and sides are ground, and in place of the boss cast on the front for a finger rest, it has an applewood knob, stained black.

Numbers	Length Inches	Cutter Inches		Package	Pounds	Each
101	3½	1	.....	6 only	1½	$ .20
100	3½	1	Handled	1 only	⅜	.25
102	5½	1⅜	.....	1 only	⅞	.40
110	7½	1⅝	.....	1 only	1⅜	.55

Stanley Rabbet and Block No. 140

A detachable side will easily change it from a block plane to a rabbet plane, and vice-versa, a combination that will be appreciated by many. The cutter is adjustable endwise and set on a skew. It has a rosewood knob.

No. 140 7 inches long, 1¾-inch cutter, Japan trimmings, weight 1⅛ pounds, each $1.40

Packed one in Box.

Stanley Bull-Nose Rabbet No. 75

Will be found very useful for working close up into corners or other difficult places. The mouth can be adjusted for different widths by means of the set screw on top of the plane.

No. 75 4 inches long, 1-inch cutter, Japan trimmings, weight ⅝ pound, each ..... $ .40

Packed one in Box.

Stanley Curve Rabbet

This Tool will cut rabbets on circular or other curved and irregular edges. It is provided with two cutters. The upper cutter acts as a spur for the lower and also cuts the side of the rabbet. The lower cutter is a skew cutter which follows the spur and cleanly cuts the bottom of the rabbet. The stock and handles are cast in one piece. The plane is fitted with an adjustable depth gauge. The fence is also asjustable and has a curved face.

No. 196 9 inches long, nickel-plated, weight 3 pounds, each.. $4.00

Packed one in Box.

Planes

Stanley

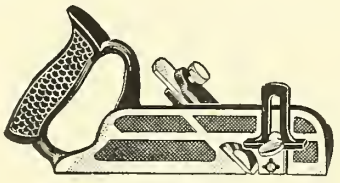
Handled Iron Rabbet

These Planes will lie perfectly flat on either side and can be used equally as well with right or left hand while planing into corners or up against perpendicular surfaces.

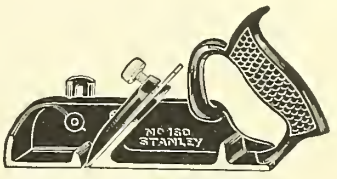
Made in two styles, one fitted with a spur which permits them to be used for working across the grain, and the other without a spur. Both styles are fitted with a detachable depth gauge.

Numbers	Length Inches	Cutter Inches		Weight Pounds	Each
190	8	1½	Japanned, with spur	2½	$1.25
191	8	1¼	Japanned, with spur	2¼	1.25
192	8	1	Japanned, with spur	2	1.25
180	8	1½	Japanned, without spur	2½	1.10
181	8	1¼	Japanned, without spur	2¼	1.10
182	8	1	Japanned, without spur	2	1.10

Packed one in Box.



No. 190

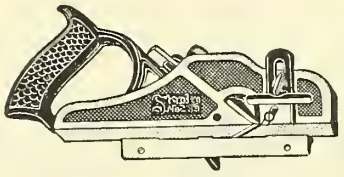


No. 180

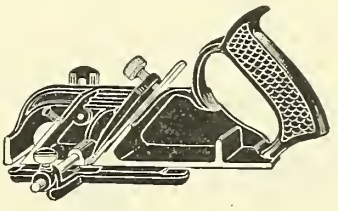
Skew Cutter Filletster and Rabbet

This Plane has an extra wide skew cutter. An adjustable spur is fitted to each side. The fence and depth gauge can be attached to either side; the plane is, therefore, suitable for right or left-hand work. The adjustable fence slides under the bottom regulating the width of the cut. Remove arms and fence and a Skew-Cutter Rabbet Plane is obtained.

No. 289, 8½ inches long, 1¾-inch cutter. Japanned. Weight 3¾ pounds. Packed one in box, each $1.75



No. 289



No. 78

Duplex Filletster and Rabbet

This Plane has two seats for the cutter, one for regular work and the other where a bull-nose is required. It has a spur and a removable depth gauge. The adjustable fence can be used on either side and slides under the bottom, regulating the width of the cut. To work same as a rabbet plane, remove fence and arms.

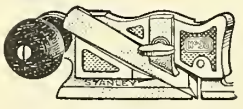
No. 78, 8½ inches long, 1½-inch cutter. Japanned. Weight 3 pounds. Packed one in box, each $1.65

Side Rabbet

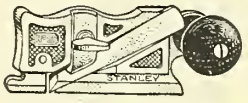
These will be found to be very convenient for side-rabbeting in trimming dados, mouldings and grooves of all sorts. A reversible nose-piece gives the tool a form whereby it will work close up into corners when required. They have rosewood knobs and are nickel-plated.

Numbers	Length Inches	Cutter Inch		Weight Pound	Each
98	4	½	Right-Hand	½	$1.00
99	4	½	Left-Hand	½	1.00

Packed one in Box.



No. 98



No. 99

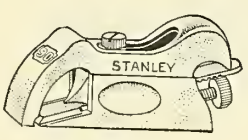
Cabinet Makers Rabbet

For fine cabinet or other work where extreme accuracy is required. The sides and bottom being square with each other the planes will lie perfectly flat on either side, and can be worked either right or left hand. They have adjustable throats; this means that the width of the throat opening or mouth can be widened or narrowed as coarse or fine work may require. They also are fitted with the side groove or "Hand-y" grip feature. The cutters are adjustable endwise.

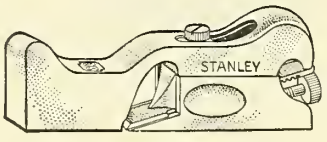
Plane No. 90 is of the Bull-Nose pattern so that it can be used close up into corners or other difficult places.

Numbers	Length Inches	Cutter Inches		Weight Pounds	Each
90	4	1	Nickel-Plated	1	$2.20
92	5½	¾	Nickel-Plated	1½	2.20
93	6½	1	Nickel-Plated	1¾	2.60
94	7½	1¼	Nickel-Plated	2	3.00

Packed one in Box.



No. 90

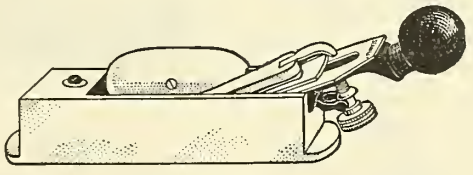


No. 93

Cabinet Makers Block

For Piano Makers and workmen in kindred trades requiring an extra fine tool for finishing hard woods, etc. The metallic handle can be attached to the top of either edge, and the sides being accurately machined, it can be used for work with a shoot-board in planing mitres, etc. The mouth is adjustable for coarse or fine work and the cutter is adjustable endwise.

No. 9, 10 inches long, 2-inch cutter. Rosewood knob. Weight 4½ pounds. Packed one in Box, each $4.10



No. 9

Cabinet Makers Edge

For Piano Makers and all Cabinet Workers. It has a cutter resting on a solid bed practically its entire length. The cutting edge being located at the extreme end of the plane gives the tool the form of a chisel. No other plane can be worked in such a small space or so close up into corners The cutter is adjustable endwise. Rosewood knob.

No. 97, 10 inches long, 2¼-inch cutter, weight 3¾ pounds. Packed one in box, each $2.20



No. 97

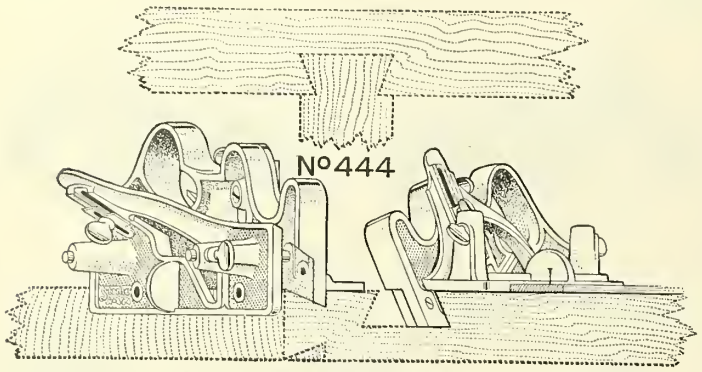
Edge Trimming

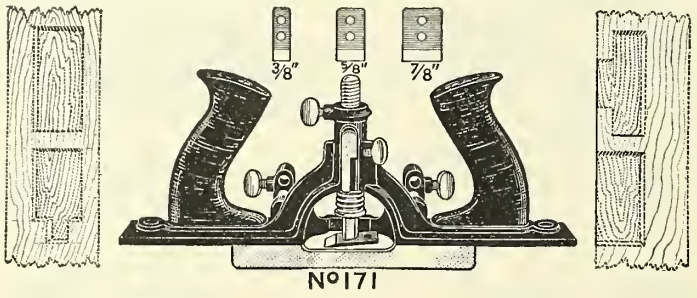
Designed especially for trimming or smoothing the ends of boards, such as sidings etc., for a square or close fit. It has a right-angle rest or guide from the cutter edge and the cutter works on a skew giving an easy shaving cut. In the rest or guide are two screw holes to which wood blocks of various bevels may be attached enabling the user to make a slanting cut.

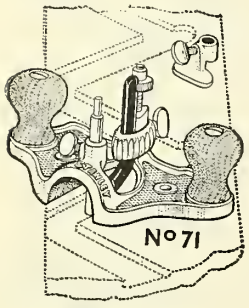
No. 95, 6 inches long, ⅞-inch cutter. Japanned. Weight 1¼ pounds. Packed one in box, each $1.15

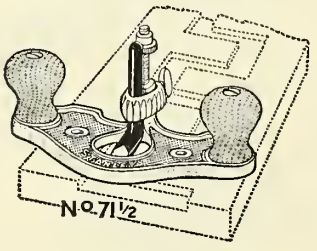


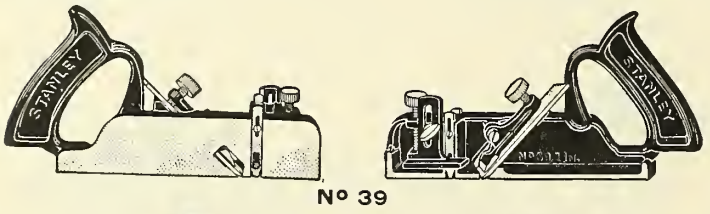
Planes

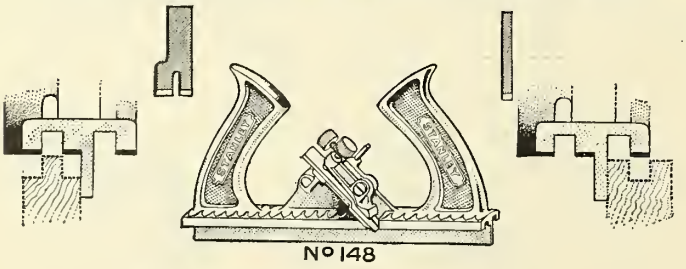


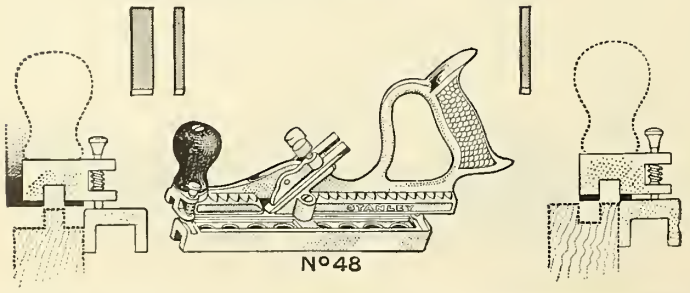












Stanley Dovetail Tongue and Groove

This novel tool will cut any size grooves and tongues to fit with sides at flare of 20 degrees, where the width of the neck is more than one-quarter of an inch and the depth of groove not more than three-quarters of an inch. The tongue and groove are cut separately, and can be made with parallel or tapering sides.

The compactness of the tool is shown in the illustration, where the cut on the left shows the plane assembled for cutting the tongue, and that on the right the plane assembled for cutting the groove. All parts are carefully machined and are interchangeable. The entire tool is heavily nickel-plated and, together with its cutters, is packed in a neat wooden box.

Extra parts and cutters for this plane are priced on page 485.

	Each
No. 444, 9 inches long, Nickel-plated, weight 6 pounds.....	$6.00

Stanley Door Trim

This plane will make mortises for butts, face plates, strike plates, escutcheons, etc., up to a depth of $\frac{5}{16}$ and a width of 3 inches. Its original feature is the method of mounting the cutter, which can be instantly set to work from either end of the plane or across it. In addition, the cutter is cushioned by a spring which prevents taking a heavier chip than can be easily carried. A fence regulates the position of the cut and insures the sides of the cut being parallel. The depth of the cut is governed by a positive stop.

By removing the fence and locking the cutter post with the thumb screw instead of using the spring a very superior Router plane is obtained. The bottom is designed so that an extra wooden bottom of any size desired can be screwed on, enabling the user to router on large openings.

The two handles as shown in the illustration are of rosewood, and three forged-steel cutters, $\frac{3}{8}$, $\frac{5}{8}$ and $\frac{7}{8}$ inch wide, are furnished with the tool.

	Each
No. 171, 11 inches long, Japanned, weight 3 pounds.....	$2.75

Packed one in box

Stanley Router

These planes are for surfacing the bottom of grooves or other depressions parallel with the general surface of the work. They are made in two styles, differing in the form of throat. The closed throat is the ordinary form of router plane; the open throat an improved design, giving more freedom for chips and a better view of the work and cutter. The latter has an attachment for regulating the thickness of the chip, and a second attachment for closing the throat for use on narrow surfaces. The bottoms of both styles are designed so that an extra wooden bottom of any size desired can be screwed on, enabling the user to router on large openings.

A ¼ and ½-inch cutter are furnished with each plane. Cutters have screw adjustment, and can be held as shown in illustrations, or on the back of the cutter post, for bull-nose work.

Numbers	Length Inches			Weight Pounds	Each
71	7½	Open Throat	Nickel-plated	2⅝	$2.05
71½	7½	Closed Throat	Nickel-plated	2⅛	1.65

Packed one in box

Stanley Iron Dado

The great advantage of these Dado Planes over those made of wood is that they will keep true under all conditions even in the narrowest widths. They have skew cutters, an adjustable depth gauge, and two adjustable spurs, one on each side of the plane. This adjustable feature permits of the spurs being adjusted to take up wear as well as for the depth of the cut.

The plane is made in seven sizes, from ¼ inch to 1 inch in width. In ordering always give the number (39) and width of cutter desired.

Numbers	Length Inches	Cutter Inch		Weight Pounds	Each
39	8	¼	Japanned	1¾	$1.65
39	8	⅜	Japanned	1¾	1.65
39	8	½	Japanned	1¾	1.65
39	8	⅝	Japanned	2	1.65
39	8	¾	Japanned	2	1.65
39	8	⅞	Japanned	2¼	1.65
39	8	1	Japanned	2¼	1.65

Packed one in box

Stanley Matching

These planes cut a tongue on the edge of one board to fit a groove in the edge of another board, so that when put together the surfaces of the boards come true. The straightness of both tongue and groove, and their distance from the surface, is governed by a fence. This fence is so designed that the distance of the groove from the side the fence engages is practically the same as the width of the groove. The distance of the other side from the groove depends upon the thickness of the board and the capacity of the plane. When grooves are cut on center, the joint is practically of equal strength in all parts.

Double End

This type has two separate cutters, a plow and a tongue tool, both governed by one permanent fence. The tongue tool has one edge wider than the other, which overhangs one side when tonguing on center. Both tongue and groove are cut by working the tool in the same direction by merely reversing it end for end. The planes are nickel-plated and have iron handles cast with the body.

Numbers	Size of Groove Inch	Size of Boards Inch	Centers on Inch	Weight Pounds	Each
146	⅛	⅜ to ½	⅜	1½	$2.20
147	3/16	½ to ¾	⅝	1⅞	2.20
148	¼	¾ to 1	⅞	2⅜	2.20

Packed one in box

Swinging Fence

This form has two plow cutters of the same width and one extra wide cutter. The fence in one setting exposes two cutters for cutting the tongue and, when reversed, leaves only one exposed for cutting the groove. On thicker boards than the plane works on center, the extra wide cutter is substituted for groove cutter when cutting tongue. Nickel-plated. Rosewood knobs.

Numbers	Size of Groove Inch	Size of Boards Inches	Centers on Inch	Weight Pounds	Each
48	5/16	¾ to 1¼	⅞	3¾	$2.75
49	3/16	½ to ¾	½	2⅜	2.75

Packed one in box

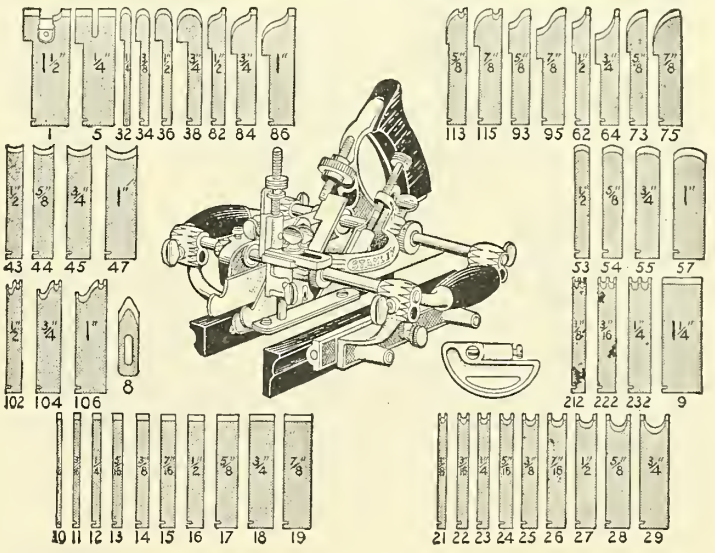
Planes

Stanley. Fifty-five

No. 55 Nickel-plated, with 52 Cutters, weight 15¼ pounds, each $14.00

The following cutters are furnished with each Plane. The price is given in case duplicates should be required.

No.	Size Style	Each
1	1½-inch Sash Tool	$ .50
5	¼-inch Match Tool	.50
8	Slitting Tool	.30
9	1¼-inch Filletster	.25
10	⅛-inch Plow and Dado Tool	.15
11	3/16-inch Plow and Dado Tool	.15
12	¼-inch Plow and Dado Tool	.15
13	5/16-inch Plow and Dado Tool	.15
14	⅜-inch Plow and Dado Tool	.20
15	7/16-inch Plow and Dado Tool	.20
16	½-inch Plow and Dado Tool	.20
17	⅝-inch Plow and Dado Tool	.20
18	¾-inch Plow and Dado Tool	.20
19	⅞-inch Plow and Dado Tool	.25
21	⅛-inch Beading Tool	.15
22	3/16-inch Beading Tool	.15
23	¼-inch Beading Tool	.15
24	5/16-inch Beading Tool	.20
25	⅜-inch Beading Tool	.20
26	7/16-inch Beading Tool	.25
27	½-inch Beading Tool	.25
28	⅝-inch Beading Tool	.30
29	¾-inch Beading Tool	.30
32	¼-inch Fluting Tool	.30
34	⅜-inch Fluting Tool	.30
36	½-inch Fluting Tool	.30
38	¾-inch Fluting Tool	.30
43	½-inch Hollow	.20
44	⅝-inch Hollow	.20
45	¾-inch Hollow	.20
47	1 -inch Hollow	.20
53	½-inch Round	.20
54	⅝-inch Round	.20
55	¾-inch Round	.20
57	1 -inch Round	.20
62	½-inch Quarter Hollow	.45
64	¾-inch Quarter Hollow	.50
73	⅝-inch Quarter Round	.45
75	⅞-inch Quarter Round	.50
82	½-inch Reverse Ogee	.45
84	¾-inch Reverse Ogee	.50
86	1-inch Reverse Ogee	.50
93	⅝-inch Roman Ogee	$ .45
95	⅞-inch Roman Ogee	.50
102	½-inch Grecian Ogee	.45
104	¾-inch Grecian Ogee	.50
106	1-inch Grecian Ogee	.50
113	⅝-inch Quarter Round with Bead	.45
115	⅞-inch Quarter Round with Bead	.50
212	⅛-inch Reeding Tool, 2 Beads	.20
222	3/16-inch Reeding Tool, 2 Beads	.20
232	¼-inch Reeding Tool, 2 Beads	.20



This Tool, in addition to being a Beading and Center Beading Plane, a Plow, Dado, Rabbet, Filletster, and Match Plane, a Sash Plane and a Slitting Plane, is also a superior Moulding Plane, and will accommodate cutters of almost any shape and size.

The regular equipment sent with the Plane comprises fifty-two cutters, all of which are shown in the cut. These cutters, together with the Plane and all its attachments, are packed in a neat box.

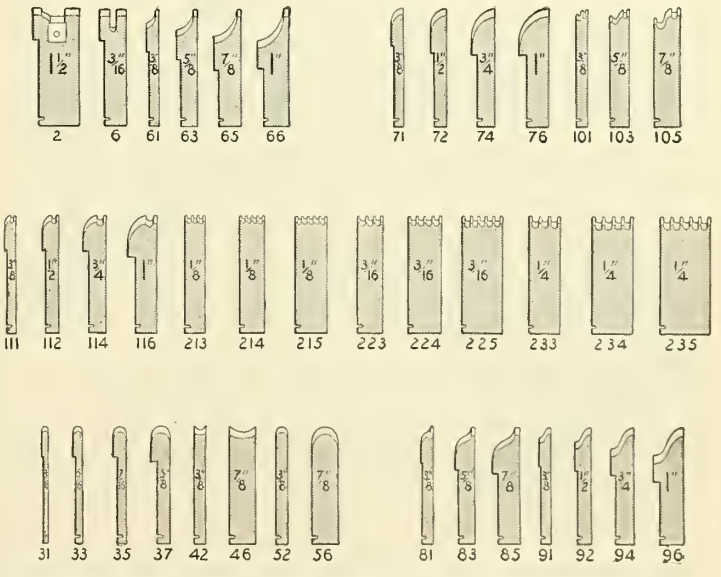
Cutters of practically any form can be used in the Plane, which the owner can make from blanks or order from sketch.

All metal parts of the Plane are nickel-plated. The handle and fences are made of selected rosewood.

Book of instructions supplied with each Plane.

Special Cutters

No.	Size Style	Each
2	1½-inch Sash Tool	$ .50
6	3/16-inch Match Tool	.50
31	3/16-inch Fluting Tool	.30
33	5/16-inch Fluting Tool	.30
35	7/16-inch Fluting Tool	.30
37	⅝-inch Fluting Tool	.30
42	⅜-inch Hollow	.20
46	⅞-inch Hollow	.20
52	⅜-inch Round	.20
56	⅞-inch Round	.20
61	⅜-inch Quarter Hollow	.45
63	⅝-inch Quarter Hollow	.45
65	⅞-inch Quarter Hollow	.50
66	1 -inch Quarter Hollow	.50
71	⅜-inch Quarter Round	.45
72	½-inch Quarter Round	.45
74	¾-inch Quarter Round	.50
76	1 -inch Quarter Round	.50
81	⅜-inch Reverse Ogree	.45
83	⅝-inch Reverse Ogee	.45
85	⅞-inch Reverse Ogee	.50
91	⅜-inch Roman Ogee	.45
92	½-inch Roman Ogee	.45
94	¾-inch Roman Ogee	.50
96	1 -inch Roman Ogee	.50
101	⅜-inch Grecian Ogee	.45
103	⅝-inch Grecian Ogee	.45
105	⅞-inch Grecian Ogee	.50
111	⅜-inch Quarter Round with Bead	.45
112	½-inch Quarter Round with Bead	.45
114	¾-inch Quarter Round with Bead	.50
116	1 -inch Quarter Round with Bead	.50
213	⅛-inch Reeding Tool, 3 Beads	.30
214	⅛-inch Reeding Tool, 4 Beads	.40
215	⅛-inch Reeding Tool, 5 Beads	.50
223	3/16-inch Reeding Tool, 3 Beads	$ .30
224	3/16-inch Reeding Tool, 4 Beads	.40
225	3/16-inch Reeding Tool, 5 Beads	.50
233	¼-inch Reeding Tool, 3 Beads	.30
234	¼-inch Reeding Tool, 4 Beads	.40
235	¼-inch Reeding Tool, 5 Beads	.50

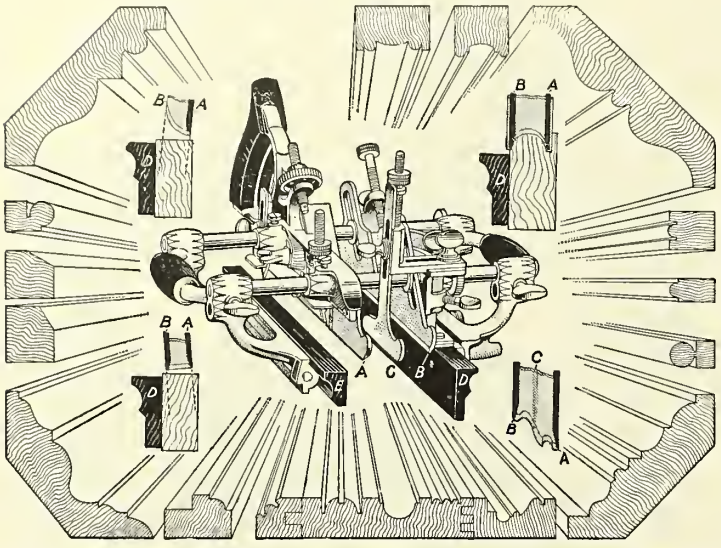


These Cutters may be ordered by simply specifying the number required.

Planes

Stanley. Fifty-Five

Some Samples of Work



The samples of work illustrated show some of the mouldings that can be made with cutters regularly furnished with this Plane.

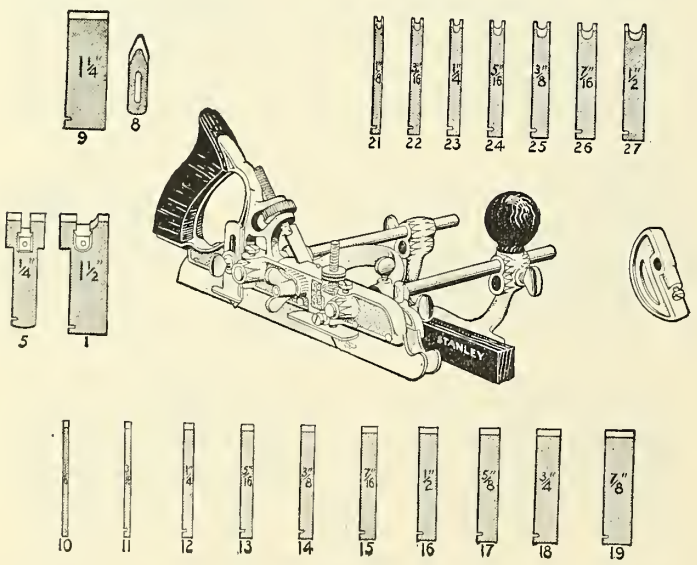
When it is considered that in addition to the fifty-two regular cutters and the forty-one special cutters (carried in stock), the plane will take practically any form of cutter desired, its wide range of work will be appreciated.

The Plane has a Main Stock "A", which carries the cutter adjustment, a Handle, a Depth Gauge, a Slitting Gauge, and has a steel bottom forming a bearing for one edge of the cutter. A Sliding Section "B", with a steel bottom, gives bearing for the other edge of the cutter and slides on arms secured in the Main Stock. This bottom can be raised or lowered so that, in addition to allowing the use of cutters of different widths, cutters can be used having one edge higher or lower than the edge supported in the Main Stock. An extra support or stop is necessary for cutters which first enter the wood at a point between the outside edges, and is a benefit for such cutters which, if the Plane were accidently tilted, would tend to gouge the work. The Auxiliary Center Bottom "C", which can be adjusted for width or depth, fulfills this requirement. Fence "D" has a lateral adjustment by means of screw for extra fine work. The Fences can be used on either side of the Plane, and the rosewood guides can be tilted to any desired angle up to forty-five degrees, by loosening the screws on the face. Fence "E" can be reversed for center beading wide boards.

The Plane is fitted with Spurs for working across the grain, and a special Cam Rest, to be located on the front arm when working at a distance from the edge of the board to keep the Fence from sagging, or on the rear arm on certain work to prevent the possibility of the Plane rocking. All parts are interchangeable.

The four small cuts in the corners, show how the bottoms should be set for different forms of cutters, and the great importance of having the Fences adjusted so that the cutters will not run.

Stanley. Forty-Five



Seven Tools in One. In compact and practical form. 1. Beading and Center Beading Plane. 2. Plow. 3. Dado. 4. Rabbet and Fillestster. 5. Match Plane. 6. Sash Plane. 7. Slitting Plane.

The Plane has two principal parts, a main stock and a sliding section. The main stock carries the handle, cutter adjustment, a slitting tool, depth gauge, and forms a bearing for one edge of the cutter. The sliding section slides on two arms secured in the stock and has a bearing for the other edge, allowing cutters of different widths to be used. A fence also slides on these arms for use when working as a plow, beader or filletster, to gauge the distance from the cutter to the edge of the board, and to keep the cutter at right angles to same. When used as a filletster, the fence slides under the bottom of the plane and determines the width of cutter exposed to the work.

The Plane is fitted with spurs for use across the grain, etc., and can be used either right or left hand.

With each Plane are furnished twenty-one cutters, all of which are shown in the cut. The cutters, together with the Plane, are packed in a neat box.

All metal parts are nickel-plated. The handle, knob and fence are made of selected rosewood.

For beading at a distance from the edge of a board, attach cam rest (see cut at right of Plane) to the front arm between the sliding section and fence to prevent the fence sagging. In certain work attach same to the rear arm to prevent the Plane from rocking.

No. 45 Nickel-plated, with 21 cutters, weight 9½ pounds, each.. $7.00

The following cutters are furnished with each Plane. The price is given in case duplicates should be required.

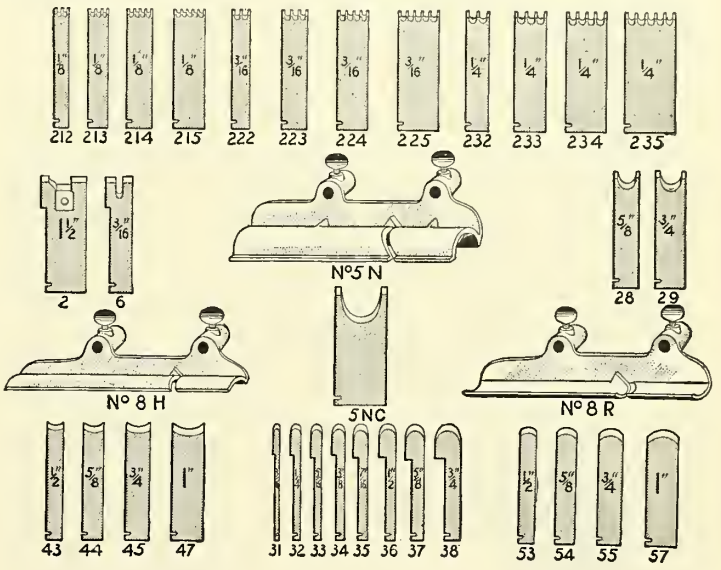
	Size	Style	Each
No. 1	1½-inch	Sash Tool	$ .50
No. 5	¼-inch	Match Tool	.50
No. 8		Slitting Tool	.30
No. 9	1¼-inch	Filletster	.25
No. 10	⅛-inch	Plow and Dado Tool	.15
No. 11	3/16-inch	Plow and Dado Tool	.15
No. 12	¼-inch	Plow and Dado Tool	.15
No. 13	5/16-inch	Plow and Dado Tool	.15
No. 14	⅜-inch	Plow and Dado Tool	.20
No. 15	7/16-inch	Plow and Dado Tool	.20
No. 16	½-inch	Plow and Dado Tool	$ .20
No. 17	⅝-inch	Plow and Dado Tool	.20
No. 18	¾-inch	Plow and Dado Tool	.20
No. 19	⅞-inch	Plow and Dado Tool	.25
No. 21	⅛-inch	Beading Tool	.15
No. 22	3/16-inch	Beading Tool	.15
No. 23	¼-inch	Beading Tool	.15
No. 24	5/16-inch	Beading Tool	.20
No. 25	⅜-inch	Beading Tool	.20
No. 26	7/16-inch	Beading Tool	.25
No. 27	½-inch	Beading Tool	.25

Planes

Stanley. Forty-Five

Special Cutters

No.	Size Style	Each
2	1½-inch Sash Tool	$ .50
6	3/16-inch Match Tool	.50
28	5/8-inch Beading Tool	.30
29	¾-inch Beading Tool	.30
31	3/16-inch Fluting Tool	.30
32	¼-inch Fluting Tool	.30
33	5/16-inch Fluting Tool	.30
34	3/8-inch Fluting Tool	.30
35	7/16-inch Fluting Tool	.30
36	½-inch Fluting Tool	.30
37	5/8-inch Fluting Tool	.30
38	¾-inch Fluting Tool	.30
212	1/8-inch Reeding Tool, 2 Beads	.20
213	1/8-inch Reeding Tool, 3 Beads	.30
214	1/8-inch Reeding Tool, 4 Beads	.40
215	1/8-inch Reeding Tool, 5 Beads	.50
222	3/16-inch Reeding Tool, 2 Beads	.20
223	3/16-inch Reeding Tool, 3 Beads	.30
224	3/16-inch Reeding Tool, 4 Beads	.40
225	3/16-inch Reeding Tool, 5 Beads	.50
232	¼-inch Reeding Tool, 2 Beads	.20
233	¼-inch Reeding Tool, 3 Beads	.30
234	¼-inch Reeding Tool, 4 Beads	.40
235	¼-inch Reeding Tool. 5 Beads	.50



Special Bottoms

In order to work Hollows and Rounds, or a Nosing Cutter in the No. 45 Plane, it is necessary to substitute, for the sliding section, specially formed bottoms which are called by the same name as the cutters they are designed to carry, that is: Hollows, Rounds or Nosing Tools.

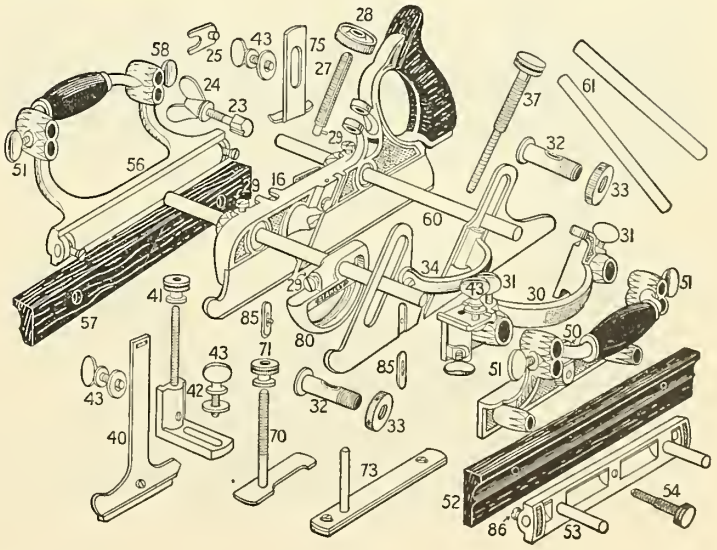
A Hollow and its cutters will form a Round on the moulding being worked. A Round and its cutters willl form a Hollow. A Nosing Tool and its cutters will form what might be called an exaggerated Round. It is very largely used for shaping the edges of stair treads. Hollows and Rounds are made in four sizes and are usually sold in sets, a set comprising one Hollow, one Round and two Cutters. The price of a Nosing Tool includes one Cutter.

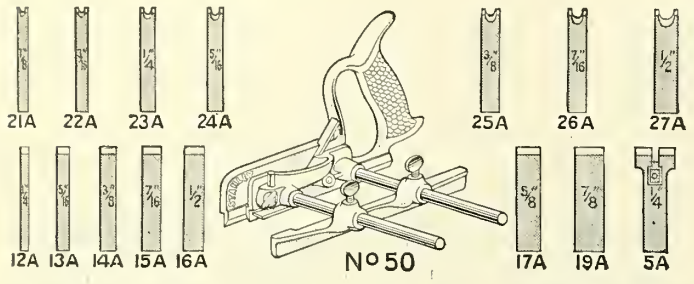
No. 6 Hollow and Round, ½-inch Cutters, work ¾-inch Circle, pair	$1.40
No. 8 Hollow and Round, 5/8-inch Cutters, work 1-inch Circle, pair	1.40
No. 10 Hollow and Round, ¾-inch Cutters, work 1¼-inch Circle, pair	1.50
No. 12 Hollow and Round, 1-inch Cutters, work 1½-inch Circle, pair	1.50
No. 5 Nosing Tool, 1¼-inch Cutters, work 1¼-inch Circle, Each	1.00

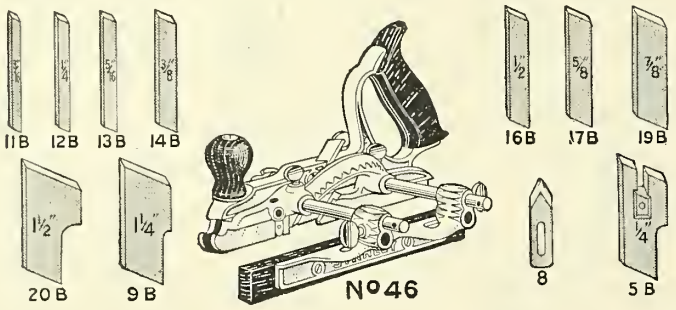
Parts of Stanley Combination

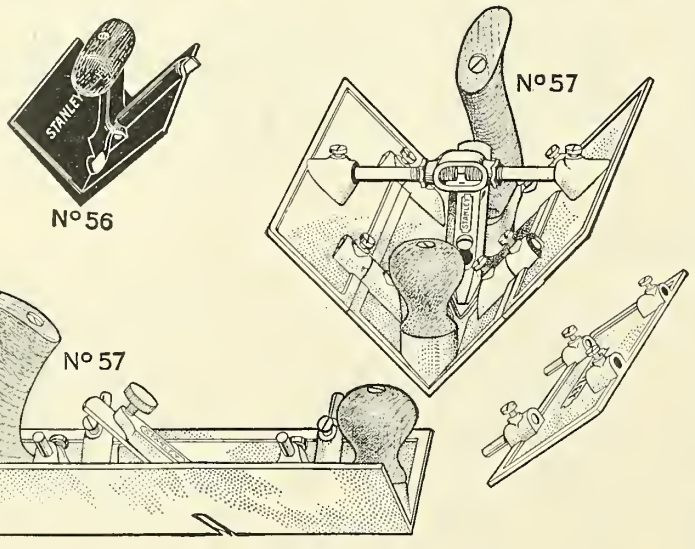
No.	Name of Part Plane Nos.	45	46	47	50	55	141 143	444
1	Cutters, per set	$3.50	2.00	1.00	1.75	6.00	2.00	1.25
16	Main Stock or Bottom	2.50	2.50	2.50	1.25	3.00	3.00	2.50
23	Cutter Bolt	.15	.15	.15	.15	.15		
24	Cutter Bolt Wing Nut	.15	.15	.15	.15	.15		
25	Cutter Bolt Clip and Screws	.05	.05	.05	...	.05		
27	Cutter Bolt Adjusting Screws	.10	...	...	...	.10		
28	Cutter Bolt Adjusting Wheel	.10	...	...	...	.10		
30	Sliding Section	1.50	1.50	1.50	.30	.75		
32	Thimble	...	...	...	...	.15		
33	Thimble Check Nut	...	...	...	...	.15		
34	Adjustable Bottom	...	...	...	...	1.25		
37	Adjustable Bottom Screw	...	...	...	...	.20		
40	Auxiliary Center Bottom	...	...	...	...	.30		
42	Angle Iron and Adjusting Screws	...	...	...	...	.30		
50	Left Fence	.75	.75	...	.75	1.35	1.00	1.00
52	Tilting Guard Plate (Wood)	...	...	...	...	.20		
53	Tilting Iron with Swivel	...	...	...	...	.40		
54	Left Fence Adjusting Screw	...	...	...	...	.20		
56	Right Fence	...	...	...	...	1.00	...	1.25
57	Right Fence Tilting Plate	...	...	...	...	.20		
60	Long Arms, per pair	.50	.50	.50	.50	.50	.50	
61	Short Arms, per pair	.25	.25	.25	...	.25	...	.25
70	Adjustable Depth Gauge	.20	.20	.20	.20	.20	.20	
73	Adjustable Beading Stop	.20	...	...	...	.30		
75	Slitting Cutter Stop	.10	.10	.10	.10	.10		
80	Cam Stop	.40	...	...	...	.40		
85	Spurs with Screws	.05	.05	.05	.05	.05	...	.05

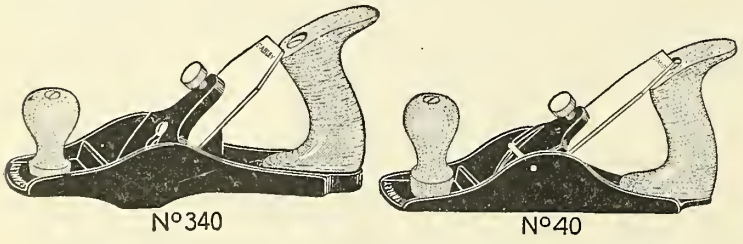
Screws Nos. 29, 31, 41, 43, 51, 58, 71, 76, 81 and 86, $.10 each.

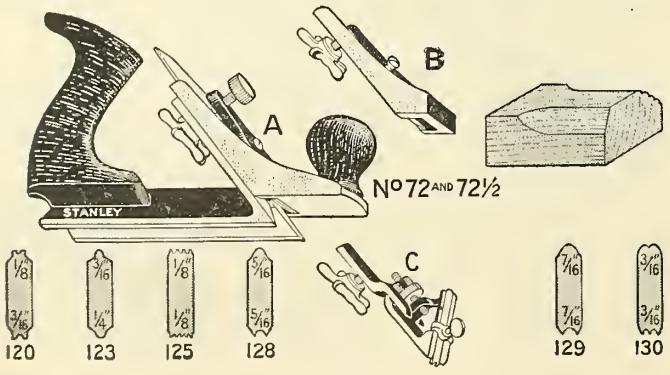












Planes

Stanley Combination

The following are termed Combination Planes, as they combine different sizes of cutters in one Main Stock.

Cutters for these planes have the same numbers and prices as the No. 55 Plane cutters (see page 483). To designate the plane for which the cutters are used, a letter is added—this letter, together with number, is shown in the cuts. In ordering, specify both the number and the letter. Extra parts are priced on page 485.

Plow, Beading and Matching

This consists of a main stock, carrying a spur and a depth gauge, and forming a support for one side of the cutter; a sliding section, carrying a spur and forming a support for the other side of the cutter, and a fence with a 5-inch adjustment. The handle is metal, being a part of the main stock.

The cutters comprise 7 plow and dado bits, ¼, 5/16, ⅜, 7/16, ½, ⅝ and ⅞ inch; 7 beading tools, ⅛, 1/16, ¼, 5/16, ⅜, 7/16 and ½ inch; and a ¼-inch tonguing tool.

Number	Length Inches	Finish	Number of Cutters	Weight Pounds	Each
50	9¼	Nickel-plated	15	3½	$5.00

Plow, Dado, Filletster and Matching

Skew cutters are the feature of this plane. It consists of a main stock carrying a spur, a depth gauge and a slitting cutter, a sliding section carrying a spur and forming an extra sole for the plane, and a fence (rosewood face) which can be set for either plow or filletster work. It has a rosewood handle and knob.

The cutters comprise 8 plow and dado bits, 3/16, ¾, 5/16, ⅜, ½, ⅝, ⅞ and 1¼ inches; a 1½-inch filletster cutter; a ¼-inch tonguing tool, and a slitting cutter.

Number	Length Inches	Finish	Number of Cutters	Weight Pounds	Each
46	10½	Nickel-plated	11	5¾	$5.00

Stanley Core Box

These planes are designed for making circular core boxes. The principle by which this result is obtained is that only a right angle may be inscribed in a half circle. The sides of the plane are at right angles, consequently the point of the plane will always cut on the circumference of the circle when the sides rest on the edges of the cut.

To make a core box, first lay out with scratch and compass the lines to which it is desired to work. With the core box plane make a groove ⅛-inch deep, working out exactly to the guide line. This defines the edges of the cut. Next with a gouge, chisel or a plow, remove the middle portion of the core, leaving from ⅛ inch to ¼ inch to be cut with the plane. By using care to see that the sides of the plane rest on both edges of the cut an accurate half circle will be planed out. These planes will make tapered core boxes as well as straight, it being merely necessary to lay out and groove to the desired taper instead of parallel.

No. 56 is especially adapted to small core boxes, working semi-circles from 3/16 inch to 2 inches in diameter. The handle is made of rosewood.

No. 57 is adapted for large core boxes, and is furnished with one pair of extra sides or, as they are called, additional sections (see cut). Without sections, as shown at bottom of illustration, it will work semi-circles from 1 inch up to 2½ inches in diameter. With one pair of sections (see cut at top of illustration) it will work semi-circles up to 5 inches in diameter. Additional sections can be supplied, each extra pair adding 2½ inches to the diameter of the semi-circle that can be worked up to 10 inches in diameter, the practical limits of the plane. Price, per pair, $1.00. Handle and knob of beech.

Number	Length Inches	Size of Cutter Inch	Finish	Weight Pounds	Each
56	4	⅜	Nickel-plated	2	$2.25
57	10	⅞	Nickel-plated	6¾	4.40

Packed one in Box

Stanley Scrub

With these planes the user can quickly plane down to a rough dimension any board that is too wide to conveniently rip with a hand saw, an operation that is sometimes called "hogging". This is made possible by reason of the peculiar shape of the extra heavy cutter, the cutting edge of which is rounded instead of square. Handle and knob of beech.

Number	Length Inches	Size of Cutter Inches	Finish	Weight Pounds	Each
40	9½	1⅛	Japanned	2⅛	$1.10
40½	10½	1½	Japanned	2½	1.50

Packed one in Box.

Stanley Furring

For preparing lumber as it comes roughly sawed from the mill. The construction of the bottom is such that it will remove the fur, grit, dirt, etc., and in fact "clean up" the surface and get it ready for the bench plane quicker than any other hand tool. Handle and knob of beech.

Number	Length Inches	Size of Cutter Inches	Finish	Weight Pounds	Each
340	10	2	Japanned	2½	$1.65

Packed one in Box.

Stanley Adjustable Chamfer

This plane will do perfect chamfer or stop-chamfer work. It has a ninety degree V-bottom which acts as a mitre guide. To this is attached an adjustable front "A", having a flat bottom which carries the cutter; this front can be set for different sizes of chamfer. Front "A" can be readily detached and a bull-nose front "B" (furnished with the plane) substituted, permitting the plane to be worked close up into corners. Rosewood handle and knob.

An additional front section "C" can be substituted for either "A" or "B". This attachment together with (6) moulding cutters sharpened at both ends make possible the working of a variety of ornamental forms. With this front the plane is known as No. 72½. Extra moulding cutters, $ .05 each.

Number	Length Inches	Size of Cutter Inches		Weight Pounds	Each
72	9	1⅝		3⅜	$2.20
72½	9	1⅝	6 Moulding Cutters	4⅛	3.30

Packed one in Box.

Planes

Stanley Carriage-Makers Rabbet

Especially adapted for the heavy framing required in mining work, for carriage or wagon building, or in any work of similar nature.

They have a cutter of double type and are adjustable both endwise and sidewise.

No. 10¼ has all the features of Nos. 10 and 10½, and in addition both the handle and knob can be tilted to either side. This permits working close up to perpendicular sides of any height without hurting the hands of the user. It is fitted with spurs on both sides, so that it will rabbet across the grain equally as well as with it.

All have rosewood handles and knobs.

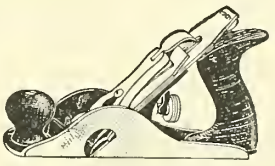
The number with a "C" designates Corrugated Bottom (see cut No. 10½C).

No. 10½ or 10½C, 9 inches long, 2⅛-inch cutter, weight 3 pounds, each $2.50

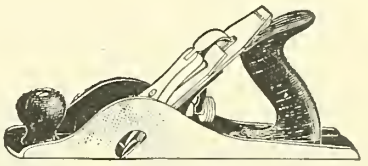
No. 10 or 10C, 13 inches long, 2⅛-inch cutter, weight 4¼ pounds each 3.00

No. 10¼ or 10¼C, 13 inches long, 2⅛-inch cutter, weight 4¼ pounds, each 3.50

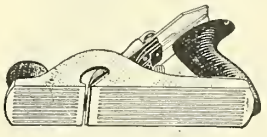
Packed one in Box.



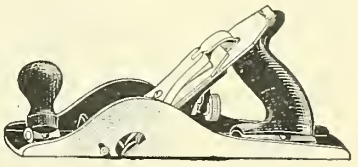
No. 10½



No. 10



No. 10½ C



No. 10¼

Adjustable Circular

Have flexible steel faces which can be accurately adjusted for planing the inside or outside of circles. The cutters are the same as in "Bailey" and "Bed Rock" Planes.

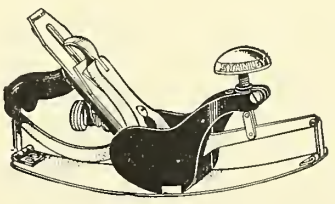
Stanley

The face is fastened at its center to the Plane Body, and adjusted at the ends by means of a screw and levers.

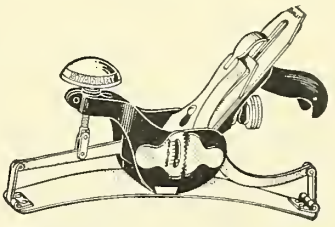
Has graduated scale for setting the face,

No. 113 Japanned, 10 inches long, 1¾-inch cutter, weight 3½ pounds, each $3.00

Packed one in Box.



No. 113



No. 113

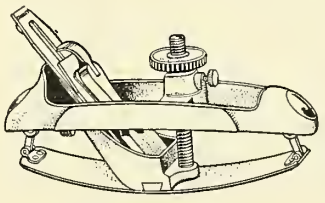
Victor

The face is fastened at each end to the Plane Body, and adjusted by a screw at the center. This construction gives great strength and accuracy.

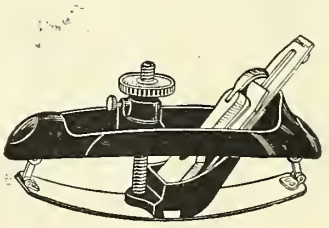
No. 20 Nickel-plated, 10 inches long, 1¾-inch cutter, weight 4 pounds, each $4.10

No. 20½ Japanned, 10 inches long, 1¾-inch cutter, weight 4 pounds, each 3.50

Packed one in Box.



No. 20



No. 20½

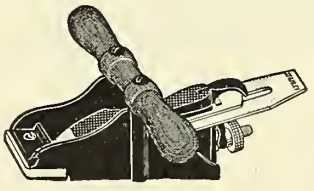
Stanley Floor and Belt Makers

Belt Makers

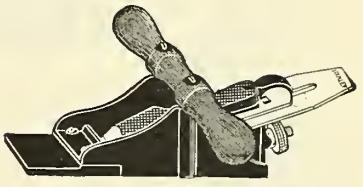
Designed for chamfering down the ends or laps of a belt before fastening them together. Largely used by belt manufacturers; also a valuable tool for all users of belting, enabling them to make repairs that otherwise would require that the belt be sent to the makers.

No. 11 5¾ inches long, 2⅜-inch cutter, Japanned, weight 3½ pounds, each $2.20

Packed one in Box.



No. 11



No. 11½

Special Floor

This Plane is fitted with an adjustable throat, permitting a wide or narrow mouth, according as coarse or fine work requires. It is designed for working from a kneeling position

No. 11½ 7 inches long, 2⅜-inch cutter, Japanned, weight 3¾ pounds, each $3.15

Packed one in Box.

Pattern Makers Routers

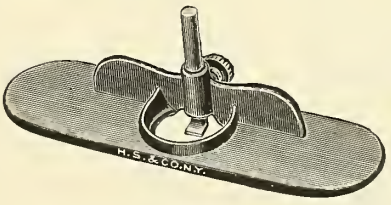
B. M. Co.

No. 1 ⅜-inch cutter, each $1.00

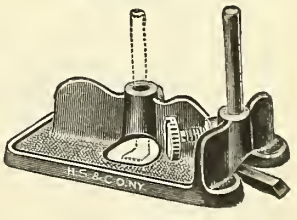
Sargent

Provided with two seats for the cutter, one in center with closed throat;, other at end with open throat.

No. 73 ¼-inch cutter, each ..... $ .50



No. 1



No. 73

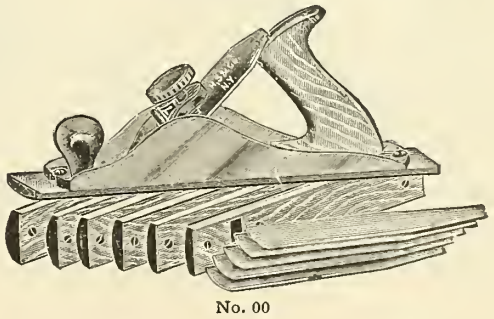
Pattern Makers Sole

Simplex

Covers the requirements of pattern makers and woodworkers who have coved or hollow work to finish.

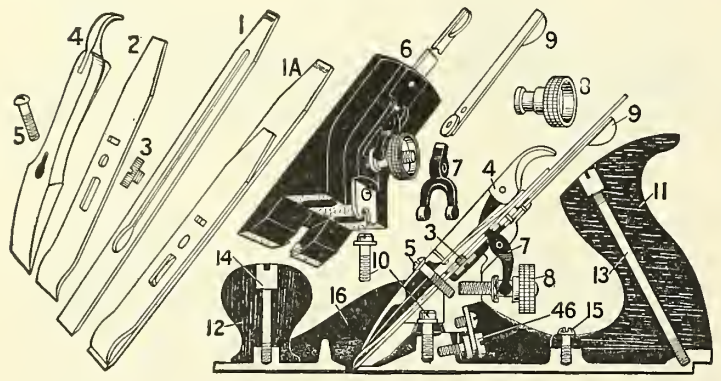
The faces or soles are made of finest seasoned beech and are 13 inches long, 2¼ inches wide and ⅝-inch thick. Six soles are furnished with each plane, rounded to circles of 4, 6, 9, 12, 16 and 20 inches diameter, each sole being stamped with the size. A flat face may be added and the plane used as an ordinary jack plane. Lightly made of cast iron, with steel cutters, 1¾ inches wide.

Complete, with 6 Soles, each $6.50



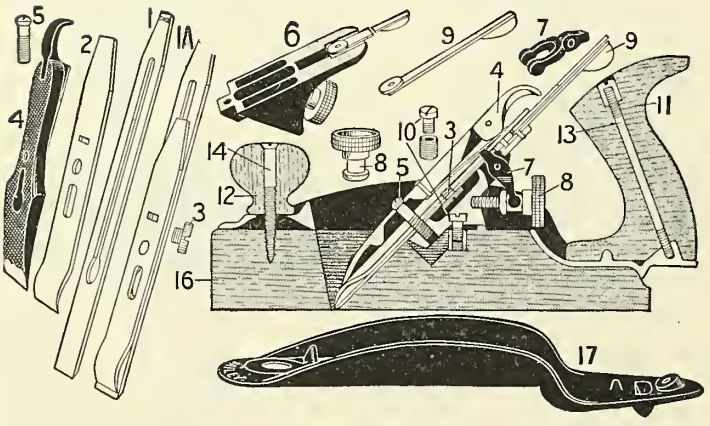
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Plane Parts



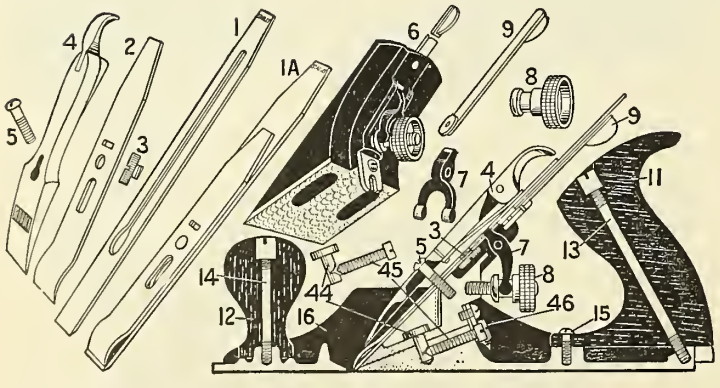
Bailey Iron

No.	Name of Part	No. of Plane	1	2 2C	3 3C	4 4C	4½ 4½C	5 5C	5½ 5½C	6 6C	7 7C	8 8C
1A	Double Plane Iron		$.32	.35	.38	.42	.48	.42	.47	.48	.48	.50
1	Single Plane Iron		.18	.21	.23	.25	.29	.25	.28	.29	.29	.32
2	Plane Iron Cap		.14	.14	.15	.17	.19	.17	.19	.19	.19	.18
3	Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
4	Lever Cap		.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
5	Lever Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete		.35	.35	.35	.35	.35	.35	.35	.35	.35	.35
7	"Y" Adjusting Lever		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
8	Adjusting Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adj. Lever		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
10	Frog Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
11	Plane Handle		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
12	Plane Knob		.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
13	Handle Bolt and Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
14	Knob Bolt and Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
15	Plane Handle Screw		...	...	...	...	.05	.05	.05	.05	.05	.05
16	Plane Bottom		.65	.85	1.00	1.00	1.20	1.20	1.20	1.65	2.35	2.85
46	Frog Adj. Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05



Bailey Wood

No.	Name of Part	No. of Plane	21 22 23	24 25 35	26	27	27½	28 29	30 31	32 33 34	36	37
1A	Double Plane Iron		$.38	.42	.42	.45	.47	.48	.48	.50	.48	.50
1	Single Plane Iron		.23	.25	.25	.27	.28	.29	.29	.32	.29	.32
2	Plane Iron Cap		.15	.17	.17	.18	.19	.19	.19	.18	.19	.18
3	Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
4	Lever Cap		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
5	Lever Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete		.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
7	"Y" Adjusting Lever		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
8	Adjusting Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adj. Lever		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
10	Frog Screw and Bush'g		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
11	Plane Handle		...	.10	.10	.10	.10	.10	.10	.10	.10	.10
12	Plane Knob		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
13	Handle Bolt and Nut		...	.10	.10	.10	.10	.10	.10	.10	.10	.10
14	Knob Bolt and Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
16	Plane Bottom		.40	.40	.50	.50	.50	.70	.80	.85	.50	.70
17	Top Casting		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20



Bed Rock

No.	Name of Part	No. of Plane	602 "C	603 "C	604 "C	604½ "C	605 "C	605½ "C	606 "C	607 "C	608	608 "C
1A	Double Plane Iron		$ .35	.38	.42	.48	.42	.47	.48	.48	.50	.50
1	Single Plane Iron		.21	.23	.25	.29	.25	.28	.29	.29	.32	.32
2	Plane Iron Cap		.14	.15	.17	.19	.17	.19	.19	.19	.18	.18
3	Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
4	Lever Cap		.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
5	Lever Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete		.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
7	"Y" Adjusting Lever		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
8	Adjusting Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adj. Lever		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
11	Plane Handle		.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
12	Plane Knob		.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
13	Handle Bolt and Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
14	Knob Bolt and Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
15	Plane Handle Screw		...	...	...	.05	.05	.05	.05	.05	.05	.05
16	Plane Bottom		1.10	1.25	1.25	1.50	1.50	1.60	2.20	3.10	3.50	3.50
44	Frog Pin		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
45	Frog Clamping Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
46	Frog Adjusting Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05

NOTE—In several of the Planes, the Parts designated by the same name differ in form.

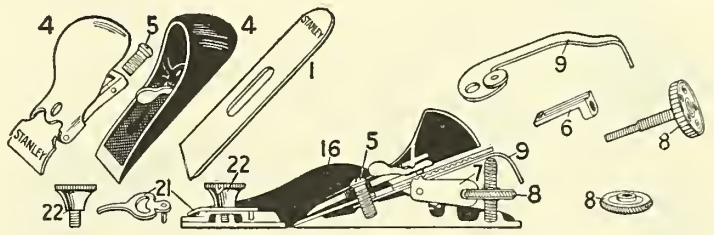
In these cases the corresponding Parts are given the same number, and when the Part is not shown directly opposite the number of the Plane the illustration will be found in another place.

Always give Plane number and Part number when ordering Cutters or parts.

Plane Parts

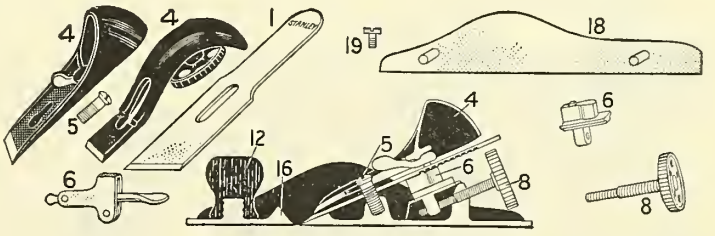
Bailey and Stanley Block

No.	Name of Part	No. of Plane	9½ 9¾	15 15½	16 17	18	19	60	60½	61	65	65½
1	Single Plane Iron		$ .17	.17	.17	.17	.17	.17	.17	.17	.17	.17
4	Lever Cap		.10	.10	.15	.20	.20	.15	.10	.15	.15	.10
5	Lever Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
6	Frog Complete		...	...	...	...	...	.10	.10	.10	.10	.10
7	Adjusting Lever		.05	.05	.05	.05	.05					
8	Adjusting Nut		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
9	Lateral Adjusting Lever		.10	.10	.10	.10	.10					
11	Plane Handle		.25	.25								
16	Plane Bottom		.70	.75	.75	.70	.75	.60	.60	.40	.75	.75
21	Eccentric Plate		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
22	Finger Rest Knob		.10	.10	.10	.10	.10	.10	.10	.10	.10	.10



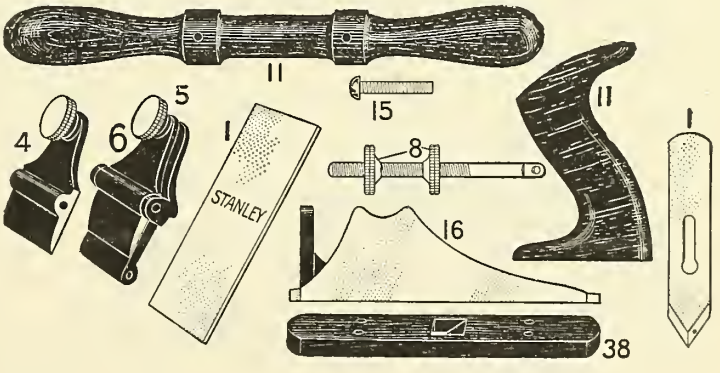
Stanley Block

No.	Name of Part	No. of Plane	100 101	102	103	110	120	130	131	140	203	220
1	Single Plane Iron		$ .05	.10	.10	.13	.17	.13	.17	.20	.20	.17
4	Lever Cap		.05	.10	.10	.10	.10	.10	.10	.15	.10	.10
5	Lever Cap Screw		...	...	...	...	...	...	.05	.05	.05	.05
6	Frog Complete		...	...	...	...	.15	...	.15	.10	.10	.10
8	Adjusting Nut		...	...	...	...	...	...	.10	.10	.10	.10
12	Plane Knob		...	...	...	.10	.10	.10	.15	.15	.10	.10
16	Plane Bottom		.10	.15	.20	.25	.30	.35	.70	.75	.25	.30
18	Detachable Side		...	...	...	...	...	...	...	.25		
19	Side Screw (Pair)		...	...	...	...	...	...	...	.10		



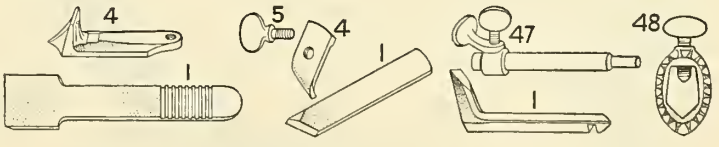
Stanley Scraper and Chamfer

No.	Name of Part	No. of Plane	12 12½	12¼	112	212	85	87	56	57	72	72½
1	Single Plane Iron		$ .20	.20	.20	.20	.20	.20	.25	.30	.20	.20
4	Lever Cap		.25	.25	.20	.10	.20	.20	.15	.15	.10	.10
5	Lever Cap Screw		...	...	...	...	...	...	.05	.05	.05	.05
6	Frog Complete		.60	.70	.35	.10	.30	.30				
8	Adjusting Nut		.10	.10	.10							
10	Frog Screw		...	...	...	...	.05	.05				
11	Plane Handle		.50	.50	.20	...	.25	.20	.20	.10	.30	.30
12	Plane Knob		...	...	.15	.20	.20	.20	...	.10	.15	.15
13	Handle Bolt and Nut		...	...	.10	...	.10	.10	...	.10	.10	.10
14	Knob Bolt and Nut		...	...	.10	.10	.10	.10	...	.10	.10	.10
15	Plane Handle Screw		.05	.05								
16	Plane Bottom		1.20	.80	1.20	.60	1.00	.80	1.00	2.50	1.50	1.50
38	Extra Wood Bottom		59									



Stanley Rabbet and Router

No.	Name of Part	No. of Plane	90 92	93	94	196	98	99	71	71½	75	95
1	Single Plane Iron		$ .30	.30	.30	.25	.20	.20	.30	.30	.20	.20
4	Lever Cap		.15	.15	.15	.10	.10	.10	...	...	.10	.10
12	Plane Knob		...	...	...	...	.15	.15	.15	.15		
14	Knob, Bolt and Nut		...	...	...	...	...	...	.10	.10		
16	Plane Bottom		1.75	2.10	2.50	1.20	.60	.60	1.00	1.00	.30	.80
27	Cutter Bolt Adj. Screw		.20	.20	.20							
47	Extra Attachment		...	...	...	...	...	...	.25			
48	Collar		...	...	...	...	...	...	.25	.25		

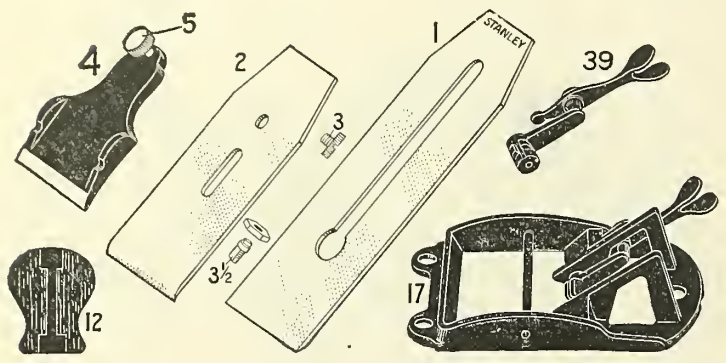


Note—In several of the Planes, the Parts designated by the same name differ in form.

In these cases the corresponding Parts are given the same number; and when the part is not shown directly opposite the number of the Plane, the illustration will be found in another place.

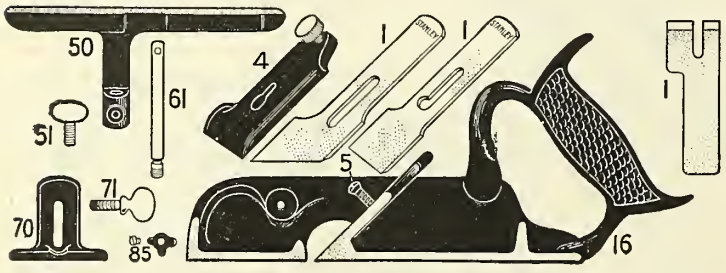
Always give Plane number and Part number when ordering Cutters or parts.

Plane Parts



Stanley Lever Adjustment and Special

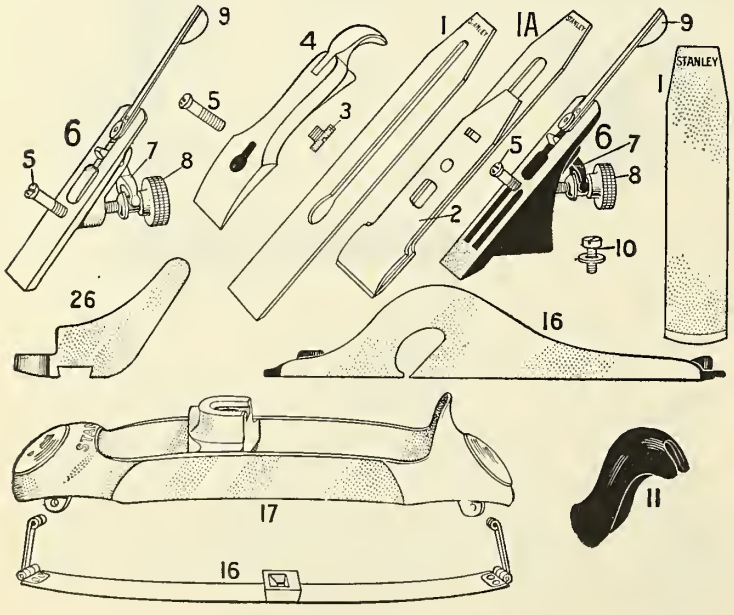
No.	Name of Part	No. of Plane	104	105	122	127	129	132	135	340	62	97
1A	Double Plane Iron		$ .45	.45	.38	.45	.48	.50	.45			
1	Single Plane Iron		.27	.27	.23	.27	.29	.32	.27	.30	.30	.45
2	Plane Iron Cap		.18	.18	.15	.18	.19	.18	.18			
3	Cap Screw		.05	.05	.05	.05	.05	.05	.05			
3½	Adj. Stud and Nut		.05	.05	.05	.05	.05	.05	.05			
4	Lever Cap		.10	.10	.10	.10	.10	.10	.10	.10	.15	.15
5	Lever Cap Screw		...	...	...	...	...	...	...	.05	.05	.05
11	Plane Handle		.20	.20	...	.10	.10	.10	.10	.10	.30	
12	Plane Knob		.15	.15	.10	.10	.10	.10	.10	.15	.15	.15
13	Handle Bolt and Nut		.10	.10	...	.10	.10	.10	.10	.10	.10	...
14	Knob Bolt and Nut		.10	.10	...	...	...	...	...	.10	.10	.10
15	Plane Handle Screw		...	...	...	.05	.05	.05	.05	...	...	...
16	Plane Bottom		.85	1.35	.40	.45	.70	.85	.40	.80	1.75	1.00
17	Top Casting		...	...	.30	.30	.30	.30	.30			
21	Eccentric Plate		...	...	...	...	...	...	...	...	.10	
22	Finger Rest Knob		...	...	...	...	...	...	...	...	.25	
39	Lever Adjustment		.20	.20	.20	.20	.20	.20	.20			



Stanley Rabbet, Matching and Dado

No.	Name of Part	No. of Plane	39	48	49	78	289	146	147 148	171	180 to 182	190 to 192
1	Single Plane Iron		$ .20	.20	.20	.20	.30	*.65	*.65	*.40	.20	.20
4	Lever Cap		.10	.10	.10	.10	.10	.15	.15	...	.10	.10
16	Plane Bottom		1.20	1.20	2.00	1.00	1.20	1.50	1.50	.90	.75	.90
50	Fence		...	.50	.50	.25	.20	...	...	.30		
51	Fence Thumb Screw		...	...	...	.05	.05	...	...	.05		
61	Short Arm		...	...	...	.10	.10	...	...	.20		
70	Adj. Depth Gauge		.20	...	...	.20	.20	...	...	...	.20	.20
71	Depth Gauge Th. Sc'w.		.10	...	...	.10	.10	...	...	...	.10	.15
85	Spurs with Screws		.10	...	...	.05	.05	...	...	...	...	.05

*Set



Stanley Carriage, Circular and Scrub

No.	Name of Part	No. of Plane	10 10C	10¼	10½ " C	11 11½	113	20 20½	40	40½	51	74
1A	Double Plane Iron		$ .45	.45	.45	.48	.38	.38	...	...	.48	.50
1	Single Plane Iron		.27	.27	.27	.29	.23	.23	.20	.25	.29	.32
2	Plane Iron Cap		.18	.18	.18	.19	.15	.15	...	...	.19	.18
3	Cap Screw		.05	.05	.05	.05	.05	.05	...	...	.05	.05
4	Lever Cap		.25	.25	.25	.25	.25	.25	.10	.10	.25	.30
5	Lever Cap Screw		.05	.05	.05	.05	.05	.05	.05	.05	.05	.10
6	Frog Complete		.35	.35	.35	.35	.35	.35	...	...	.35	
7	"Y" Adjusting Lever		.05	.05	.05	.05	.05	.05	...	...	.05	
8	Adjusting Nut		.10	.10	.10	.10	.10	.10	...	...	.10	
9	Lateral Adj. Lever		.10	.10	.10	...	.10	.10	...	...	.10	
10	Frog Screw		.05	.05	.05	.05	.05	.05	...	...	.05	
11	Plane Handle		.20	.40	.20	.30	...	...	.10	.10	.20	1.00
12	Plane Knob		.15	.30	.15	...	...	...	.10	.10	.15	
13	Handle Bolt and Nut		.10	.10	.10	...	...	...	.10	.10	.10	
14	Knob Bolt and Nut		.10	.10	.10	...	...	...	.10	.10	.10	
16	Plane Bottom		1.65	1.50	1.50	1.30	.60	.60	.70	1.00	3.00	2.20
17	Top Casting		...	...	...	...	1.00	1.50				
26	Frog Seat		...	...	...	...	...	.50				
35	Bottom Adj. Screw		...	...	...	...	.50	.25				
36	Bottom Adj. Nut		...	...	...	...	...	.25				

Note—In several of the Planes, the Parts designated by the same name differ in form.
In these cases the corresponding Parts are given the same number; and when the Part is not shown directly opposite the number of the Plane, the illustration will be found in another place.
Always give Plane number and Part number when ordering Cutters or parts.

Adjustable Iron Planes

Sargent

Bench

With Patent Frog—Adjustable Without Removing Cutter

Frog Adjustment

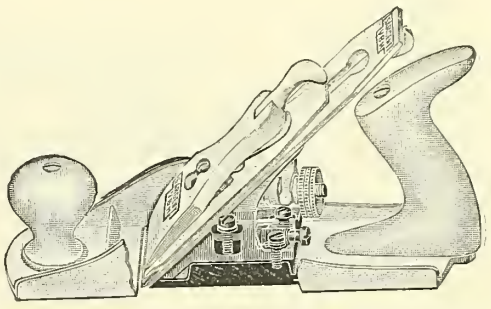
Fine work requires a very narrow opening between the front of the mouth and the cutting edge of the cutter. Coarse work requires support close to the cutting edge of the cutter to prevent chattering. By this improved construction, the frog with the cutter still clamped in position on it may be adjusted forward for fine work or backward for coarse work, and at all times it is so supported as to prevent chattering. The frog is moved forward or backward on a line parallel with the base so that no adjustment of the cutter is required after the frog adjustment has been made.

The clamp and cutter may be left fastened to the frog while the adjustment is being made.

Solid—Rigid—Firm

These Planes have the double seat, giving two points of contact of the bottom of the frog with the bed or bottom of plane. At these points both the frog and the bed are profiled or milled, insuring accuracy of fit and a solid, firm seating of the frog on the bed.

All cutters are made from the best double refined English cast steel, tempered by the very best improved process, then highly polished and sharpened ready for use, and are warranted. A slightly heavier cutter is used to avoid the vibration which may occur on spring cap planes

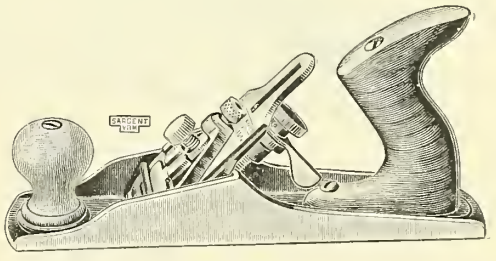


Sectional View of the Improved Iron Bench Plane Showing Position of Parts

Polished Trimmings, East India Mahogany Handle and Knob

With patent side adjustment, for exact adjusting of the cutter with the face of the plane

Smooth Bottom Number	Corrugated Bottom Number		Each
7	7C	Smooth, 7 inches, 1⅝-inch cutter	$3.00
8	8C	Smooth, 8 inches, 1¾-inch cutter	3.30
9	9C	Smooth, 9 inches, 2-inch cutter	3.60
10	10C	Smooth, 10 inches, 2⅜-inch cutter	4.25
		Jack, Fore and Jointer	
14	14C	Jack, 14 inches, 2-inch cutter	4.25
15	15C	Jack, 15 inches, 2¼-inch cutter	4.60
18	18C	Fore, 18 inches, 2⅜-inch cutter	5.25
22	22C	Jointer, 22 inches, 2⅜-inch cutter	6.10
24	24C	Jointer, 24 inches, 2⅝-inch cutter	7.25



No. 710

Automatic Setting

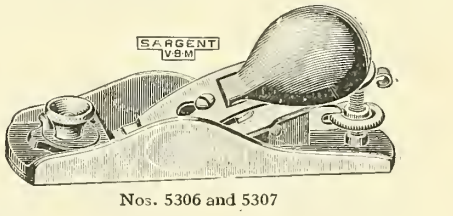
The frog is very rigid and the frog and bed at the mouth are in alignment so that the cutter has an even bearing down to the bevel of the cutter. Combines solidity, compactness and simplicity. The meeting surfaces of the frog and bed are all machined so that the fit is absolute.

The Sheffield Steel Cutter requires no cap, as the clamp acts as a breaker for the chip.

The clamp is adjustable for fine or coarse work by means of a thumb-screw which permits a quick and accurate adjustment. When the clamp has been adjusted to the proper position, it will remain in this position without change until the adjusting screw has been regulated, even when the clamp and cutter have been taken out and replaced. In this way the cutter may be sharpened without the necessity of readjusting the clamp. This saves time and insures that the clamp is in the proper position at all times.

Lateral adjustment may be secured without removing the hand from the handle and the vertical adjustment, obtained through a direct-acting thumb-screw at the back of cutter, is positive and rapid.

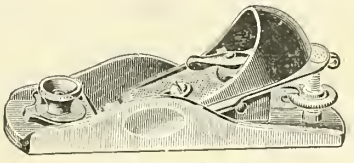
Intended for both heavy and very fine cuts. Is especially adapted for working against the grain on cross-grained hardwood where the absolute rigidity of the cutter avoids any tendency to chatter.



Nos. 5306 and 5307

Polished Trimmings, East India Mahogany Handle and Knob

Smooth Bottom Number	Corrugated Bottom Number		Each
707	707C	Smooth, 7 inches, 1⅝-inch cutter	$3.25
708	708C	Smooth, 8 inches, 1⅞-inch cutter	3.50
710	710C	Smooth, 10 inches, 2-inch cutter	4.00
714	714C	Jack, 14 inches, 2⅛-inch cutter	4.50
718	718C	Fore, 18 inches, 2½-inch cutter	5.50
722	722C	Jointer, 22 inches, 2½-inch cutter	6.50

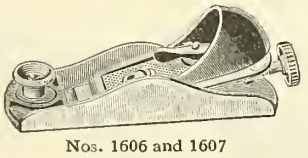


Nos. 1306 and 1307

Block, Knuckle-Joint

Screw adjustment and adjustable mouth. Patent side adjustment for exact adjusting of the cutter with the face of the plane. All steel non-breakable clamp.

Nickel-Plated Trimmings	Each
No. 5306. 6 inches, 1⅝-inch cutter	$1.85
No. 5307. 7 inches, 1⅝-inch cutter	1.95



Nos. 1606 and 1607

Block

Screw adjustment and adjustable mouth. Patent side adjustment for exact adjusting of the cutter with the face of the plane.

Nickel-Plated Trimmings	Each
No. 1306. 6 inches, 1⅝-inch cutter	$1.75
No. 1307. 7 inches, 1⅝-inch cutter	1.85

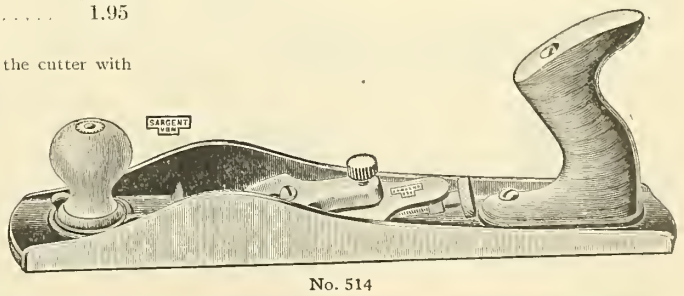
Low-Angle Block

Screw adjustment and adjustable mouth. Nickel-plated trimmings.

	Each
No. 1606. 6 inches, 1⅜-inch cutter	1.90
No. 1607. 7 inches, 1⅝-inch cutter	2.10

Polished Trimmings, East India Mahogany Handle and Knob

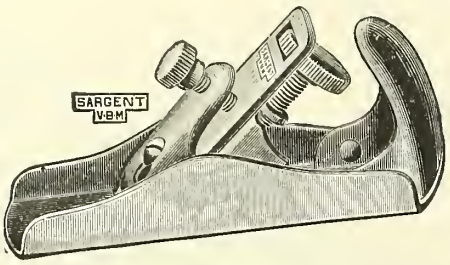
No. 514. 14 inches, 2-inch cutter, each	4.30



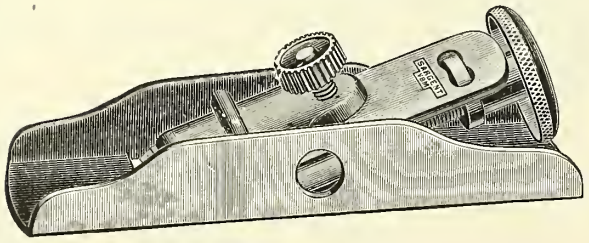
No. 514

Adjustable Planes

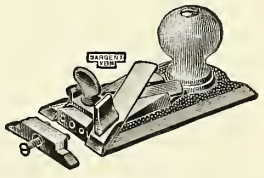
Sargent All Steel Block



No. 2204, Polished



No. 5206, Nickel-plated



No. 81

Light, unbreakable and indestructible; owing to their shape and size they may be readily carried in the pocket of a carpenter's apron; they are particularly desirable for use in work on scaffoldings, etc. No. 2204 is especially suitable for pattern-makers' use.

Mechanics will find them substantial, serviceable and handy; they are also particularly suitable for amateur work at home.

The clamp is especially powerful owing to the screw construction which takes the place of the cam generally used on block planes. This is indicated by the fact that it is necessary to loosen the clamp screw before making the lateral or up and down adjustment. The side adjustment may be made by moving the cutter with the fingers.

Rapid up and down adjustment obtained by the screw in the rear. The head of this screw is made to serve as a handle.

Highly Polished

No. 2204. 4¼ inches, 1⅛-inch cutter, each..... $1.00

Low Angle, Nickel-plated

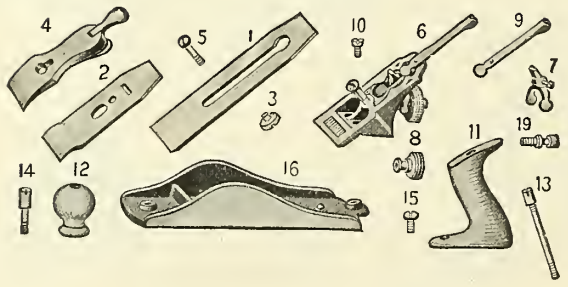
No. 5206. 6 inches, 1⅝-inch cutter, each..... $2.00

Sargent Double Side Rabbet

Very convenient for side-rabbeting in trimming dados, mouldings and grooves of all sorts. A removable nose-piece gives the tool a form whereby it will work close up into corners when required. They have East India mahogany knob, and are nickel-plated. Having double blades, may be used either right or left hand.

No. 81. 4¼ inches long, two ½-inch cutters. Each..... $1.90

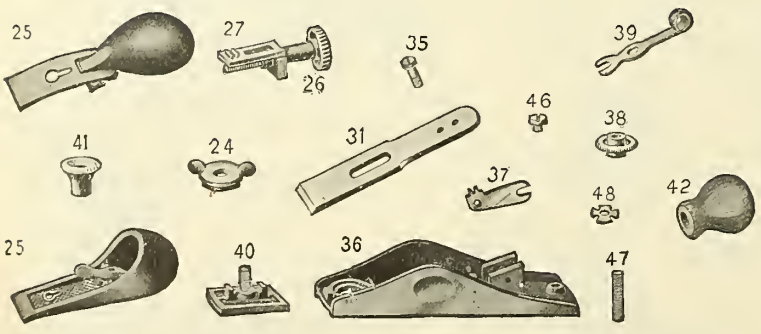
Packed one in box.



Parts For Sargent Bench Planes

Number of Part	For Planes Nos.	7, 7C Each	8, 8C Each	9, 9C 14, 14C Each	10, 10C 15, 15C 18, 18C 22, 22C Each	24, 24C Each
1	Single Steel Cutter.	$ .33	.35	.40	.45	.50
2	Cap for Single Steel Cutter.....	.22	.25	.25	.30	.30
1 and 2	Double Steel Cutter.	.55	.60	.65	.75	.80
3	Cap Screw.....	.08	.08	.08	.08	.08
4	Clamp.....	.40	.40	.40	.40	.40
5	Clamp Screw.....	.06	.06	.06	.06	.06
6	Frog Complete.....	.55	.55	.55	.55	.55
7	Fork Adjustment...	.15	.15	.15	.15	.15
8	Brass Adjusting Nut.	.18	.18	.18	.18	.18
9	Lateral Adjustment.	.15	.15	.15	.15	.15
10	Frog Screw.....	.06	.06	.06	.06	.06
11	Handle.....	.30	.30	.30	.30	.30
12	Knob.....	.23	.23	.23	.23	.23
13	Handle Bolt.....	.20	.20	.20	.20	.20
14	Knob Bolt.....	.20	.20	.20	.20	.20
15	Handle Screw.....	..	..	..	.06	.06
16	Bottom.....	1.35	1.60	1.60	1.90	4.50
19	Adjusting Screw....	.06	.06	.06	.06	.06

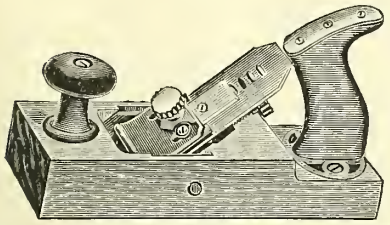
Parts For Sargent Block Planes



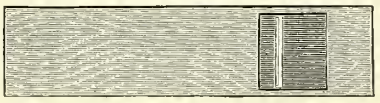
Number of the Part	For Planes Nos.	1306 5306 Each	1307 5307 Each	1606 Each	1607 Each
24	Cam.....	$ .10	.10	.10	.10
25	Clamp.....	.30	.30	.30	.30
26	Adjusting Screw.....	..	..	.15	.15
27	Slide.....	..	..	.10	.10
31	Steel Cutter.....	.25	.25	.25	.25
35	Clamp Screw.....	.05	.05	.05	.05
36	Bottom.....	1.10	1.20	1.10	1.20
37	Adjusting Lever.....	.08	.08		
38	Adjusting Nut.....	.15	.15		
39	Lateral Adjustment...	.15	.15		
40	Mouth Piece.....	.15	.15	.15	.15
41	Knob.....	.15	.15	.15	.15
46	Fillister Head Screws..	.05	.05		
47	Headless Machine Screw.....	.05	.05		

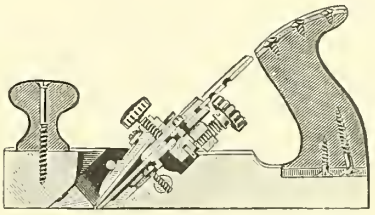
In ordering specify the number of the Part and the number of the Plane for which the part is wanted

Self-Setting Planes



Gage





Are self-setting in every respect, and can be perfectly set for the finest work without difficulty; the bit simply dropped into position sets the plane with the most minute accuracy.

When properly adjusted, they cannot be set wrong. The cap and cutter may be removed, replaced and accurately set in five seconds, by actual trial; this alone would save many days in the course of a year usually spent in setting the cutter.

The adjustment is such that the cutting-iron may be set square with the face of the plane, even if the cutter is not ground square with itself.

The throat is prevented from wear by being within the adjustable iron bit-holder, which extends through the plane.

The cap is not attached to the cutter, but remains stationary while the cutter is moved up or down by a thumb-screw; thus even while at work the thickness of the cut can be changed by a simple movement of the thumb and finger.

This tool can be changed from a double to a single iron, or from a single to a double iron plane, in two seconds.

		Each
No. 2	Smooth Plane, 10 inches long, 1¾-inch cutter	$3.00
No. 4	Smooth Plane, 10 inches long, 2-inch cutter	3.25
No. 4½	Smooth Plane, 10½ inches long, 2¼-inch cutter	3.50
No. 7	Jack Plane, 14 inches long, 1¾-inch cutter	3.25
No. 11	Jack Plane, 16 inches long, 2-inch cutter	3.50
No. 12	Fore Plane, 18 inches long, 2-inch cutter	3.75
No. 16	Fore Plane, 20 inches long, 2¼-inch cutter	4.00
No. 17	Jointer Plane, 22 inches long, 2¼-inch cutter	4.25
No. 21	Jointer Plane, 24 inches long, 2½-inch cutter	4.50

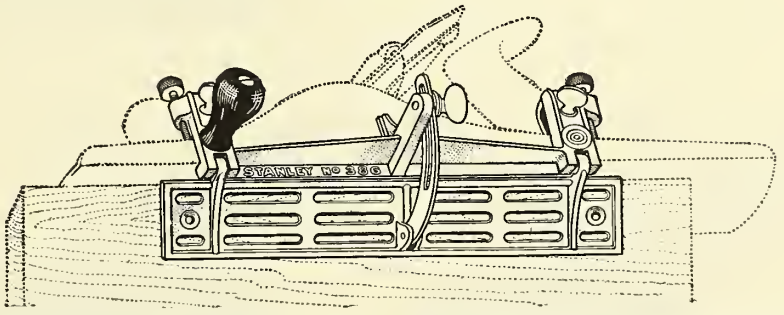
Extra Parts

Inches	1¾	2	2¼	2½
Cutters, each	$ .45	.50	.55	.60
Cutter Cap, each	.25	.25	.30	.30

Handle, fitting all sizes, each 45 cents
Knob, fitting all sizes, each 20 cents

Jointer Gauges

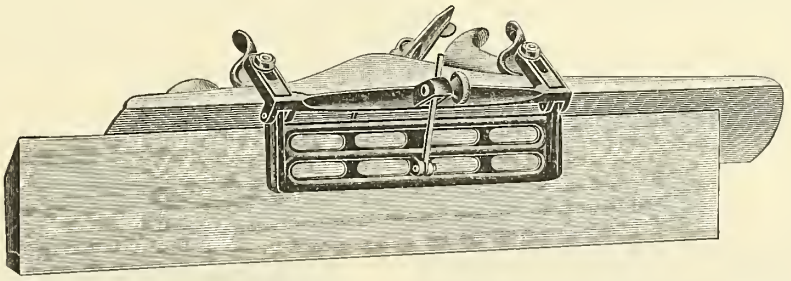
Stanley



Designed for use in connection with all sizes of Iron, Jack or Jointer Planes. It will enable the workman to plane bevels of any angle between 30 and 90 degrees, or to square up the edges of boards with extreme accuracy. All joints and bearing surfaces are machined, The method of attaching to a Plane is such as to insure its being absolutely rigid when in use, and it is so constructed that it may be attached to either side of the Plane. The wooden knob can be placed at either end of the Gauge. A hole is bored in each end of the Gauge so that a wood face of any desired size may be attached.

No. 386 Nickel-plated, weight 2 pounds, each $1.75

Perfection



Made of iron, black enameled, except some of the smaller parts, which are polished and nickeled.

Instantly attached to iron planes of all sizes by adjustable cams and to wood planes with ordinary wood screws.

May be adjusted for planing square or on a bevel.

Each $1.50

Packed one in a pasteboard box.

Suggestions for Grinding Plane Cutters

Many of the complaints about poorly cutting planes are due to improper grinding of the cutters. The bevel should always be at an angle of 25 degrees, which means that it must be exactly twice as long as the cutter is thick.

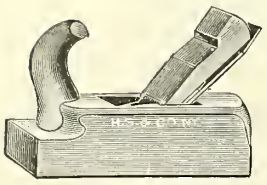
We are informed by the Stanley Rule and Level Co., that this rule applies to every plane they make and that they believe the rule is a universal one, applying to every plane that is made.

Before condemning any plane, therefore, carefully measure and compare the bevel of cut and thickness of cutter. If the bevel is too long, the plane will "jump and chatter." If too short, it will not cut.

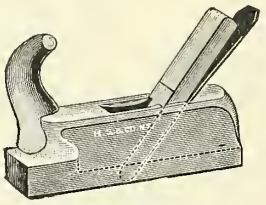
Wooden Bench Planes

H. S. & Co. Extra Quality

Cutters Sharpened Ready for Use



Horn Smooth



Horn Shrup

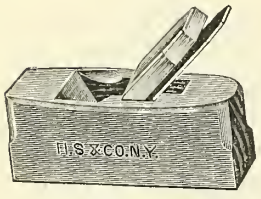
No. 301 **Horn, smooth.** Red beech. 8½ inches long. With double 1¾, 1⅞, 2 or 2⅛-inch Buck Bros.Cutter. Warranted. Each $1.50

No. 401 **Horn, smooth.** White German beech. 8½ inches long. With Double Cutter.

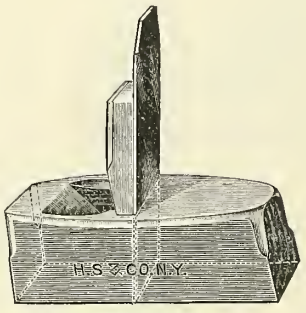
1⅞ inch, each 1.80
2 inch, each 2.00
2⅛ inch, each 2.10

No. 303. **Horn, shrup.** Red beech. 8½ inches long. With 1¼, 1⅜ or 1½-inch Buck Bros. Round Nose Cutter. Warranted. Each 1.05

No. 402 **Horn, Shrup.** White German beech. 9 inches long. With single Round Nose Cutters. 1⅜ inch, each 1.20
1½ inch, each 1.30



Double Smooth

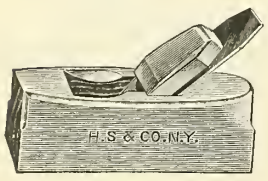


Single Tooth

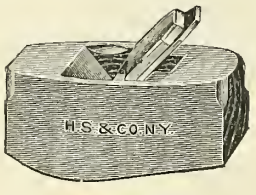
No. 304 **Smooth.** Red beech. 7¼ to 8 inches long. With double 1¾, 1⅞, 2, 2⅛ or 2¼-inch Buck Bros. Cutter. Warranted. Each $1.35

No. 404 **Smooth.** White German beech. 8 inches long. With double 2-inch cutter. Each 2.00

No. 302 **Tooth.** Red beech. 6⅝ inches long. With single 1⅞, 2, 2⅛ or 2¼-inch Buck Bros. Cutter. Warranted. Each .. 1.20



Straight

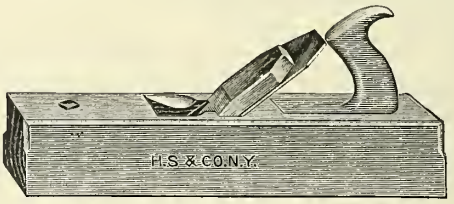


Oval

Warranted

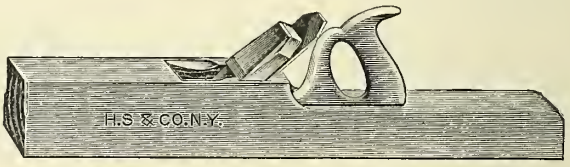
No. 1116 **Small, for piano makers.** Oval. Beech. 5½ inches long. With 1¼-inch Buck Bros. Double Cutter. Each $1.30

No. 1120 **Small, for piano makers.** Straight. Beech. 5½ inches long. With 1¼-inch Buck Bros. Double Cutter. Each 1.15

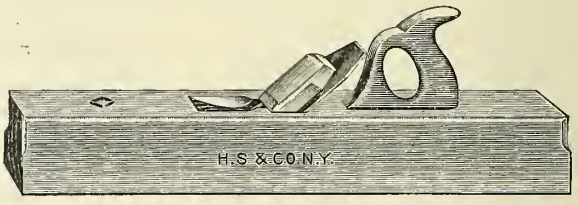


No. 306 **Jack.** Red beech. 16 inches long, with double 2⅛ or 2¼-inch Buck Bros. Cutter. Warranted. Each $1.50

No. 403 **Jack.** White German beech. 16 inches long. With double 2⅛ and 2¼-inch Cutter. Each 2.60



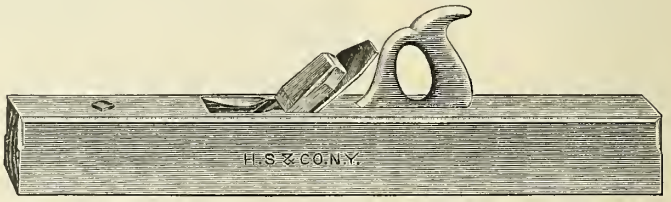
No. 312 **Jack.** Razee (or Recess) Red beech. 16 inches long, 2-inch Cutter. Buck Bros. Double Cutter. Warranted. Each $1.75



No. 307 **Fore.** Red beech. 20 inches long, with double 2⅜-inch Buck Bros. Cutter. Warranted. Each $2.15

No. 308 **Fore.** Red beech. 22 inches long, with double 2½-inch Buck Bros. Cutter. Warranted. Each 2.15

No. 405 **Fore.** German white beech. 20 inches long, with double 2⅜-inch Cutters. Each 2.80



No. 309 **Jointer.** Red beech. Buck Bros. Double Cutters. Warranted.. 26 inches long, 2½ inch cutters. Each $2.55

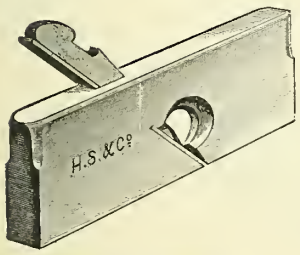
No. 310 **Jointer.** 28 inches long, 2⅝-inch cutter. Each 2.80

No. 406 **Jointer.** German white beech. 24 inches long, 2½-inch cutter. Each 3.40

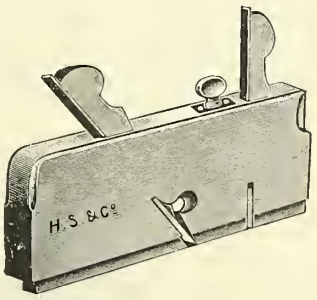
Wooden Moulding Planes

H. S. & Co. Extra Quality

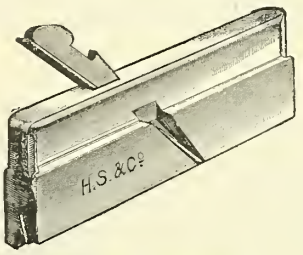
Cutters Sharpened, Ready for Use



No. 317. Rabbet



No. 318. Dado



No. 321. Single Bead

No. 317. Rabbet. Red beech. Square or skew. Warranted. 9½ inches long.

Inches	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2
Each	$ .60	.60	.60	.60	.60	.65	.65	.70	.80	.90

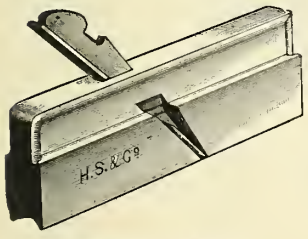
No. 318. Dado. Red beech. Right hand only. Warranted. 9½ inches long.

Inch	⅛	3/16	¼	5/16	⅜	½	⅝
Each	$1.75	1.50	1.50	1.50	1.50	1.50	1.50

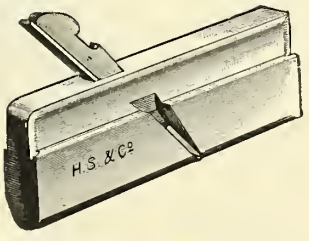
⅛-inch size has iron fence

No. 321. Single Bead. Red beech. Warranted. 9½ inches long.

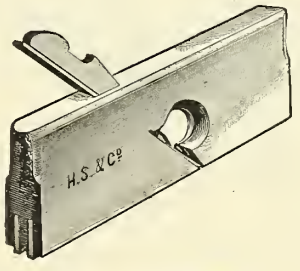
Inch	⅛	3/16	¼	5/16	⅜	½	⅝	¾
Each	$ .50	.50	.50	.50	.50	50	.55	.55



No. 319. Hollow



No. 320. Round



No. 322. Center Bead

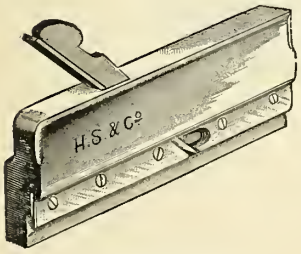
No. 319. Hollow. No. 320. Round. Red beech. Warranted 9½ inches long. Both styles at same prices.

Inches	¼	5/16	⅜	½	⅝	¾	⅞	1	1¼	1½	2
Each	$ .50	.50	.50	.50	.50	.50	.50	.57½	.57½	.67½	.87½

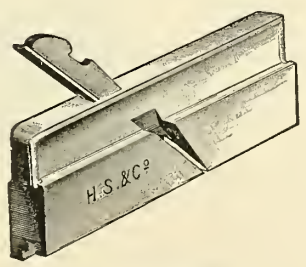
Set of 9 pairs (¼, 5/16, ⅜, ½, ⅝, ¾, ⅞, 1 and 1¼-inch), per set, $9.30

No. 322. Center Bead. Red beech. Boxed. Warranted. 9½ inches long.

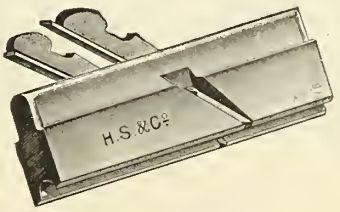
Inch	¼	5/16
Each	$ .60	.60



No. 325. Groove



No. 325. Tongue



No. 324. Nosing

No. 23. Match. Red beech. Warranted. 9½ inches long.

Inch	½	⅝	¾	⅞	1
Width of tongue or groove, inch	⅛	3/16	3/16	¼	¼
Per pair	$1.50	1.50	1.50	1.50	1.50

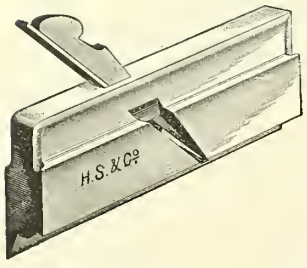
No. 324. Nosing. Red beech. Two irons. Warranted. 9½ inches long.

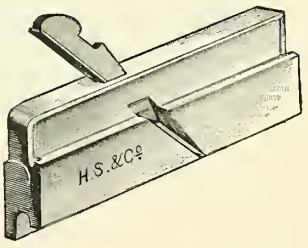
Inches	1	1¼
Each	$1.10	1.10

Wooden Moulding Planes

H. S. & Co. Extra Quality

Cutters Sharpened, Ready for Use

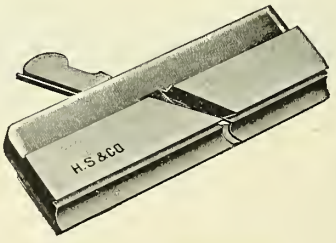




No. 326. Table

No. 326. **Table.** Red beech. With fence. Warranted.

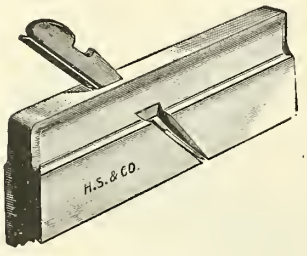
⅝ inch, pair	$1.65



No. 332. Quarter Round

No. 332. **Quarter Round.** Red beech. Warranted.

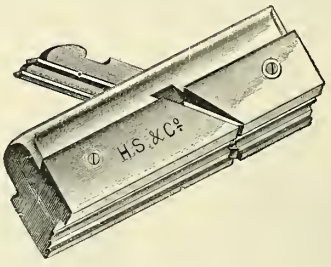
Inch	½	⅝	¾
Each	$ .50	.50	.65



No. 331. Ogee

No. 331. **Ogee.** Red beech. Warranted.

Inch	½	¾	1
Each	$ .65	.65	.65

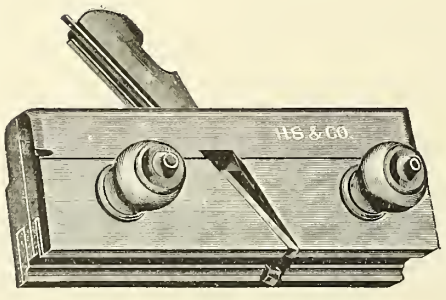


No. 328. Sash

Red beech. Warranted.

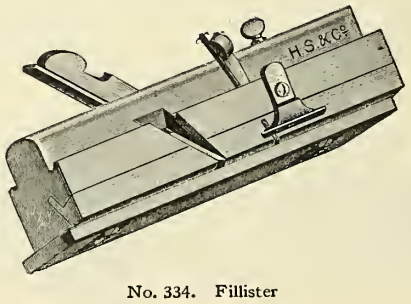
No. 328. **Sash.** Adjustable from 1¼ to 1½ inches (see cut), each $1.50

No. 329. **Sash.** Adjustable from 1¼ to 1½ inches, boxed, each 1.65



No. 330. Sash

No. 330. **Sash.** Red beech. Adjustable from 1¼ to 1½ inches, boxed, with side arms. Warranted. Each $2.00

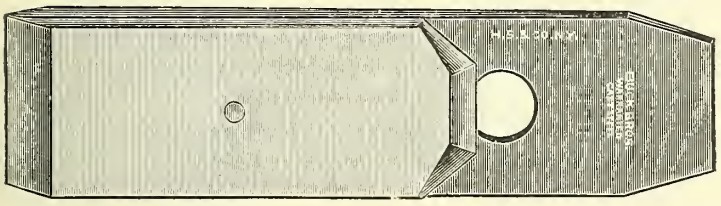


No. 334. Fillister

No. 334. **Fillister.** Red beech. Screw top, boxed. Warranted. Each $2.50

Bench Plane Cutters

Buck Bros. Warranted

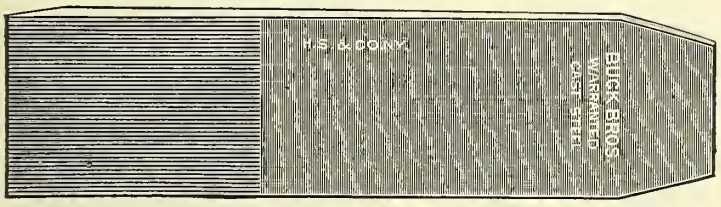


Double

Inches	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2⅝	2¾
No. 60. Dozen	$6.10	6.10	6.30	6.70	6.90	7.20	7.90	8.75	9.30	10.15	11.15

No. 68. Small, for Piano Planes. 1¼ inches. Dozen..... $5.75

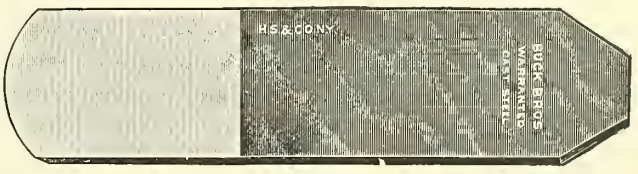
Screws for Double Plane Irons. Dozen..... .50



Tooth

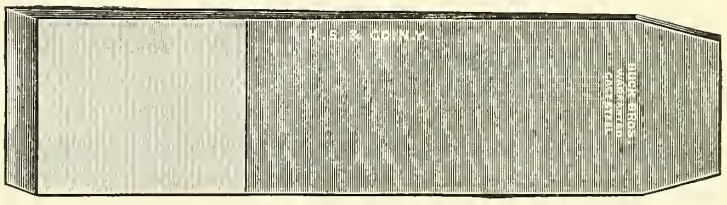
Inches	½	1	1¾	1⅞	2	2⅛	2¼
No. 63. Dozen	$6.00	6.00	4.50	4.90	5.25	5.60	6.10

We have the ½ and 1-inch with extra fine teeth; 1-inch with fine teeth and all other sizes with fine, medium and coarse teeth. In ordering be sure to state which is wanted.



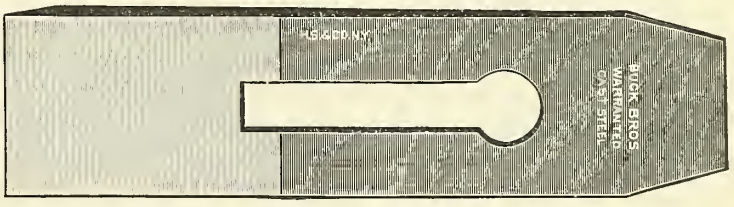
Round Nose

Inches	1⅛	1¼	1⅜	1½
No. 64. Dozen	$3.00	3.00	3.00	3.00



Single

Inches	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2⅝
No. 61. Dozen	$3.00	3.00	3.10	3.40	3.60	3.75	4.30	4.80	5.00	5.70



Cut

Inches	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2⅝	2¾
No. 59. Dozen	$3.15	3.20	3.30	3.60	3.75	3.90	4.50	5.00	5.25	5.90	6.70

No. 67. Small, for Piano Planes, 1¼ inches. Dozen..... $3.00

Moulding Plane Cutters

Warranted

Width Inches	Bead Each	Center Bead Each	Dado Cutters Each	Dado Irons Each	Hollow Each	Round Each	Rabbet Square or Skew Each	* Match Pair
⅛	$ .30		$ .16	$ .13	$ .30	$ .30		
3/16	.30	....	.16	.13	.30	.30		
¼	.30	$ .30	.16	.13	.30	.30		
5/16	.30	.30	.16	.13	.30	.30		
⅜	.30	....	.16	.13	.30	.30		
½	.30	....	.16	.13	.30	.30	$ .15	$ .53
⅝	.30	....	.16	....	.30	.30	.15	.53
¾	.30	....	.17	....	.30	.30	.16	.55
⅞	...	...	.18	....	.30	.30	.17	.55
1	...	....	19	....	.30	.30	.18	.56
1⅛	....	....	....	....	....	....	.19	
1¼	....	....	....	....	.38	.38	.20	
1⅜	...	....	....	....	....	....	.21	
1½	....	....	....	....	.38	.38	.22	
1¾	....	...	....	....	.38	.38	.24	
2	....	....	....	....	.38	.38	.25	

* Grooving Bits only. Each $ .20

Moulding Plane Cutter Blanks

Not Tempered

Inches	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Dozen	$ 1.50	1.50	1.50	1.70	1.70	1.70	1.70	1.85	2.00	2.00	2.20	2.50	2.85

Scraper Planes

Stanley

Double Handle Veneer. The handles are of rosewood with a double grip, and being placed across the center of the tool, give it a good balance. The blades are adjustable endwise and for angle, and can be firmly locked in position desired.

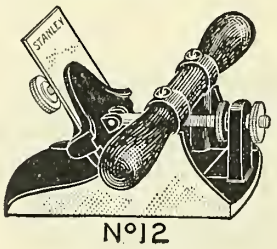
They can also be used as Toothing Planes, doing excellent work in scraping off old paint or glue, and in roughing up the surface of wood preparatory to veneering same. For price of toothing cutters see below.

No. 12 has for many years been the standard for Scrapers of this design. No. 12½ is the same except that it has an extra bottom or face made of rosewood. This wood bottom is especially adapted for use on very fine work, as it renders less liable the possibility of marring or scratching the surface being worked upon. This bottom is detachable and, when worn, can be readily removed and a new one substituted.

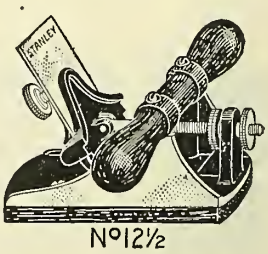
No. 12¼ is the same style as No. 12 but is smaller, consequently lighter, and has a narrower blade. An excellent tool for light work.

	Each
No. 12 9½ inches long, 3-inch Blade, Japanned Iron Face, weight 3¾ pounds	$2.40
No. 12½ 9½ inches long, 3-inch Blade, Japanned Rosewood Face, weight 4 pounds	3.20
No. 12¼ 6¼ inches long, 2-inch Blade, Japanned Iron Face, weight 2½ pounds	2.00

Packed one in Box.



No 12

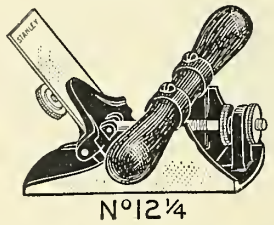


No 12½

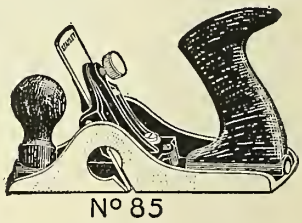
Cabinet Makers. When in use the blade rests against the front edge of the mouth under a slight pressure. In working, the blade springs backward opening the mouth and allowing the shaving to pass through it. As soon as working pressure is released the blade springs back to its normal position. Made in two styles, one a Rabbet Scraper with handle and knob pivoted to allow tilting for convenience when working into corners or up against perpendicular surfaces, and the other without a rabbet mouth and with stationary handle and knob. Handles and knobs of rosewood.

	Each
No. 85 8 inches long, 2-inch Blade, Rabbet Mouth, Tilting Handle and Knob, weight 2⅝ pounds	$2.30
No. 87 8 inches long, 3-inch Blade, Regular Mouth, Stationary Handle and Knob, weight 2½ pounds	2.00

Packed one in Box.



No 12¼



No 85

Single Handle Veneer. The No. 112 has a rosewood handle and knob, having the same form as the regular "Bailey" Plane, and is preferred by some users to the two-handle or double-grip form of Scraper Plane.

The blades are adjustable endwise and for angle, and can be firmly locked in position desired. It can also be used as a Toothing Plane, doing excellent work in scraping off old paint or glue, and in roughing up the surface of wood preparatory to veneering same. For price of Toothing Cutters see below.

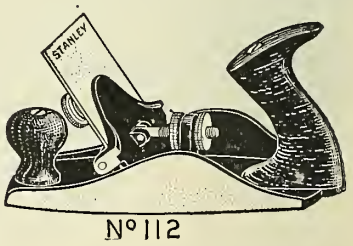
No. 212 is a small handy tool, designed to be used with one hand and well adapted for Violin Makers and all Mechanics requiring a light adjustable scraper. It has a rosewood knob but no handle. It also has the "Hand-y" feature on both sides.

	Each
No. 212 5½ inches long, 1⅜-inch Blade, japanned, weight 1½ pounds	$1.50
No. 112 9 inches long, 3-inch Blade, japanned, weight 4 pounds	2.10

Packed one in Box.



No 212



No 112

Scrapers

Stanley Cabinet

Handle No. 80 has a blade that may be sprung to a slight curve by means of a thumb-screw, giving ease of operation and quickness of cut. The handles are raised to protect the user's hands, and pierced so that the tool can be hung up out of the way. Body and handles cast in one piece.

No. 80 11 inches long, 2¾-inch Blade, japanned, weight each 1¾ pounds, dozen	$12.00

Packed one in Box.



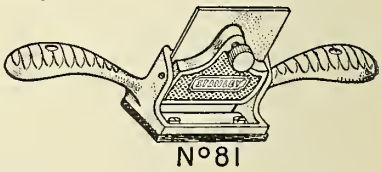
No 80

Handle No. 81 has a rosewood face for use in the finest cabinet work. The handles are raised to protect the hands, and pierced so that it can be hung up out of the way. Body and handles cast in one piece.

No. 81 10 inches long, 2½-inch Blade, nickeled, weight each 2¼ pounds, dozen	$18.00

Packed one in Box.


Scraper for No. 80

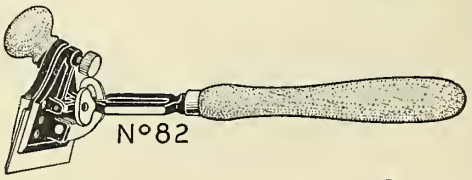


No 81

Adjustable No. 82 has an adjustable single handle which can be tilted to give the blade any angle desired. Special blades of different forms and widths can be securely held in any position required, thus permitting the tool to be worked in many places inaccessible to other scrapers. Handle and knob of hardwood.

No. 82 14½ inches long, 3-inch Blade, japanned, weight each 1¾ pounds, dozen	$12.60

Packed one in Box.

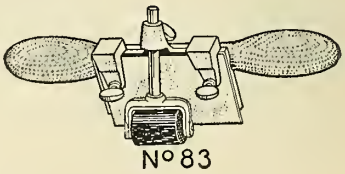

No 82

Roller No. 83 has a roller back of the blade which acts as a support to relieve the strain on the wrists of the workman. Handle is made of beech and can be detached for working into corners.

No. 83 9½ inches long, 3-inch Blade, nickeled, weight each 1¼ pounds, dozen	$12.00

Packed one in Box.


Scraper for No. 83

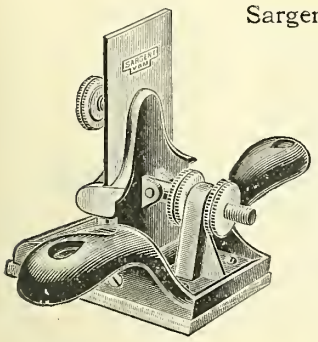

No 83

Extra Blades for Above

	Each
For Scrapers Nos. 12, 12½, 80, 81, 82, 83, 85, 87 and 112	$ .20
For Scrapers No. 12¼	.18
For Scraper No. 212	.15
Toothing Cutters 22, 28 or 32 teeth to the inch, for use with Nos. 12, 12½, 12¼ Scrapers	$ .30
Extra faces, rosewood, for No. 12½, each	.30

Scrapers

Sargent Adjustable Iron Plane Cabinet



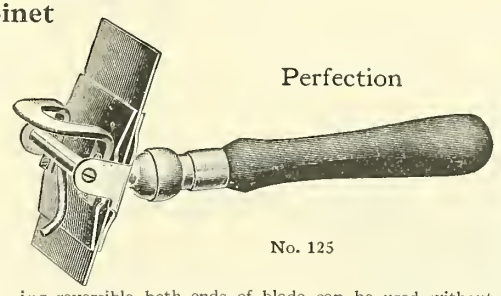
No. 53

Especially suitable for scraping veneers and finishing cabinet and other fine work. They may also be used for removing old paint and glue.

Japanned, double-iron handle with wood face. Particularly adapted for stair-maker and floor-finisher use.

Number 53, 3½ inches, 2½-inch cutter.
Each $2.75

Perfection

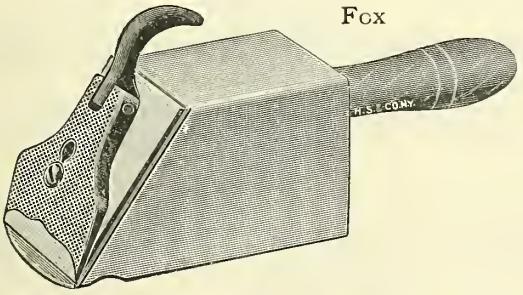


No. 125

With ball of hand on hand rest, fingers clasping under side, stroke can be regulated and strain on hand and wrist relieved in carrying tool forward. Cutting edge of blade, rigidly held between steel plates which prevents chattering. Any blade up to three inches wide and of proper gauge can be used. Blade furnished 3x5 inches, No. 16 gauge. Handle adjusts instantly to any desired angle, up or down and sidewise by a slight turn of handle. Holder being reversible, both ends of blade can be used without removing from holder—one for rough cut, other to finish.

Each $1.25

Fox

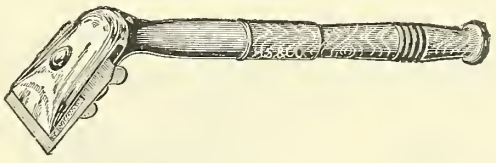


Size of body, 6 inches long, 3½ inches high; cuts 3½ inches wide.

Body slides on the wood insuring a cut of uniform depth. Blade is fastened with a handy clamp and can be adjusted or reversed in a seconds time. Works equally well in a horizontal or perpendicular position. Never leaves waves. Unequalled for floor, cabinet or bench work where the finest of finish is desired.

Each $1.25

Nicholls



Leather clamped on blade prevents vibration. Can be worked up close to wall or projections. Blade easily adjusted without the use of wrench or screwdriver Wing nut to loosen blade. No hole in blade, therefore an old piece of saw blade can be used. So constructed that it does not tire the hands of the operator. Rigid and substantial.

Dozen $12.00

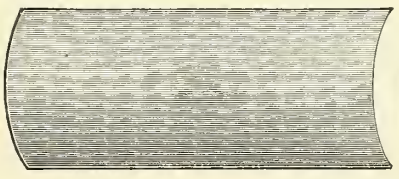
Rectangular

STANLEY No 0

These scrapers are made of high grade steel and great care is taken to give them a special temper for this work.

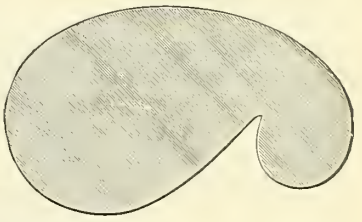
Inches		2½x5	3x4	3x5	3x6	3½x6
Stanley, dozen		$2.50	2.50	3.00	3.00	3.50
Inches	1x6	1¼x6	2x6	3x4	3x5	3x6
H. S. & Co. doz.	.60	...	.60	.60	.60	.60
French, doz.	$1.45	1.45	1.60	1.70	1.80	2.15

Concave and Convex



Inches	2½x5	2½x6	3x5	3x6
Dozen	$1.80	2.25	2.25	2.75

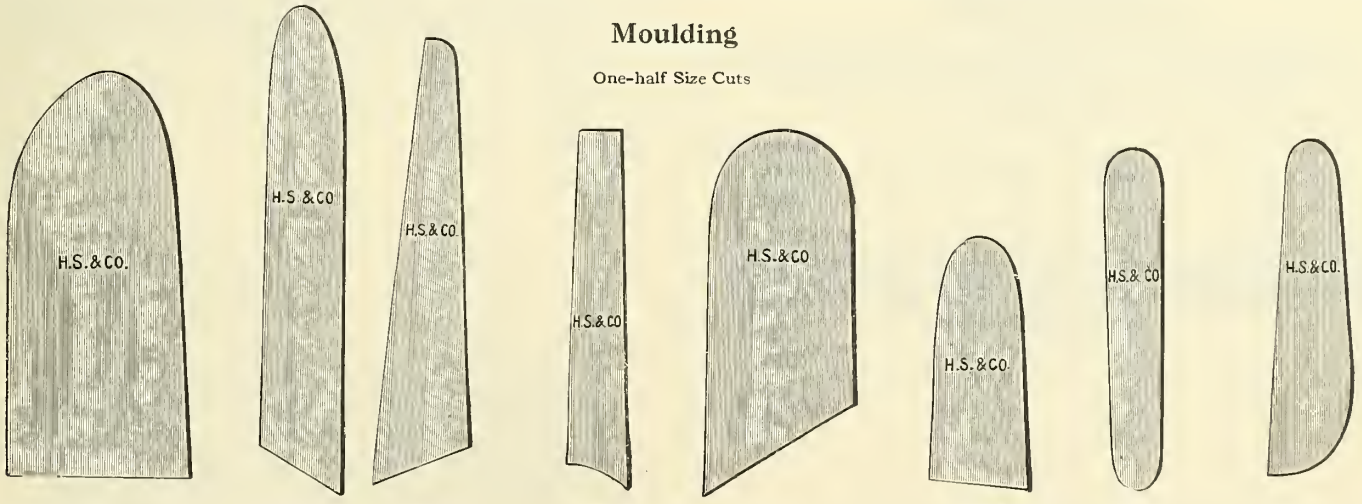
Swan Neck



Inches 3x5
Per dozen $1.80

Moulding

One-half Size Cuts



No. 2 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10

Either number, each ..... $ .20

Per set of 8, per set $1.20

Cabinet Burnishers

Especially Adapted for Putting the Final Edge on Scraper Blades

Blade 4½ inches long

No. 1. Oval, per dozen $3.35
No. 3. Square, with round point, cut on all sides, per dozen 4.15
No. 4. Square, with round point, not cut, per dozen 3.85

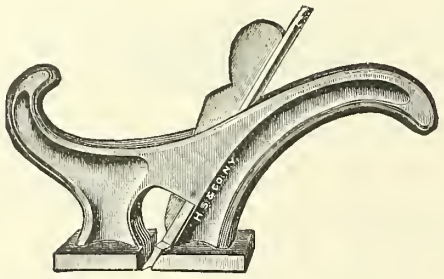


Oval

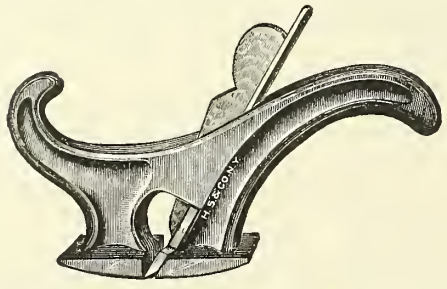
Carriage Makers Tools

T-Planes

Iron

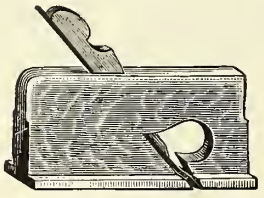


No. 2 Straight, 3½ inches, 1½-inch cutter, will cut $\frac{7}{16}$-inch deep, each $1.35



No. 4 Round, 3 inches, 1½-inch cutter, will cut $\frac{7}{16}$-inch deep, each $1.35

Wood



No. 5 Straight, 1½-inch cutter, each $1.20
No. 6 Round, 1½-inch cutter, each 1.35
Cutters only, for above, 1½-inch, each ..... .50

Panel Routers

Wood



No. 5 For $\frac{5}{16}$ and $\frac{3}{8}$-inch moulding. Made especially for heavy work, each $6.00

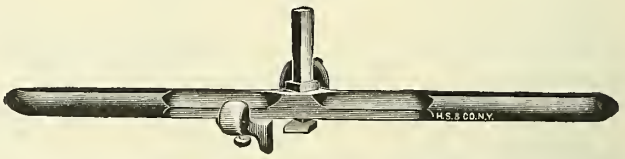
Iron



No. 6 Double, $\frac{3}{16}$-inch cutter. Can be set to cut grooves from $\frac{1}{16}$ to 1 inch. Gauge can be adjusted either right or left hand, each $3.00

Boxing Tools

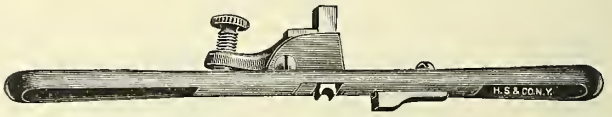
Iron



No. 14 Length 13 inches, width of cutter, ½ inch, each $2.50

Hand Beaders

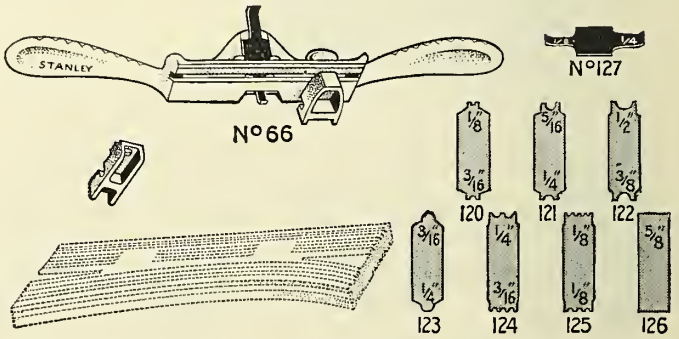
Iron



No. 12 Length 12 inches, width of cutter, $\frac{5}{16}$ inch, each $2.50

Universal Beaders

Stanley

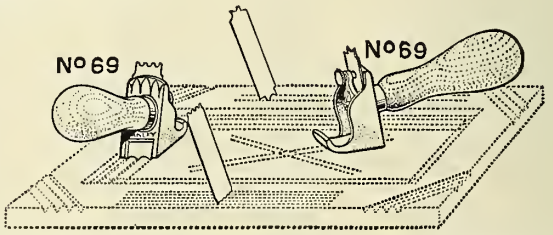


Two handed, for beading, reeding or fluting straight or irregular surfaces and for light routering. The sample illustrated shows some of the work that it will do. With each beader are furnished a square gauge for straight work and an oval gauge for curved work. There are also furnished eight cutters sharpened at both ends and embracing the following assortment: 6 single beads, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$ and $\frac{1}{2}$ inch; 2 fluting tools, $\frac{3}{16}$ and $\frac{1}{4}$ inch; 4 reeding tools (2 beads $\frac{3}{16}$ inch, 3 beads $\frac{1}{4}$ inch, and 3 beads $\frac{1}{8}$ inch and 4 beads $\frac{1}{8}$ inch), 2 routers $\frac{1}{8}$ and $\frac{1}{4}$ inch, and a $\frac{5}{8}$-inch blank, which latter cutter the owner can file up as he desires.

The handles are curved so as to insure ample room between the workmans hands and the surface of the work. Made entirely of metal. Extra moulding cutters $ .05 each.

No. 66 11½ inches long, 8 cutters, nickel-plated, weight 1⅜ pounds, each $1.00

Packed one in box.



Single handed. All kinds of straight beading, reeding or fluting can be done with this tool. The sample of work shown illustrates some of the usages to which it can be put.

The assortment of cutters is the same as furnished with the No. 66 beader (except that there are no router cutters), comprising 6 single beads—$\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$ and $\frac{1}{2}$ inch; 2 fluting tools, $\frac{3}{16}$ and $\frac{1}{4}$ inch; 4 reeding tools (3 beads $\frac{3}{16}$-inch, 2 beads $\frac{1}{4}$ inch, 3 beads $\frac{1}{8}$ inch and 4 beads $\frac{1}{8}$ inch), and a $\frac{5}{8}$-inch blank.

The body of the beader is of metal and the handle is made of maple and well ferruled. Extra moulding cutters $ .05 each.

No. 69 5 inches long, 7 cutters, nickel-plated, weight $\frac{3}{8}$ pound, each ..... $ .75

Packed one in box.

Carriage Makers Tools

Moulding

Made of Bronze Metal



No. 1 Bead and round. For cutting solid moulding, or moulding before it is put on. Round with square head. Will work on any curve or sweep. Length 9 inches, each..... $2.00



No. 2 Round. Same design as No. 1, but only for round moulding. Will work on any curve or sweep and will cut a circle about $\frac{1}{16}$ inch to the bottom of moulding. Length 9 inches, each $1.75



No. 0 Round. Will cut a $\frac{3}{8}$-inch moulding down to the close edge. Will work with or against the grain. Length 9 inches, each..... $2.00



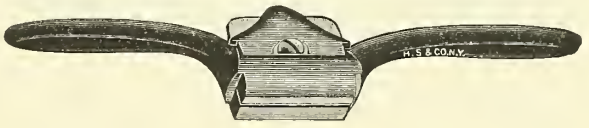
No. 3 Square. For cutting square moulding. Will work on any curve or sweep. Length 10 inches, each..... $2.00

Panel Spokeshaves

Iron



No. 4 Round bottom. For dressing out panels and all heavy work. Length 22 inches, cutter 2 inches wide, each..... $2.65



No. 7 See note. Length 11 inches, cutter $2\frac{1}{8}$ inches wide, $\frac{3}{8}$-inch deep, each..... $2.00



No. 8 See note. Length 10 inches, cutter $1\frac{3}{4}$ inches wide, $\frac{9}{16}$-inch deep, each..... $1.80

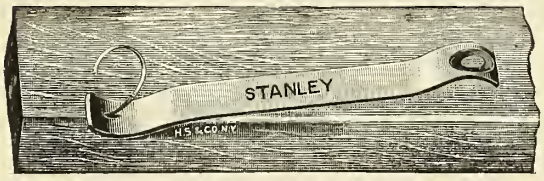


No. 9 See note. Length 10 inches, cutter 2 inches wide, $\frac{1}{4}$-inch deep, each..... $1.00

Note—Nos. 7, 8 and 9 are made expressly for working solid panels where the moulding is cut. They work close up to the edge and can be used for gear work, or smoothing, if edge of blade is properly adjusted. Cutters are made of Jessups best English steel.

Cornering Tools

Stanley

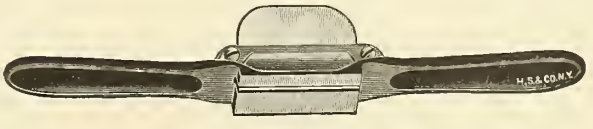


Used by all wood workers in rounding sharp corners. The tool is made in two numbers, with a different size cutter at each end, so sharpened that it will always cut with the grain without changing position of work.

No. 28 Length $5\frac{1}{2}$ inches, cutters $\frac{1}{16}$ and $\frac{1}{8}$ inch, each..... $ .40
No. 29 Length $5\frac{1}{2}$ inches, cutters $\frac{3}{16}$ and $\frac{1}{4}$ inch, each..... .40

Scrapers

Iron



No. 10 Length 9 inches. Made especially for all kinds of light and heavy carriage work. Will do good smoothing if edge of blade is properly adjusted. Cutter $2\frac{1}{8}$ inches wide, each... $1.20

Iron Spokeshaves

Stanley

These Spoke Shaves have cutters made from a high grade of steel, well-tempered, and sharpened ready for use. The handles are japanned, and through each a hole is made which permits the tool to be hung up out of the way.



Has a cutter and cap iron, fastened by a thumb-screw, in such a manner as to bring an even pressure on the cutter edge, and at the same time allow adjustment without the use of a screwdriver.

No. 51 Double-iron, improved, 10 inches long, 2⅛-inch cutter, dozen $3.50



Has a cutter and cap iron, fastened by a thumb-screw, in such a manner as to bring an even pressure on the cutter edge, and at the same time allow adjustment without the use of a screwdriver.

No. 52 Double-iron, improved, 10 inches long, 2⅛-inch cutter, dozen $3.50



By means of a thumb-screw the mouth can be opened or closed as coarse or fine work may be required.

No. 53 Adjustable, 10 inches long, 2⅛-inch cutter, dozen $4.50

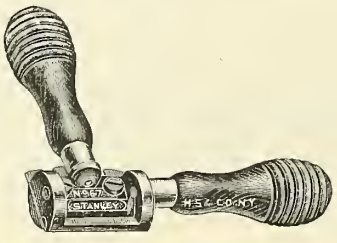


By means of a thumb-screw the mouth can be opened or closed as coarse or fine work may be required.

No. 54 Adjustable, 10 inches long, 2⅛-inch cutter, dozen $4.50



No. 55 Double-iron, hollow-face, 10 inches long, 2⅛-inch cutter, dozen $3.00

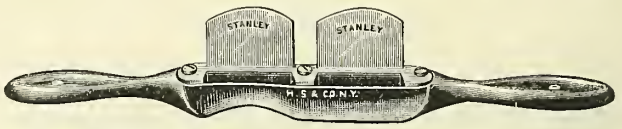


The rosewood handles are detachable, and either one can be screwed into the top of the stock, enabling the user to work into corners or panels, as no other Spokeshave can do.

One handle has a right, the other a left-hand thread, and the proper sockets to receive them are threaded accordingly. This prevents any possibility of the handles working loose when the tool is in use.

Extra Cutters

For Nos. 51, 52, 53, 54 and 55 dozen	$1.00
For No. 60, dozen pairs	1.50
For Nos. 64 and 65 dozen	.75
For Nos. 67 dozen	2.40
For No. 76 dozen	6.00



No. 60 Double-cutter, hollow and straight, 10 inches long, 1½-inch cutter, dozen $4.50



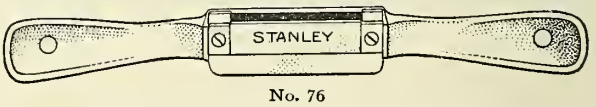
Designed especially for light work. Straight handles and cutter and japanned cap-iron are fastened by a thumb-screw.

No. 64 Double, light, 9 inches long, 1¾-inch cutter, dozen $2.00



No. 65 Adjustable, 9½ inches long, will chamfer any width edge up to 1½ inches, dozen $6.00

Razor Edge



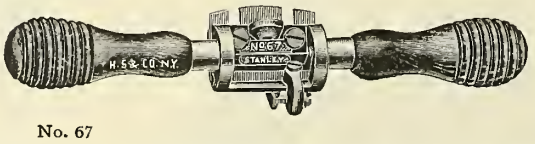
No. 76

So called from the shape of the cutter, which is hollow ground, giving an exceptionally keen-cutting edge. They have an adjustable front, which can be moved up or down, giving the same effect as if the cutter was raised or lowered. The cutter itself is also adjustable, permitting a narrow or wide opening of the mouth. With these two adjustments a coarse or fine shaving can be cut. Made with two widths of cutters.

No. 75 Iron handle, nickel-plated, 11 inches long, 2-inch cutter, dozen $13.80

No. 76 Iron handle, nickel-plated, 11 inches long, 2½-inch cutter, dozen 15.00

Universal



No. 67

The handles as well as the sockets in which they belong are lettered to avoid mistakes. Two detachable bottoms are furnished, one for straight and the other for circular work. A movable width gauge allows the tool to be used in rabbeting.

No. 67 Nickel-plated, 9¼ inches long, 1⅞-inch cutter, weight ¾ pound, dozen $18.00

Extra Screws

	Dozen
For Nos. 51, 52, 53, 54, 55, 60, 64, 65, 67 and 76	$ .50

Iron Spokeshaves

M. F. Co.



Number 2 Four faced

The tropical wood handles are removable for convenience in working in narrow places; all metal parts are polished and nickeled.

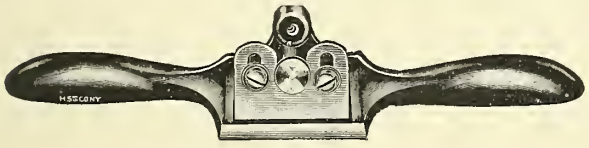
Quickly adjustable throat regulator, which may be turned about to present four different faces to the knife—one flat, two oval or convex, and one concave. Wide or narrow throat may be had.

Knife is adjustable with set screws. Length of blade, 2 inches; length of whole tool, 11 inches.

Dozen	$16.00
Extra Cutters, dozen	3.00

A. A. Wood

For Carpenters, Cabinet Makers and Pattern Makers



No. F1 adjustable length, 10¼ inches, 2-inch steel cutters.
Dozen $9.00



No. F2 double, concave and straight cutters, length 10 inches, 1⅞-inch steel cutters.
Dozen $9.00

Wooden Spokeshaves

Regular



Blades, inches	2	2½	3	4
Applewood, regular, dozen	$7.00	7.00	8.00	10.00
Boxwood, regular, dozen	10.00	10.00	11.00	12.00

Chair Makers



Illustration shows Convex Blade

	Dozen
Concave blade, 3 inches. Red birch	$11.50
Convex blade, 3 inches. Red birch	11.50

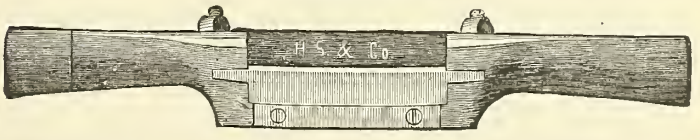
Pattern Makers



Narrow Blade

	Dozen
Applewood, 1½-inch blade, flat face	$7.00
Applewood, 1½-inch blade, round face	7.50
Boxwood, 1½-inch blade, flat face	10.00
Boxwood, 1½ and 2-inch blade, round face	10.50

Screw-iron



	Dozen
Applewood, with brass plate (see cut), 2½-inch blade	$18.00
Boxwood, without plate, 2½-inch blade	20.00

Extra Blades for Above

Best Cast Steel



Inches	1½	2	2½	3	4
Regular and pattern makers, dozen	$3.00	3.00	3.00	3.50	6.00
Concave, dozen	....	....	....	6.50	
Convex, dozen	....	....	....	6.50	
Screw Iron, dozen	....	....	6.00		

Carpenters Draw Knives



The above cut shows a sectional view of carpenters drawknife.



Razor blade, 1⅜ inches wide.

Length, inches	6	7	8	9	10	12
White, No. 31, dozen	$10.00	11.00	12.00	13.00	14.00	16.00
Witherby, No. 115, dozen	13.50	13.50	13.50	14.40	15.60	18.00

No. 115 is sharpened ready for use.



Genuine Fuchs No. 1

Broad-pattern blade, 1½ inches wide.

Length, inches	8	9	10
Dozen	$18.00	19.20	21.00



Smith Perfect Handle No. 619

Solid crucible steel blades.

Size, inches	8	10	12
Dozen	$16.00	18.00	20.00



Buck Bros. No. 71

Solid cast steel.

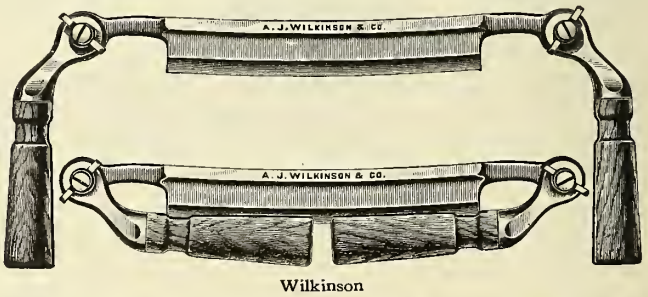
Length, inches	4	5	6
Dozen	$7.00	8.50	10.00



Witherby No. 165

Adjustable handle. Razor blade, 1⅜ inches wide.

Length, inches	8	10
Dozen	$12.00	15.00



Wilkinson

Folding handle. Blade is 1⅜ inches wide, of best cast steel. Cutting edge protected when folded.

Length, inches	6	8
Dozen	$21.00	24.00

Draw Knives

Carriage Makers





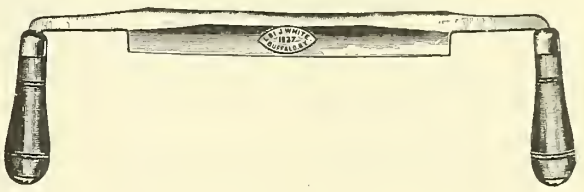
Carriage Makers



Coach Makers

The above cuts represent sectional views of Drawing Knife Blades

Coach Makers



White

Narrow blade, ¾ to 1 inch wide.
Walnut handles with polished caps and ferrules.

Inches		8	9	10
No. 32	Dozen	$12.00	13.00	14.00

White

Razor blade, 1¼ to 1½ inches wide.
Walnut handles with polished caps and ferrules.

Length, inches		8	9	10
No. 33	Dozen	$13.00	14.00	15.00

Wagon Makers

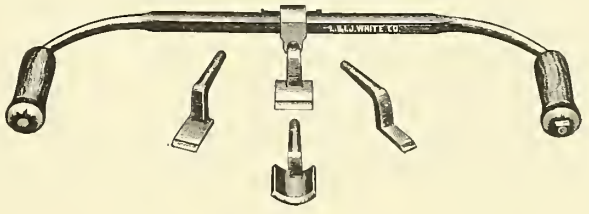


White

Heavy blades, 1¾ inches wide.
Walnut handles with polished caps.

No. 34 10 inches long, dozen $15.00

Adjustable Auto-Body



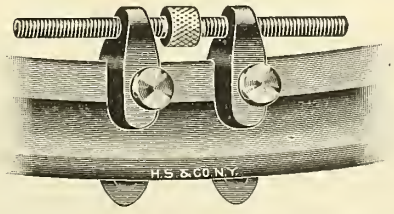
White

Furnished with four cutters, three straight and one gouge. The blades can be adjusted to any position between the handles.
Sizes of straight cutters, ½, 1 and 1½ inches.
Size of gouge, 1½ inches.

No. 35A Dozen $48.00

Non-Slipping Chamferer Gauges

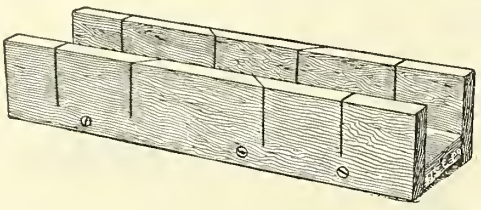
For Draw Knives



With right and left-hand screw. Will fit 1¼ and 1⅜-inch knives. To chamfer corners of square stock. The depth of the chamfer is regulated by the movable plates.

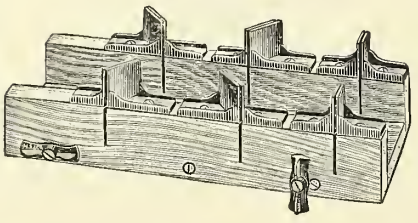
Dozen pairs ..... $9.40 .

Mitre Boxes



No. 00 Ash, 12 inches long. For 2x3-inch moulding, dozen.... $4.00
No. 0 Ash, 18 inches long. For 2¼x3¾-inch moulding, dozen 6.00

Olmsted Improved

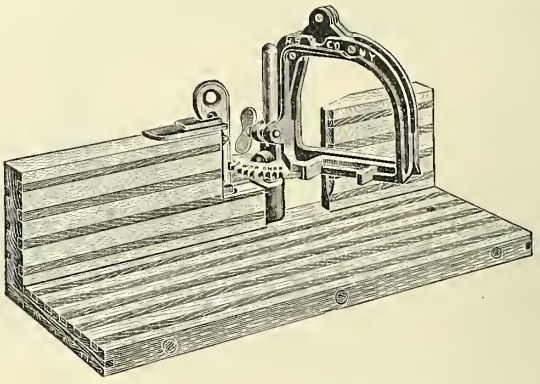


The Frame is made of 1-inch selected hardwood, having 6 fixed irons and 6 movable ones.

Adjustable to any thickness of saw.

No. 3 For moulding, 1½x3 inches, each..... $1.25
No. 4 For moulding, 2½x4 inches, each..... 1.75

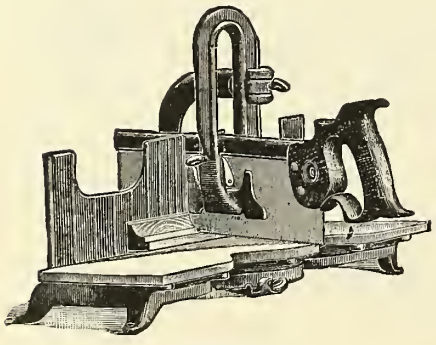
Perfection



The Saw Guide can be instantly set and rigidly held at any angle by use of the set screw. Any saw may be used, but for cutting to exact depths a back saw is necessary. The back rib resting on the shoulders in swinging guide. Has friction stop. The guide can be detached from the wood box and folded to carry in a tool chest.

Complete, as shown, each..... $4.00
Metal Parts only each..... 3.00

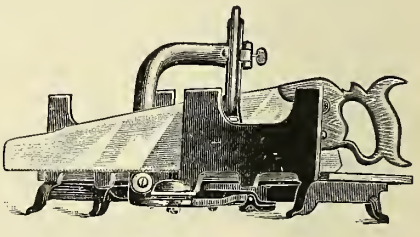
Jacob



Front View

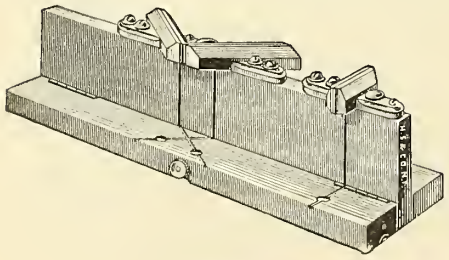
Any saw can be used in these boxes and any width of material may be sawed with precision, as guides are close to work. Quickly set for any required angle or for undercuts.

Size Inches	Size of Bed Inches	Takes Work Height Inches	Each
4	4¼x16	4	$4.00
5	5x21½	5	5.00



Back View

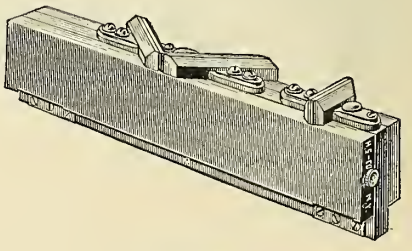
Gem Folding



Box Open

This is a strong, simple and compact mitre box, and its folding feature will at once be apparent to the mechanic with little room in his tool chest. The steel guides are absolutely true and easily and quickly adjusted. Length 14 inches; takes moulding up to 2½ inches.

Each..... $2.00

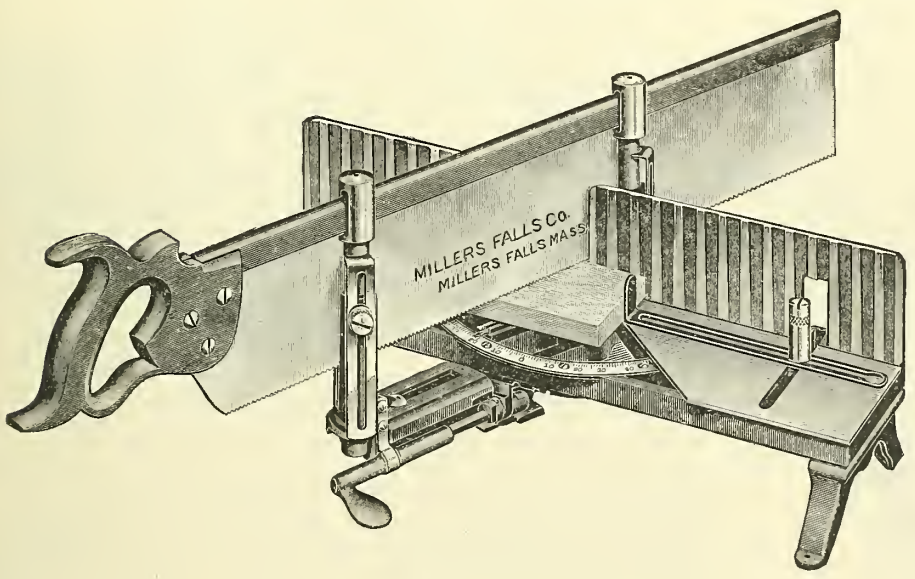


Box Closed

Mitre Boxes

M. F. Co.

Langdon Acme Improved



Iron and steel castings, the main castings with bronze finish; bright parts nickeled. Extra long saw guides to give stability when the saw is raised to its highest point.

A simple and effective device automatically catches the saw guides and holds them suspended when they are raised to their highest point and releases them instantly when desired.

Notches in the bed-plate to determine the positive angles most in use.

By the use of a thumb-lever at the front of the box the saw supports may be swung freely and locked at either a positive or an intermediate angle.

Guides to support the work against the back or to be used when angles more acute than 45 degrees are desired. These may be slid out of the way through little gateways in the back when not wanted.

An extension lever with a quick-acting adjustment. (Size 1 box does not have an extension lever.) A length gauge for duplicate lengths.

Steel bottom boards roughened to prevent the work from slipping.

A graduated arc upon the bed and an index plate to tell at what degrees to set the saw for certain desired cuts.

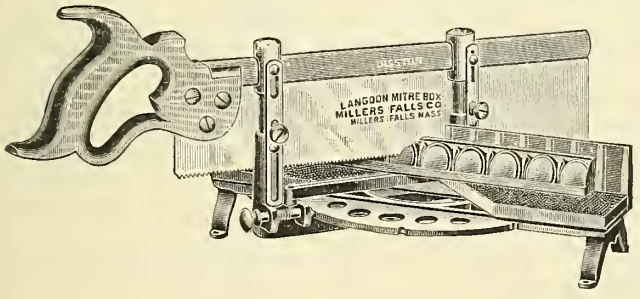
Depth gauge and take-up in case of wear upon the saw.

Number	Size	Dimension of Saw Inches	Capacity at Right Angles Inches	Capacity at Mitre Inches	Weight Boxed Pounds	Weight Net Pounds	Each
68	1	22x4	7½	5	34	23	$12.00
69	1	24x4	7½	5	35	23½	12.50
70	1	26x4	7½	5	36	24	13.00
71	2	22x4	10¼	7	34	23	13.00
72	2	24x4	10¼	7	35	23½	13.50
73	2	26x4	10¼	7	36	24	14.00
74	2½	28x5	10¼	7	37	25	15.50
75	2½	30x5	10¼	7	38	25½	16.00

Without Saws

Number	Weight Boxed Pounds	Weight Net Pounds	Each
1	26	20	$9.50
2	26	21	10.50
2½	27	22	11.50

Langdon



Easily portable and especially adapted to cutting mouldings and other light work. Guaranteed accurate.

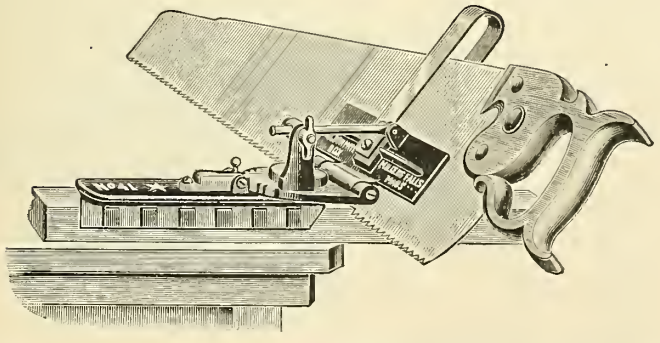
Saw supports may be quickly swung and clamped at any angle from 45 to 90 degrees either right or left, notches being cut in the base plate at the angles most used.

No. 15½, Saw 16 x 2½ inches. Capacity at right angles, 4½ inches. Capacity at mitre, 3 inches. Weights, boxed, 14 pounds; net, 8 pounds.

Each $6.75

Without saw, each 4.50

Star



Iron and steel, bright parts nickeled and other parts japanned black.

Especially useful in places where it is impracticable to use a larger box, as for sawing moulding, cornices, etc., at the top of a ladder.

Bed plate with double shelf or rest permitting the cut to be made at an angle either to the right or to the left.

May be sunk into a bench for stationary use. Notches cut into the shifting arc determine the angles ordinarily used.

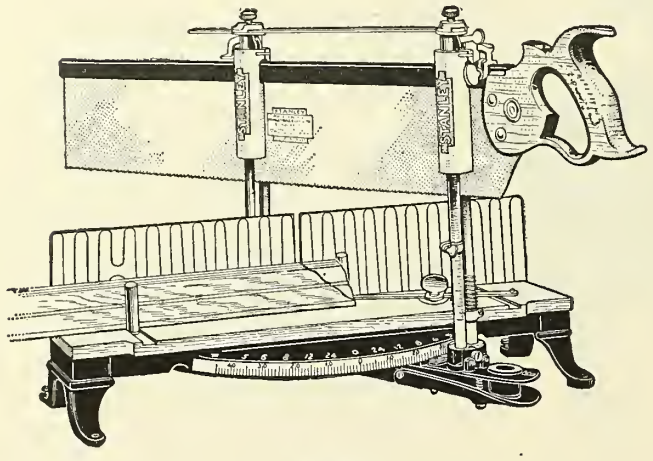
Adapted to either a panel or back saw. The saw clamp is attached to the rest of the tool by a hinge, which permits the saw to be tilted for cutting a wide range of bevels. This is of particular use in jointing floors. Weight, 2½ pounds.

No. 41 Each $3.20

All M. F. Co. Mitre Boxes are equipped with Henry Disston & Sons Saws and are guaranteed only when supplied complete with saw.

Mitre Boxes

Stanley



No. 358

These Boxes are compact, strong and durable and are quickly put together or taken apart for convenience in carrying.

The entire frame is one solid casting, insuring great strength.

The saw-guide uprights are securely clamped in tapered sockets in the swivel arm and can be adjusted to hold the saw without play, and also to counteract a saw that runs out of true, due to improper setting or filing. This is a new feature that will be appreciated.

The second socket in the swivel arm permits the use of a short saw or allows a much longer stroke with a standard or regular saw.

The swivel arm is provided with a tapered index pin which engages in holes placed on the under side of the base. These holes are made at the commonly used angles as designated on top of the base allowing 3, 4, 5, 6, 8, 12 and 24-sided pieces to be cut. The edge of the base is graduated in degrees and the swivel arm can be set and automatically fastened at any degree desired. This automatic fastening device holds the swivel arm firmly to the base in all positions.

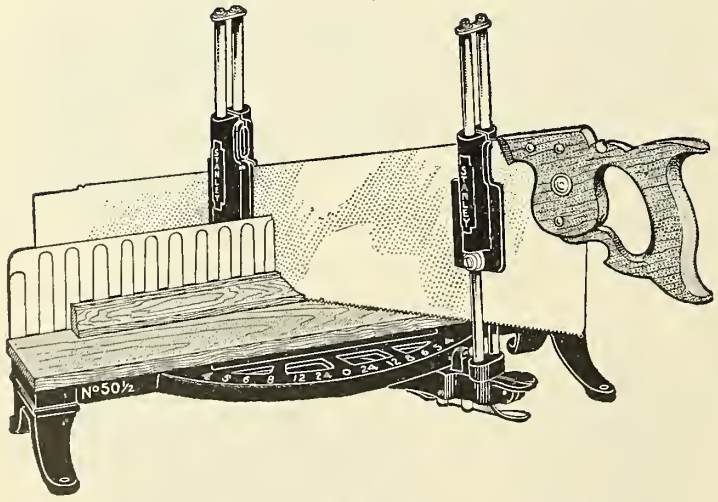
The uprights, front and back, are graduated in sixteenths of an inch, and movable stops can be set, by means of thumb-screws to the depth of the cut desired.

Stock guides hold all kinds of ordinary work, as well as irregular forms, and can be used as length gauges for duplicating short pieces.

Automatic catches on the uprights hold the saw up, which allows the use of both hands in placing the work. The adjustable stop on top of the saw, coming in contact with the lever trip, releases the front catch, and the saw in falling pitches slightly forward, automatically releasing the rear catch, without any necessity of taking the hand from the saw or touching the lever trip. Two cone-pointed leveling-screws on the rear feet prevent the box sliding when in use. These boxes are regularly packed with back saws made expressly for this purpose by Henry Disston and Sons, Inc.

Number	Saw Inches	Capacity Right Angle Inches	Capacity Mitre (45°) Inches	Capacity at 30° without Stock Guide Inches	Weight with Saw Pounds	Box Only Each	With Saw Each
240	20x4	8¼	5½	3½	28	$8.50	$10.50
242	22x4	8¼	5½	3½	28¼	8.50	10.75
244	24x4	8¼	5½	3½	28½	8.50	11.00
246	26x4	8¼	5½	3½	30	8.50	11.25
346	26x4	9½	6½	4⅛	34	9.50	12.25
358	28x5	9½	6½	4⅛	36	9.75	13.00
460	30x6	11	7½	5⅛	51	12.50	16.00

Victor



No. 60½
Without Saw No. 50½

These Boxes are strong and accurate tools, though not having all the refinements of the Stanley Mitre Boxes.

The No. 50, designated as No. 60, when furnished with back saw, has long been favorably known and is now made with several improvements. The roller saw guides, always a feature in this box, are still retained.

The No. 50½, designated as No. 60½, when furnished with back saw, has a different saw guide from the No. 50. The back, frame, indexed quadrant and swivel-arm bearing are in one piece and accurately machined. The quadrant is indexed for cutting 4, 5, 6, 8, 12 and 24-sided pieces.

The swivel arm can be locked at any point desired between zero and 45 degrees.

The saw guide uprights are securely clamped in the sockets in the swivel and can be adjusted to hold the saw without side play, thus insuring great accuracy in working.

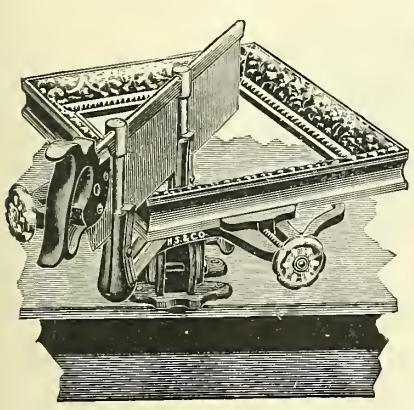
Either a back saw or panel saw can be used in these boxes. To use a panel saw in the No. 50, change the inserted plate which connects the back roller saw guides into the lower groove, and the blade of the saw will be stiffly supported by both sets of rollers and do the work of a back saw. In using a panel saw in the No. 50½, put a nail through the two small holes near the top of the rear saw guide to keep the saw in place.

Movable stops are attached to the saw-guide uprights permitting the saw to cut only to the desired depth.

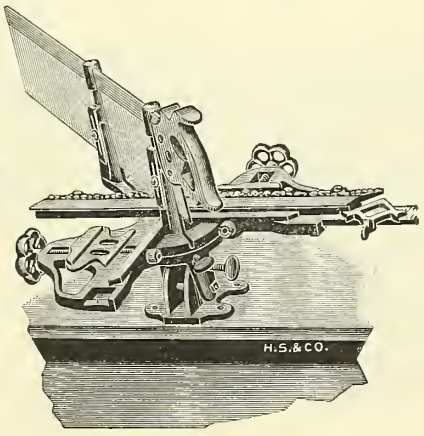
Numbers	Saw Inches	Capacity Right Angle Inches	Capacity Mitre (45°) Inches	Weight Pounds	Each
50	....	7¼	4¾	20	$6.00
60	20x4	7¼	4¾	25	8.00
50½	....	7¼	4¾	20	5.50
60½	20x4	7¼	4¾	25	7.50

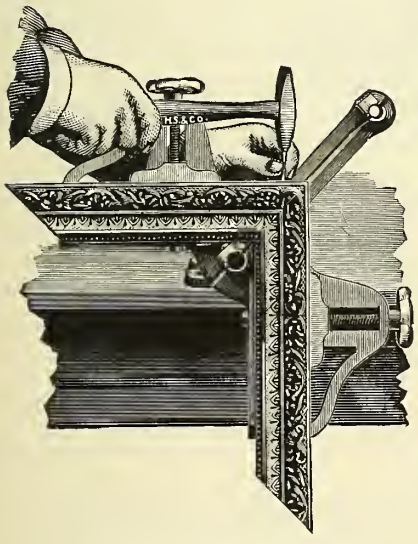
Mitre Machine and Vise

Marsh



Position in re-sawing last mitre, when necessary



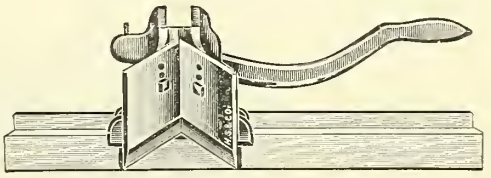


Position for boring and nailing

With this machine the sides and ends of a frame can be measured and cut from one side as well as the other, thus admitting of the machine being placed in any position at either side or end of the bench. It will cut the moulding equally well from the back or outside or from the front or inside. It can be instantly and securely adjusted toward the right or left while either in a horizontal or perpendicular position. The bed plate is 3½ inches above the bench and measures 15x15 inches. It will cut any moulding up to 5 inches in width, and will join any frame not smaller than 7½x7½ inches. It weighs 20 pounds.

		Each
No. 100	With 4½x26-inch saw	$12.50
No. 101	Without saw	10.00

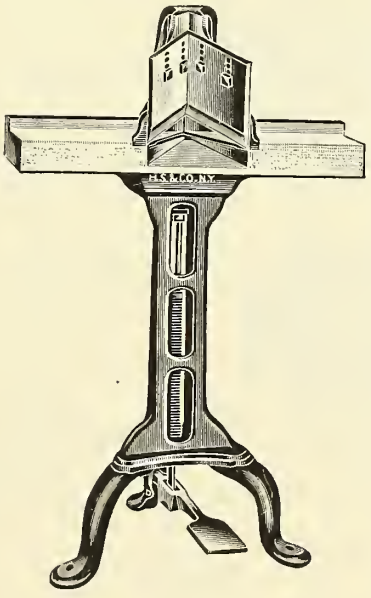
Hand Mitres



For cutting mitres rapidly and accurately. The knives are at right angles and so arranged that by one motion the moulding is cut in two and both angles of the mitre made.

		Each
No. 00	Cutting up to 2¼ inches	$20.00
No. 0	Cutting up to 3 inches	30.00

Foot Mitres



This is same style machine as shown above, except on stand for foot power. The illustration is on a smaller scale.

Provided with two knives, set at right angles, and so arranged that by one motion of the treadle the moulding is cut in two and both angles of the mitre made.

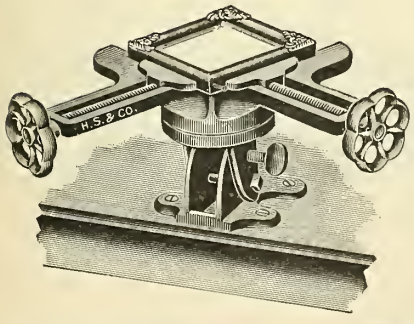
It is very rapid and positively accurate.

		Each
No. 1	To cut up to 2¼ inches	$20.00
No. 2	To cut up to 3 inches	28.00
No. 3	To cut up to 4 inches	32.00

Back support for rabbeted door mouldings, extra. $5.00

Picture Frame Vise

Marsh

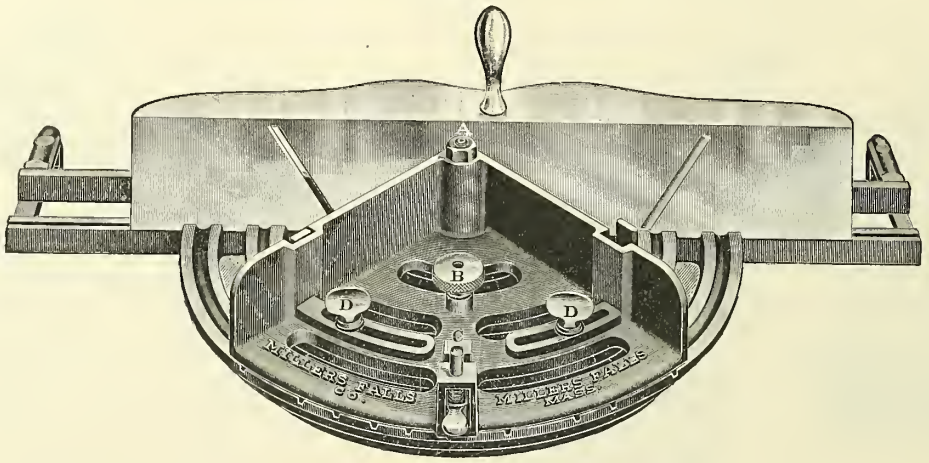


With this vise any frame can be held in proper position for nailing perfectly and with greatest ease. It has the same base with swivel attachment as the Marsh Mitre Machine, allowing the frame to be swung or tipped in any position. Holds frames from 3½x3½ inches up, and takes any width of moulding up to 4 inches wide.

No. 400 Each $4.50

Mitre Planers

Rogers



Used extensively for picture framing.

Made entirely of iron, handsomely finished, for planing straight or curved work.

Principal parts: A semi-circular bed plate with a runway at the rear; a plane sliding upon this runway, and a quadrant swinging to right or left upon the bed plate with the point A, shown in illustration, as a pivot.

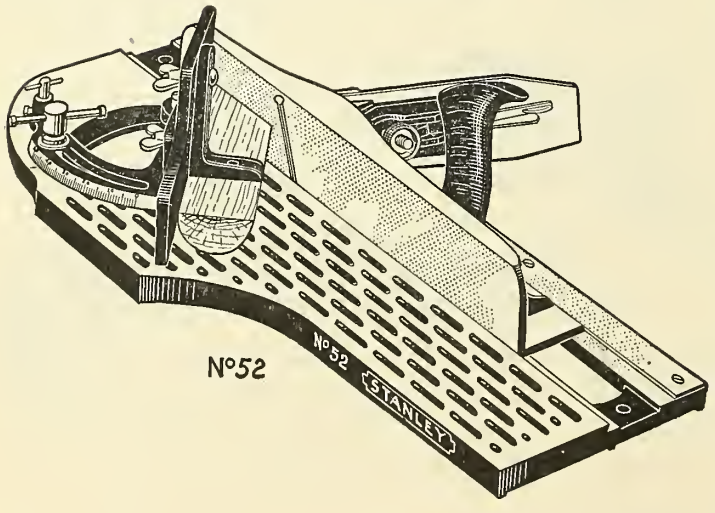
Quadrant clamped by catch C, shown in illustration, in notches in the bed plate at the angles most in use and at intermediate points by thumb screw B, also shown in illustration. When set in the middle of the bed plate, the side elevations of the quadrant form a perfect mitre for four-sided work.

Adjustable arms, clamped with thumb-screw DD, shown in illustration, of especial use in enabling one to finish the ends and angles on curved work with exactness. In preparing pieces for circular or oval work, frames, pulleys, emery wheels, circular patterns, etc., it is necessary to plane the ends of the various segments at varying angles. In planing these the point of the quadrant near the plane and the adjustable guides form the rest required for accurate work.

Size	2	3½	4
Width of Knives, inches	2	3½	4
Weight, boxed, pounds	47	73	75
Weight, net, pounds	32	53	55
Each	$26.00	32.00	38.00
Extra Knives, pair	3.40	3.60	3.80

Shoot Board and Plane

Stanley



This combination of Plane and Shoot Board (sometimes called a "Jack Board") is a very important tool for all wood workers. The nicety of adjustment, the accuracy with which all parts are made, and the general solid construction, make it particularly valuable for Pattern Makers, Cabinet Makers, Printers, Picture Framers, and Electrotypers. Amateurs will also find this tool very useful.

The Board is made of special iron, is of ribbed construction, and has an adjustable runway, accurately machined for the Plane.

The swivel is indexed at 45 and 90 degrees for planing a mitre or square, but can be securely locked by means of a clamping screw at any angle desired between 0 and 90 degrees, the quadrant being graduated between these points.

The swivel is also fitted with a sliding back that can be adjusted close to the Plane, thus supporting the work to the edge and preventing it from splintering. It is further provided with a sliding back clamp, which is designed to hold any shaped work in position to be planed.

The Plane is especially constructed for the Board, and has rosewood handle and knob.

The Cutter is fitted with the regular "Bailey" adjustment for depth of cut, also has a lateral adjustment so that a cut giving any ordinary draft to a pattern can be made and, being set on a skew, will make a very smooth, clean cut.

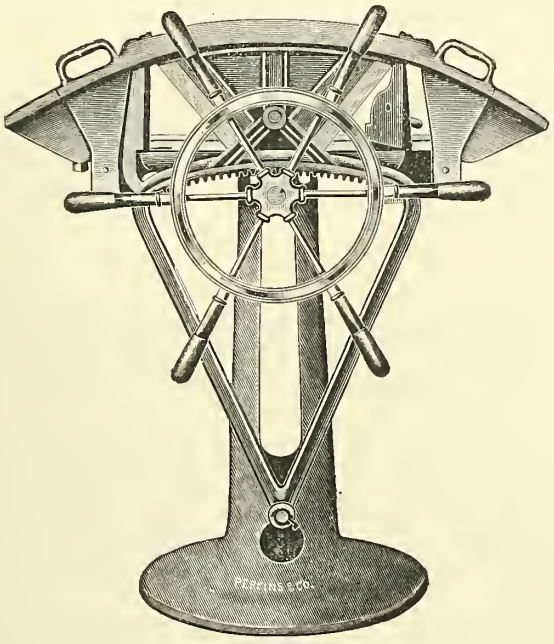
No. 52 22 inches long, Plane 15 inches long, 2⅜-inch Cutter, weight, 17½ pounds, each $10.00

Packed one in Box.

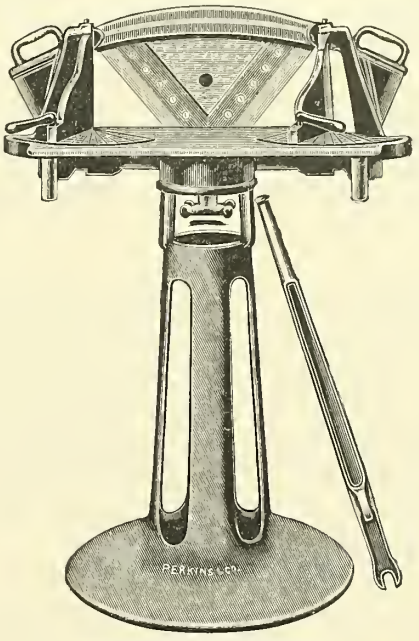
Mitre Trimmers

Perkins

These trimmers have a drawing or shaving, as well as shearing movement of knife when cutting, which gives a clean, smooth finish to the work. The gauges are pivoted at top and bottom and are rigid when clamped to table with bolt. They may be adjusted at any angle to knife from 10 to 135 degrees without changing position of supporting edge with knife-cutting edge.

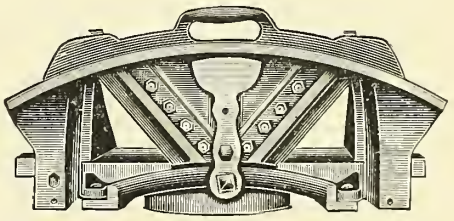


No. 14 Rear View



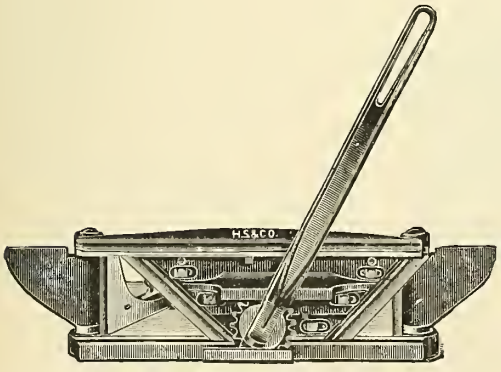
No. 13 Front View on Stand

Number	Boxed without Stand	Weight Net Pounds	Weight Boxed Pounds	Size Bed Inches	Draw of Knife in Cut Inches	Forward Mitre Inches	Back Mitre Inches	Trim Inches
8	$25.00	65	80	20x8	1⅛	4⅜	5⅝	7½
13	50.00	155	195	22x13	1⅝	8	8½	12
14	Stand Included 75.00	370	500	22x13	1⅝	8	8½	12
Stand 8	7.00	85	120					
13	10.00	130	180					

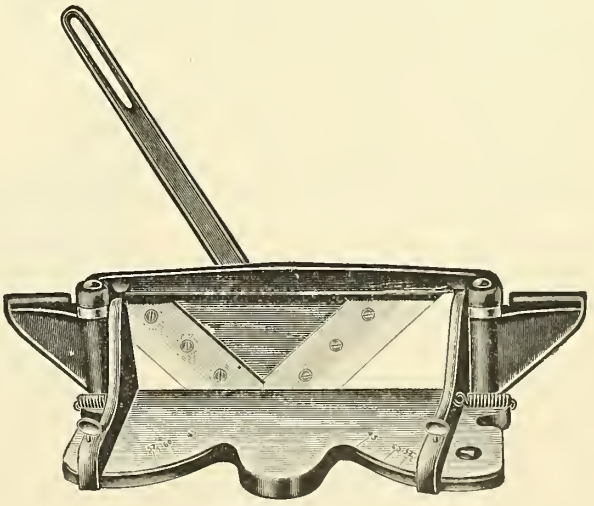


No. 8 Rear View. Showing Circular Guides for Knives which Produce Draw Cut

Lion



Back View



Front View

No. 4

An excellent little machine for pattern makers, cabinet makers, carpenters, etc.—made especially for use on each bench.

Cuts 8 inches wide, 4 inches high. Size of table 17 x 8 inches. Weight about 30 pounds.

Each $40.00

Suggestions for the Proper Handling of Hand, Band and Circular Saws

Warranty

Each saw is warranted to be as true as it is possible to make it, and to be free from flaws and seams. If found defective in either of these particulars it may be returned, and if on examination we are satisfied the saw is at fault, all necessary repairs will be made free of charge or a new saw will be given in exchange, provided it is returned within 30 days from delivery.

This warranty does not cover cases where circular saws have been cracked in gumming by reason of the punches or dies not being kept in proper order, or by filing square corners in the gullets, or by excessive emery-wheel grinding, reaming or altering the center holes, which is apt to cause the saws to spring.

Hand Saws

The teeth of a crosscut saw should be filed so true that on holding it up to the eye and looking along its edge it will show a central groove down which a fine needle will slide freely the entire length; this groove must be angular in shape and equal on each side or the saw is not filed properly and will not run true.

The proper amount of bevel to give the teeth is very important, for if too much bevel is given the points will score so deeply that the fibres severed from the main body will not crumble out as severed, but be removed by continued rasping, particularly in hard woods, as they require less bevel as well as pitch than soft wood.

Setting Saws. This is an important part of the work of keeping a saw in order and should always be done after the teeth are jointed and before filing. In all cases the set should be perfectly uniform, as the good working of the saw depends as much on this as on the filing. Whether the saw is fine or coarse the depth of set should not go, at the most, lower than half the length of the tooth, as it is certain to spring the body of saw if not break the tooth out.

Band Saws

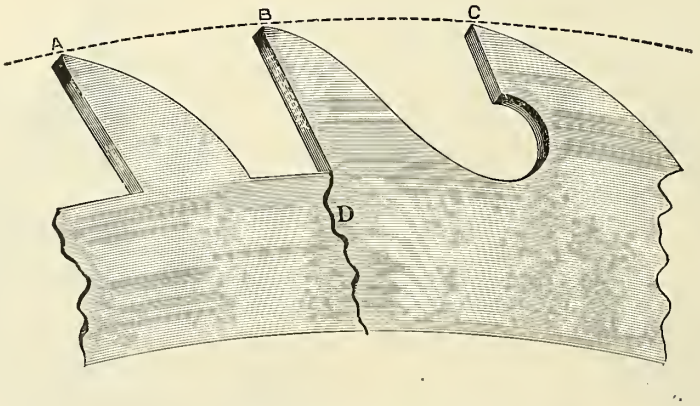
Among the most frequent causes of breakage of Band Saws the following may be named: The use of inferior saws of unsuitable gauge for the work; pulleys being out of balance or too heavy; the use of improper tension arrangements; not slackening saw after use thus preventing the free contraction of saw blades on cooling down after work; the framing of machine column being of too light a section or too high, thus causing excessive vibration; joint in saw not being of the same thickness as the rest of the blade; improper method of receiving the back thrust of saw, consequently case-hardening the back of saw blade and cracking same; using saws with angular instead of rounded gullets at root of tooth; top pulley overrunning saw; working dull saws; feeding up work too quickly to the saw; allowing saw-dust to collect on face of saw wheel, thus causing it to become lumpy and uneven; stopping or starting the machine too suddenly, especially while using a light blade, will almost certainly snap a saw in two.

Do not have sharp gullets to the teeth; this concentrates the bend of the saw as it runs over the wheels too much at one point.

Never let the back edge of saw come in contact with back-guard wheel, or any other hard surface, as case-hardening is bound to ensue from which cracks will surely result. Should the saw be accidentally forced against the guard and case-hardened remove the glaze at once by holding a piece of soft emery wheel against back edge while saw is running slowly. Do not take it for, granted that the back edge of the saw has not been in contact with guard wheel. Try a file on the edge of saw frequently, as it has only to make one revolution with the back edge against the guard to become case-hardened, and it is done so quickly that it often happens without the knowledge of the operator.

Circular Saws

Dullness is a very general cause of trouble with circular saws, not only of the extreme points but also of the cutting portion of the tooth under the points, as illustrated in the cut.

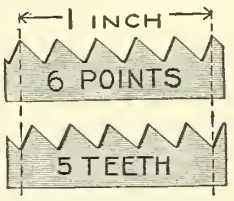


The points of the saw-teeth are the only parts of the saw that should come in contact with the lumber. They must be kept sharp by the frequent use of the file and set by springing, swaging or spreading when necessary, sufficiently to clear the blade of the saw nicely to prevent friction. As the points of the teeth do all the work they become dull and round, the sides of the points wearing away as well as the points themselves.

It will be observed in the cut that in addition to having sharp corners in the gullets, teeth A and B are very dull; tooth C shows how the points and gullets should be dressed.

Do not file square corners in the gullets of the saw, as it is very liable to cause breakage, as shown at D in cut, particularly when the teeth are dull or in frosty weather.

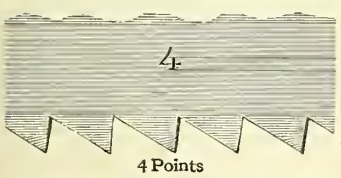
Hand Saws



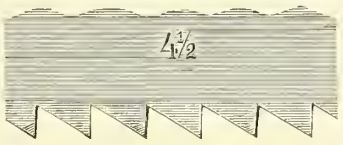
Points and teeth per inch

The following cuts represent the full sizes of the points per inch of the Hand Saws which we carry in stock. In ordering care should be taken not to confuse the points with the teeth, as there is always one more point per inch than there are teeth. (See illustration.)

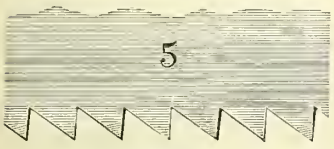
Rip



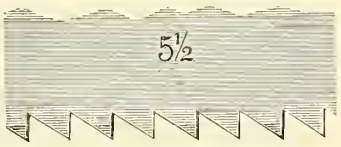
4 Points



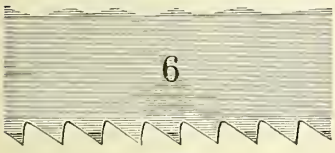
4½ Points



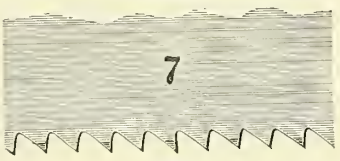
5 Points



5½ Points



6 Points

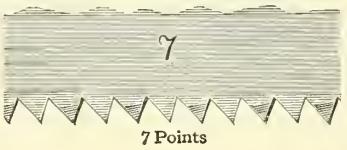


7 Points

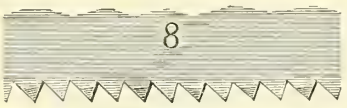
Cross Cut



6 Points



7 Points



8 Points



9 Points



10 Points



11 Points



12 Points

Sizes Carried in Stock

Saws other than those shown in this list must be ordered from factory. In ordering be sure to state number of points wanted "per inch."

Rip

Length Inches	Points Per Inch: 4	4½	5	5½	6	7
14						
16						
18						H.S.&Co. 7
20				H.S.&Co. 7 D8 12 16 112	H.S.&Co. 7 D8 12 16 112	H.S.&Co. 7 D8 12 16 112
22			H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 112
24			H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	
26			H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	
28	7	7	7 12 16	7		

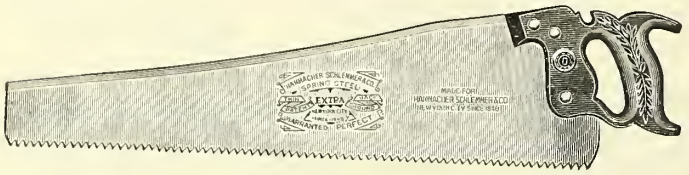
Cross Cut

Length Inches	Points Per Inch: 6	7	8	9	10	11	12
14			7	7	7 306	7	7
16			H.S.&Co. 7	H.S.&Co. 7	H.S.&Co. 7 306	H.S.&Co. 7	H.S.&Co. 7
18			H.S.&Co. 7 12 112	H.S.&Co. 7 12 112	H.S.&Co. 7 12 112 306	H.S.&Co. 7 12 112	H.S.&Co. 7 12 112
20		H.S.&Co. 7 D8 12 16 112	H.S.&Co. 7 D8 12 16 112	H.S.&Co. 7 D8 12 16 112	H.S.&Co. 7 D8 12 16 112 306	H.S.&Co. 7 D8 12 16 112	H.S.&Co. 7 D8 12 16 112 Hack for Metal
22		H.S.&Co. 7 D8 12 16 112	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115 306	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 112 Hack for Metal
24		H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115 120	H.S.&Co. 7 D8 12 16 D20 D23 112 D115 120 306	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 112 Hack for Metal
26	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	H.S.&Co. 7 D8 12 16 D20 D23 112 D115 120 7 with Gauge 43	H.S.&Co. 7 D8 12 16 D20 D23 112 D115 120	H.S.&Co. 7 D8 12 16 D20 D23 112 D115	Hack for Metal
28	7	7 12 16					

For suggestions, see preceding page

Hand Saws

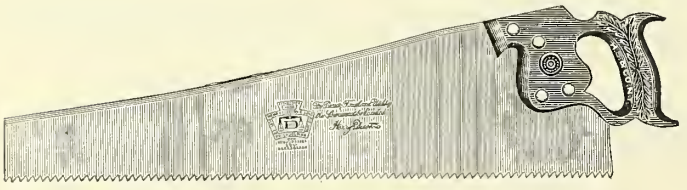
H. S. & Co.



This Saw has a polished and carved applewood handle, patent-ground, spring-steel, highly-polished blade, thin skew back, is fully warranted and is recommended for excellence of material and care in workmanship.

Length of Blade, inches	16	18	20	22	24	26
Crosscut, dozen	$14.50	16.00	17.50	19.50	21.00	22.00
Rip, dozen	....	16.00	17.50	19.50	21.00	22.00

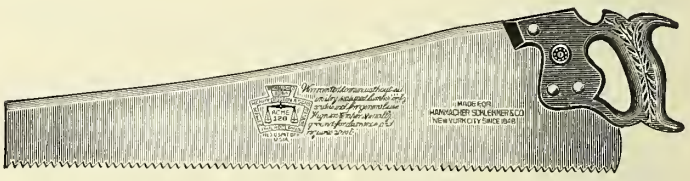
Disston



Disston No. D115

Warranted extra refined London spring-steel, patent-ground and tempered. Skew back. Rosewood handle, carved and polished. Nickel-plated screws.

Length of Blade, inches	22	24	26
Crosscut, dozen	$32.00	34.00	36.00
Rip, dozen	32.00	34.00	36.00



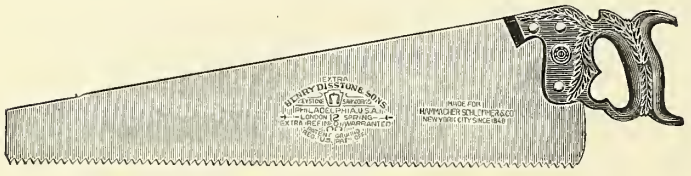
Disston No. 120

Warranted extra London spring-steel, thin skew back, patent-ground and tempered. Selected and highly-polished blade. Carved and polished applewood handle. Improved brass screws.

Note—A fast, smooth-cutting saw, particularly adapted for fine cabinet work, sawing mitres, and in all instances where rapid, smooth cutting is required. It will cut a joint sufficiently smooth to glue without planing. In sharpening, care must be used to file the teeth at the same angle as they leave the factory. These saws are warranted to run without set in dry, seasoned lumber only, and are not for general use. They are high in temper, specially ground for clearance and require no set.

In order to properly file this saw a 6-inch Safe Cant Back File should be used.

Length of Blade, inches	24	26
Crosscut, dozen	$31.00	32.00



Disston No. 12

Warranted extra refined London spring-steel, patent-ground and tempered. Selected and highly polished blade. Carved and polished applewood handle. Improved brass screws.

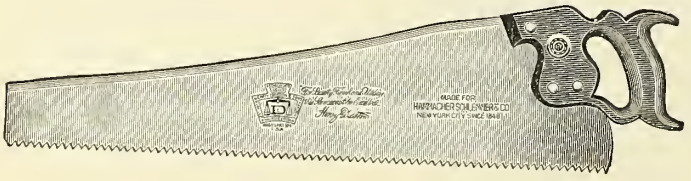
Length of Blade, inches	18	20	22	24	26	28
Crosscut, dozen	$20.75	23.00	25.00	27.00	29.00	33.00
Rip, dozen	20.75	23.00	25.00	27.00	29.00	33.00



Disston No. 112

Warranted extra refined London spring-steel, thin skew back, patent-ground and tempered. Selected and highly polished blade. Carved and polished applewood handle. Improved brass screws.

Length of Blades, inches	18	20	22	24	26
Crosscut, dozen	$21.75	24.00	26.00	28.00	30.00
Rip, dozen	....	24.00	26.00	28.00	30.00



Disston No. D8

Warranted refined crucible steel, patent-ground and tempered, skew back, applewood handle, polished improved brass screws. This Saw combines the popular "skew back," the peculiar shaped butt or heel which, with the improved screws, makes it almost impossible to work loose from the handle and gives the full sweep of the saw without the possibility of catching in the work.

Length of Blade, inches	20	22	24	26
Crosscut, dozen	$18.00	20.00	21.50	22.50
Rip, dozen	18.00	20.00	21.50	22.50



Disston No. 16

Warranted refined crucible steel, patent-ground and tempered, grained blade. Carved and polished applewood handle. Improved brass screws. This saw has the blade set into handle similar to No. D8.

Length of Blade, inches	20	22	24	26	28
Crosscut, dozen	$18.00	20.00	21.50	22.50	25.50
Rip, dozen	18.00	20.00	21.50	22.50	25.50

For suggestions and information, see two preceding pages

Hand Saws

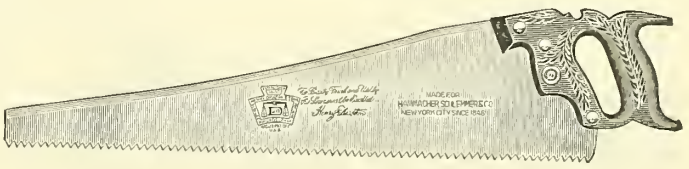
Disston



Disston No. D23

Warranted. Refined crucible steel, patent-ground and tempered, highly-polished blade. Carved and polished applewood handle. Improved brass screws.

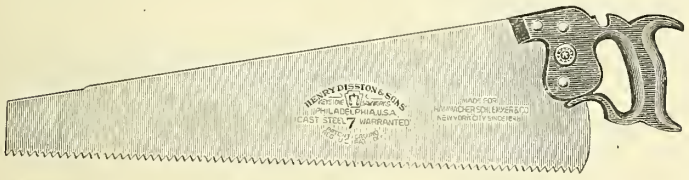
Length of Blade, inches	22	24	26
Crosscut, dozen	$22.00	23.50	25.00
Rip, dozen	22.00	23.50	25.00



Disston No. D20

Warranted. Refined crucible steel, patent-ground and tempered, highly-polished blade, thin skew back. Carved and polished applewood handle. Improved brass screws.

Length of Blade, inches	22	24	26
Crosscut, dozen	$22.00	23.50	25.00
Rip, dozen	22.00	23.50	25.00



Disston No. 7

Warranted. Crucible steel, patent-ground and tempered, grained blade, beech handle, polished. Improved brass screws.

Length of Blade, Inches	14	16	18	20	22	24	26	28
Crosscut, dozen.	$12.00	13.00	14.00	16.00	18.00	19.00	20.00	23.50
Rip, dozen.	....	....	14.00	16.00	18.00	19.00	20.00	23.50

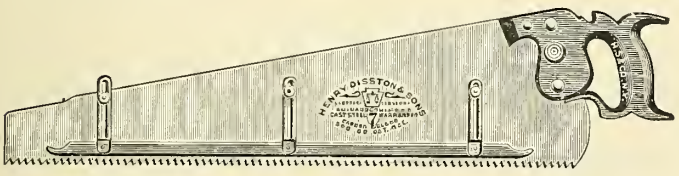
Hack (For Metal)



Made of special temper for cutting metal and is hollow-ground for clearance. Regularly made 12 point for cutting iron and steel, and 10 point for copper and brass. Unless otherwise ordered 12 point will be supplied.

Length of Blade, inches	20	22	24	26
Dozen	$25.00	28.00	30.25	32.50

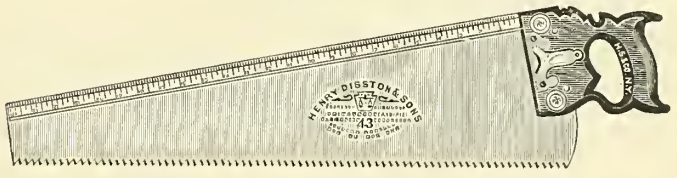
With Gauge



Adapted to tenoning, shouldering, dovetailing, curving, cog-cutting, or any purpose where a definite depth of cut is required. Same quality as the No. 7 Hand Saw.

26-inch Crosscut, 9 point, dozen $25.00

Combination



No. 43

Combines a Crosscut Saw with 24-inch Square and Rule, Straight-Edge and Scratch Awl. Applewood handle, with Plumb and Level Attachment. Blade same quality as No. 7 Hand Saw.

26-inch Crosscut, 9 point, dozen $30.00

Black Diamond



No. 306

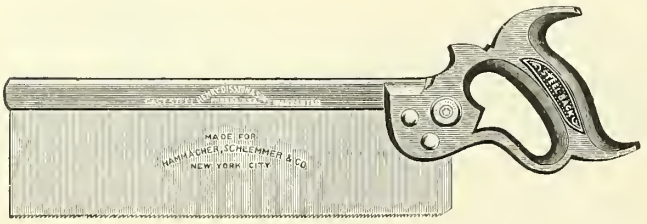
Warranted. Cast steel, beech handle, brass screws.

Length of Blades, inches	14	16	18	20	22	24
Crosscut, dozen	$9.50	10.00	10.60	11.25	11.90	12.50

For suggestions and information, see pages 512 and 513

Back Saws

Disston

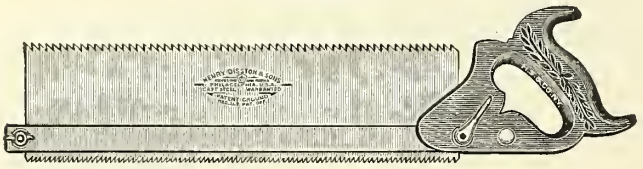


No. 4

Warranted. Cast steel, blued-steel back; applewood handle, polished edge, three improved brass screws.

Length of blade, inches.....	8	10	12	14	16	18
For wood, dozen.....	$13.00	14.00	16.00	18.00	20.00	22.00

Adjustable



Disston No. 14

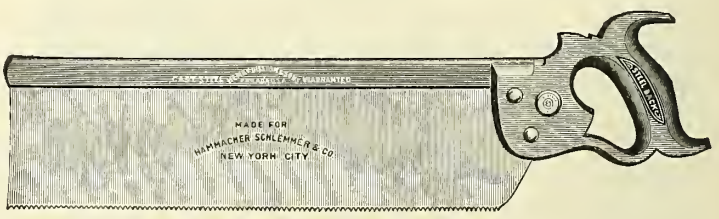
Warranted. Crucible steel blade, one edge toothed 9 point, the other 13 point, to the inch. Nickel-plated lever tightener and wing nut. Carved and polished cherry handle.

The slotted heavy, steel back, by means of the wing-nut and lever tightener, is quickly adjusted to cut any depth required.

Adopted for tenoning, shouldering, dovetailing, cog-cutting, or any purpose where a definite depth of cut is required.

Size of blade, inches.....	8x3	10x3	12x3½	14x3¾	16x4⅛
Dozen.....	$14.50	15.50	17.25	19.00	20.75

For Use in Mitre Boxes



Nos. 4 and 4M

No. 4 For Wood

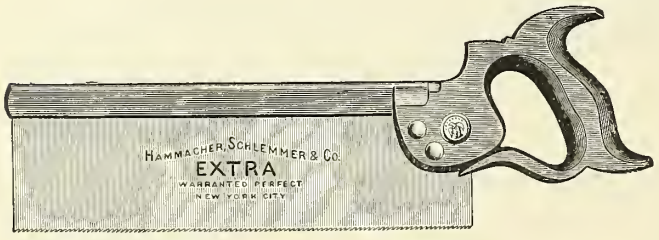
Warranted. Cast steel, blued-steel back; applewood handle, polished edge, three improved brass screws. These saws are measured the full length of blade. The peculiar shape of butt or heel on these saws makes the toothed edge about 2 inches shorter than the full length of the blade.

Length of blade, inches..	20	22	24	24	26	26
Width under back.....	4	4	4	5	4	5
Dozen.....	$24.00	26.00	28.00	31.00	30.00	33.50

No. 4M For Metal

We also furnish this saw in 24 and 26-inch lengths, either 4 or 5 inches wide under back, with special temper for metal-covered mouldings, and ground thin towards the back so as to run without set. This saw is known as No. 4M and is furnished at same prices as No. 4.

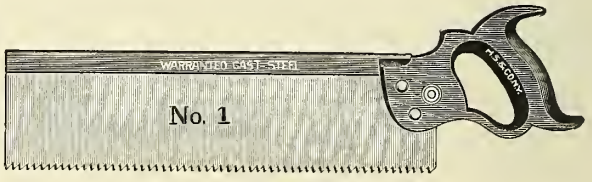
H. S. & Co.



Extra

Warranted. Polished crucible spring-steel blade, heavy blued-steel back; applewood handle.

Length of blade, inches.....	8	10	12
For wood, dozen.....	$13.00	14.00	16.00



No. 1

Warranted. Cast-steel blade, blued-back, handle, polished edges.

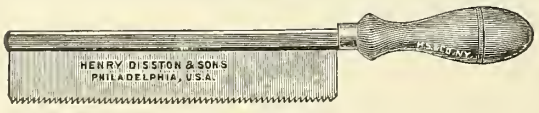
Length of blade, inches.....	10	12
Dozen.....	$10.00	12.00

Dovetail Saws

Disston

For Wood or Metal

With Straight Handle



No. 69

1½ inches wide under back.

No. 26 English Standard Gauge. Extra quality spring steel blade with special temper for cutting wood and metal. 17 points to inch. Brass-plated steel back. Polished handle.

Length of blade, inches.....	6	8	10	12
Dozen.....	$8.25	8.75	9.75	10.50

With Offset Handle



No. 71

With offset blade, as in end view. For working close to right-angle obstruction. Offset handle, straight part of blade is 1¾ inches wide.

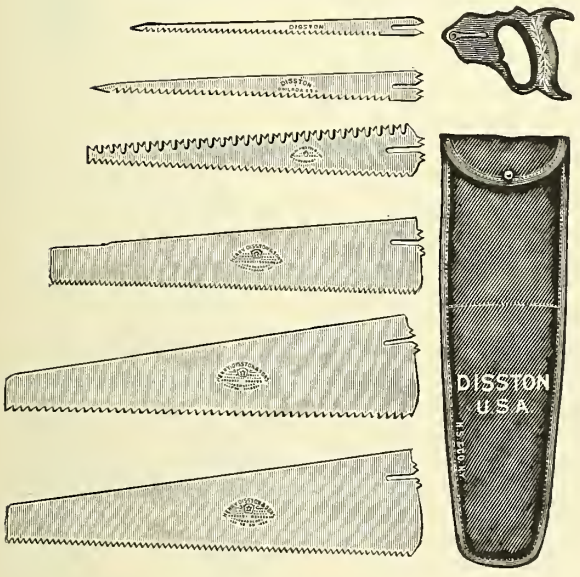
No. 26 English Standard Gauge. Extra quality spring-steel blade, with special temper for cutting wood and metal. 17 points to inch. Brass-plated steel back. Polished handle.

Length of blade, inches.....	6	8	10	12
Dozen.....	$8.25	8.75	9.75	10.50

Saws

Disston

Handy Kit



The blades are made of first quality crucible steel, carefully ground and polished. Hardwood handle, carved and polished. The butt of blade is specially formed to prevent wobbling, and the lever tightener provides for quick and easy attachment and detachment. The case is heavy canvas, leather-bound edges, and has separate compartments for each blade and a special pocket for the handle.

Parts

	Dozen
12-inch Keyhole Blade	$2.25
14-inch Compass Blade	2.75
16-inch Pruning Blade	7.00
18-inch Plumbers Blade	11.00
20-inch Crosscut Blade, 10 point	11.00
20-inch Ripsaw Blade, 7 point	11.00
Adjustable Handle	4.50
Canvas Case	6.00
	Each
Set No. 101 contains all the above	$4.50
Set No. 104 contains all the above except Pruning and Plumbers Blades	3.00

Joiner or Bench



Applewood handle, varnished edge. Blade 16x2½ inches at handle, 18 gauge, 15 point.

Dozen $12.00

Flooring



No. D19 9 points to one inch

Cherry handle, carved and polished. Adjustable to various positions. Specially designed to cut out sections of floors, ceilings or partitions to any desired depth, without necessity of boring, chiseling, etc. The blade is warranted cast steel and is reversible, interchangeable and adjustable.

Length of blade, inches	18	20
Dozen	$20.00	22.00

Plumbers, for Wood or Metal



No. 6

Beech handle, varnished edges, three brass screws. One edge toothed 6 points; the other 8 points. The coarse teeth are for sawing wood. The fine teeth for sawing wood in which nails are imbedded, lead pipe, etc.

Length of blade, inches	16	18
Dozen	$9.00	10.00



No. 10 12 points to one inch

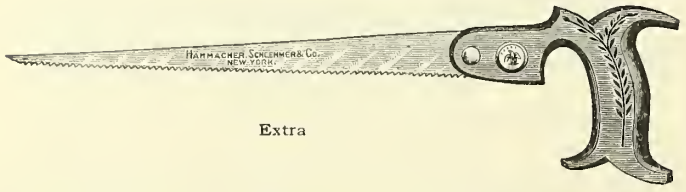
Carved and polished cherry handle adjustable to various positions. Made particularly for use on work encountered by Plumbers, Steamfitters and Carpenters in making repairs where it is necessary to cut through timbers in which nails may be imbedded or steel-covered moulding.

Length of blade, inches	20	24
Dozen	$17.25	20.75

Saws

Compass

H. S. & Co.



Extra

Crucible steel, thin back, polished and carved applewood handle.

Length of blade, inches	10	12	14	16
Dozen	$5.00	5.40	5.70	6.00

Disston



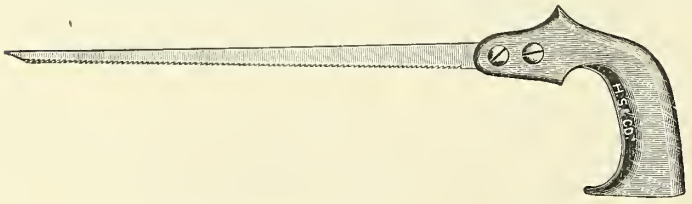
No. 2

Crucible steel, applewood handle, brass screws.

Length of blade, inches	10	12	14	16
Dozen	$4.25	4.50	4.75	5.00
Blades only, dozen	2.25	2.50	2.75	3.00

Keyhole

Disston



No. 15

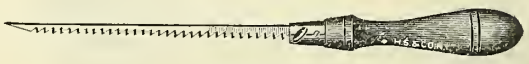
Cast-steel, beech handle, brass screws.

Length of blade, inches	10	12
Dozen	$2.25	2.50



No. 10

Complete with adjustable handle and blade, per dozen	$2.40
Extra blades, per dozen	1.40



No. 95

Round hardwood handle, polished, nickel-plated ferrule. The handle is slotted clear through permitting the adjustment of blade for length of cutting edge required. The blade, 10 inches long, ground thin back, is firmly held in place by means of a steel grip inside of handle, tightened by thumb-screw, which is nickel-plated.

Dozen	$4.00
Extra blades, dozen	2.00



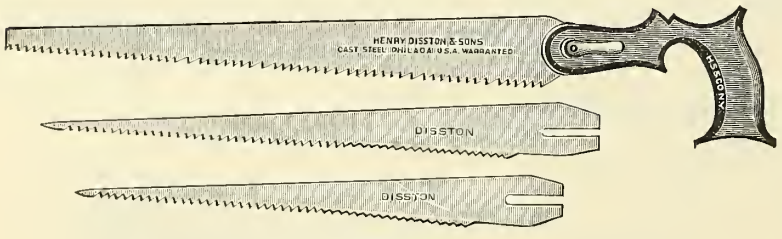
No. 5

An inexpensive and convenient combination of keyhole saw, saw pad and screw-driver.

Complete with handle and blade, dozen	$2.00
Extra blades, dozen	1.40
Handles, dozen	.60

Nest

Disston

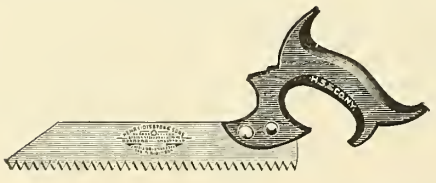


No. 3

Handle and Tightener, dozen	$1.75
Keyhole Blade, 10 inch, dozen	2.00
Compass Blade, 14 inch, dozen	2.75
Pruning Blade, 16 inch, dozen	5.50
Complete, 1 dozen each of above	12.00

Pattern-Makers

Disston

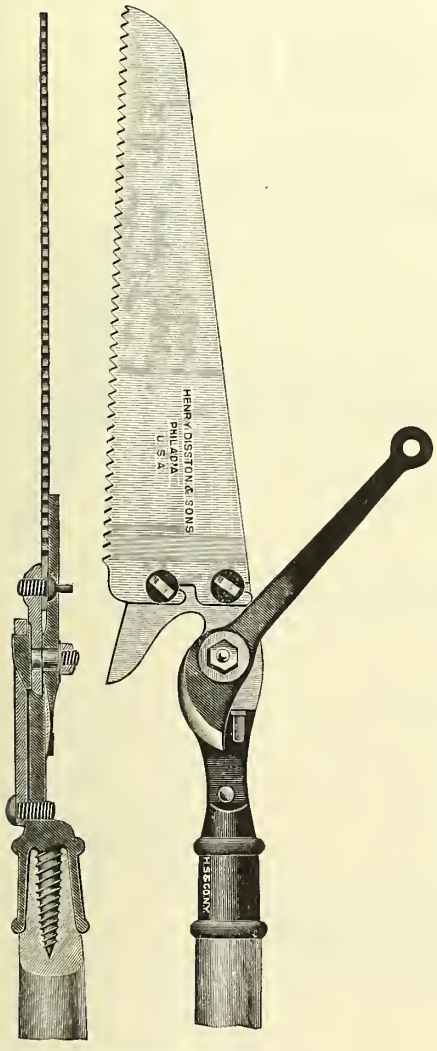


Plain applewood handle, blade 7½x1¼ inches, No. 21 gauge, 15 points.

Dozen	$5.00

Pruning Saws

Disston



Little Giant

Little Giant, with Hook

The knife and saw are made of the best crucible steel, and can be used with or without a pole. The tool is very light and strong. The saw can be detached where its use is not required on large limbs.

The saw blade is attached to the hook by means of two clamp screws, as shown in illustrations; the cuts also show the way the pole or handle should be attached to the hook.

Length of blade, inches 12
Hook and saw, without pole, dozen $18.00
Hook only, without pole, dozen 12.00
Hook will take in branch ¾-inch in diameter.

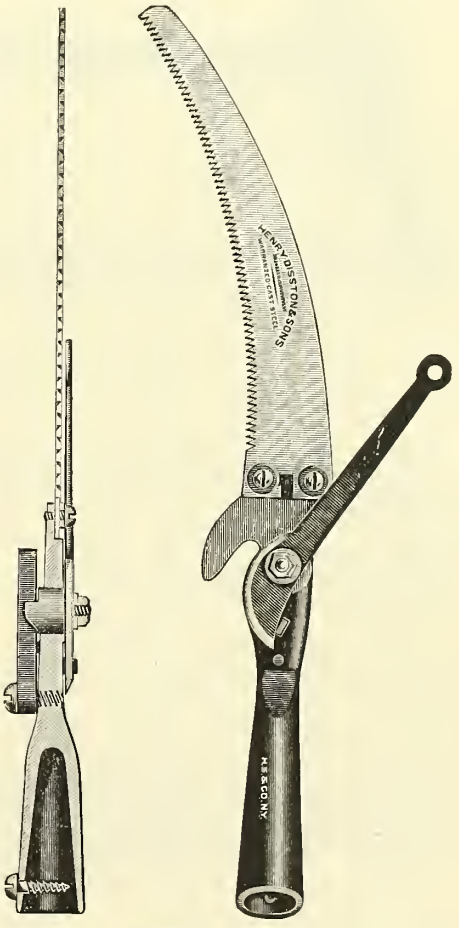
Orchard, with Hook

Made of best crucible steel, very light in construction, but crescent-shaped blade is formed to help draw the teeth into the wood.

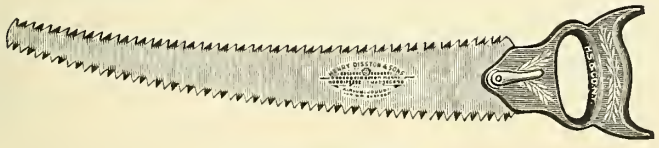
Particularly adapted for sawing the smaller branches in general pruning.

The saw can be readily removed when hook only is required.

Length of blade, inches 10
Hook and saw, without pole, dozen $18.00
Hook only, without pole, dozen 11.00
Hook will take in branch ½-inch in diameter.



Orchard



No. 1 Adjustable Handle

Cherry handle, carved and polished, adjustable, with lever tightener, crucible steel blade, double-edge, thrust cut on convex draw cut on concave edge.

Length of blade, inches	14	18
Dozen	$11.50	13.50



D-24

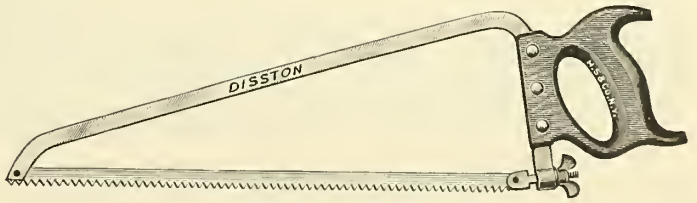
Narrow point, crucible steel blade, copper handle with beechwood grip.

Length of blade, inches	20	24
Dozen	$9.30	11.00



No. 4 Duplex Beech Handle, 3 Brass Screws

Length of blade, inches	14	18
Dozen	$9.00	10.50



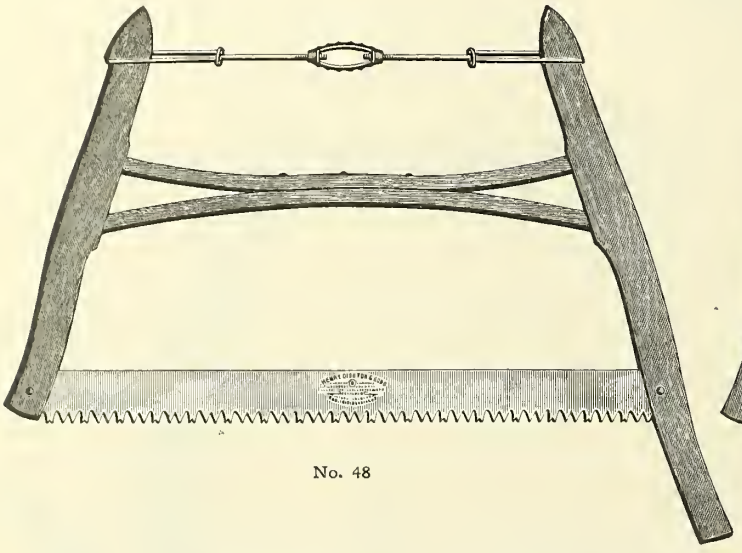
No. 18 New York Pattern

Flat steel back, narrow tapered point, beech handles with varnished edges, three brass screws. Handle has extra large hand hold for use with gloved hand. Blued steel blade. Swivel stretcher.

Length of blade, inches	18½
Dozen	$13.50

Buck Saws

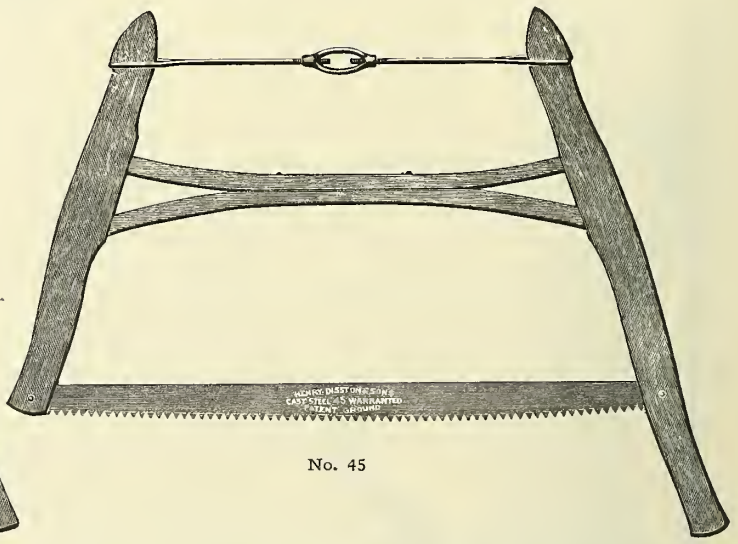
Disston



No. 48

Frame, blue stained and varnished. Extra thin-back blade, 30 inches long, 2⅜ inches wide. Champion tooth, exceptionally strong, tinned loop rod.

	Dozen
Complete	$12.00
Blades only, No. 16, 30 inches	7.10



No. 45

Frame, red stained and varnished. Extra thin-back, blue blade, 30 inches long, 1¾ inches wide, 4½ points, strong, tinned loop rod.

	Dozen
Complete	$10.50
Blades only, No. 45, 30 inches	6.00

Crosscut Saws

Disston

Two-Man



No. 2 With Plain Teeth

These saws are two gauges thinner on the back than on the tooth edge, patent ground and tempered, set and sharpened ready for use.

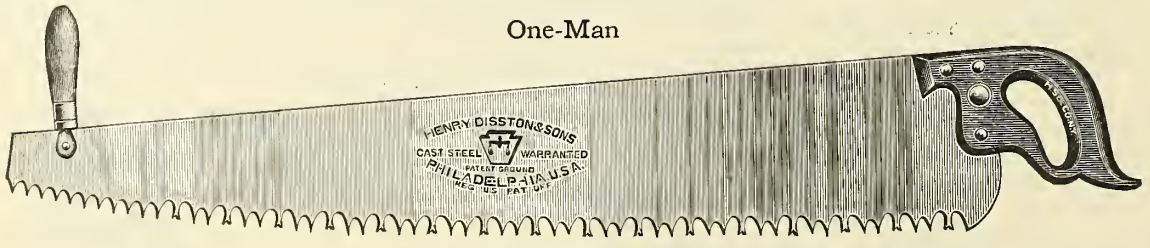
Length of blade, feet	4	4½	5	6
Without handles, each	$2.40	2.70	3.00	3.60

No. 2 With Champion Teeth

For illustration of teeth, see below.

Length of blade, feet	4	4½	5	6
Without handles, each	$2.40	2.70	3.00	3.60

One-Man



No. 2 With Champion Teeth

With supplementary handle. These saws are made, ground and tempered on the same principles as the best hand saws. They will stand all necessary thrust pressure without buckling and are rapid, easy cutters.

Length of blade, feet	3	3½	4
Complete with handles, each	$2.25	2.60	3.00

No. 2 With Plain Teeth

For illustration of teeth, see two-man saw above.

Length of blade, feet	3	3½	4
Complete with handles, each	$2.25	2.60	3.00

Handles for Two-Man Climax Pattern No. 102½



13½ inches long, 1⅜ inches diameter at thickest part. Grey iron casting, malleable iron bolt and nut.

Pair... $ .30

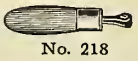
Extra Handles

For One-Man



No. 118

Dozen $3.10



No. 218

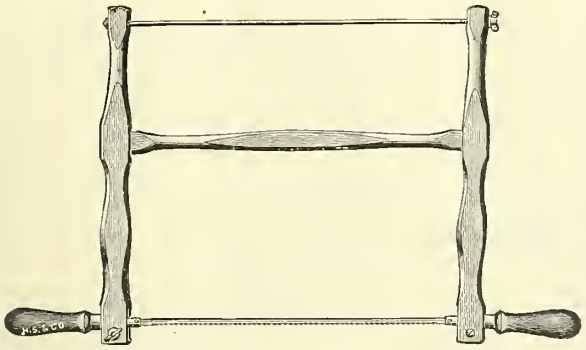
Supplementary

5¼ inches long, 1 5/16 inches diameter, malleable-iron ferrule, washer, rod and nut fastened inside.

Dozen $1.75

Turning Saws

M. F. Co.



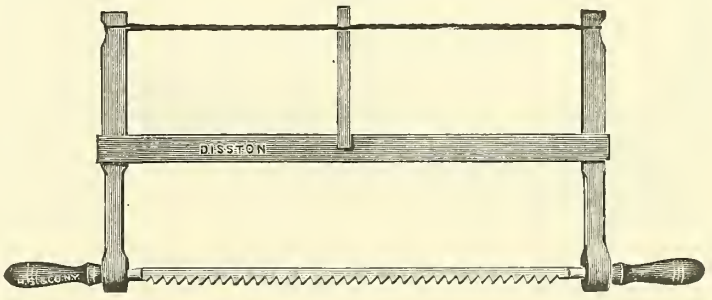
Birch wood; ebonized handles; steel tension rod.
Index on each handle to show how far to turn.
Friction regulated by screws.

Length of blade, inches	12	14	18	20	22	24
Dozen (including one blade with each frame)	$14.40	15.00	15.60	16.40	17.00	17.60

Cabinet Saw Frames

(German Pattern)

Disston



No. 1

Without blades.	Dozen
For 28-inch blades	$9.00
For 36-inch blades	10.00

Turning Saw Blades or Chair Webs

Disston



Set and Sharpened Ready for Use

Length of blade, inches	10	12	14	16	18	20	22	24	26	28	30	32
Number of gauge	22	21	21	20	20	20	20	19	19	19	19	18
1/8-inch wide, 10 points	$1.35	1.45	1.60	1.80	2.00							
3/16-inch wide, 10 points	1.35	1.45	1.60	1.80	2.00							
1/4-inch wide, 9 points	1.35	1.45										
1/4-inch wide, 8 points	....	....	1.60	1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
5/16-inch wide, 7 1/2 points	1.35	1.45	1.60	1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
3/8-inch wide, 7 1/2 points	1.35	1.45	1.60	1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
7/16-inch wide, 7 points	....	....	....	1.80	2.00	2.25	2.50	2.80	3.10	3.45	3.80	4.20
1/2-inch wide, 7 points	....	....	....	....	....	....	2.50	2.80	3.10	3.45	3.80	4.20

Cabinet Saw Blades or German Pattern Webs With Cut Tangs

Disston



Set and Sharpened Ready for Use

Length of blade, inches	26	28	30	32	36
Thickness of blade, number of gauge	23	23	23	22	22
Width of blade, inches	1 1/4	1 1/2	1 1/2	1 1/2	1 3/4
Dozen	$3.60	3.75	4.00	4.20	4.55

Jig-Saw Blades or Felloe Webs

Disston

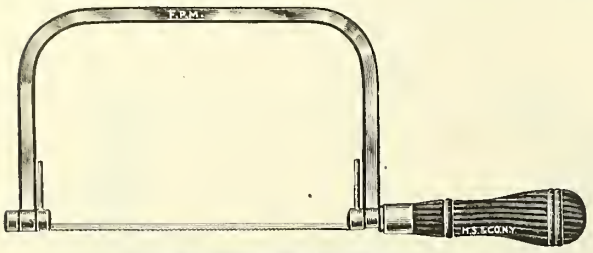


Set and Sharpened Ready for Use. Style of Turning Saw Blade, but Having Beveled Back

Length of blade, inches	8	10	12	14	16	18
Thickness of blade, number of gauge	19	18	18	17	17	17
1/8-inch wide, 9 points	$1.45	1.60	1.85	2.10	2.35	2.70
3/16-inch wide, 9 points	1.45	1.60	1.85	2.10	2.35	2.70
1/4-inch wide, 8 points	1.45	1.60	1.85			
1/4-inch wide, 7 points	....	....	....	2.10	2.35	2.70
5/16-inch wide, 6 1/2 points	....	1.60	1.85	2.10	2.35	2.70
3/8-inch wide, 6 1/2 points	....	1.60	1.85	2.10	2.35	2.70
7/16-inch wide, 6 points	....	....	....	....	2.35	2.70

Coping Saws

F. P. M.

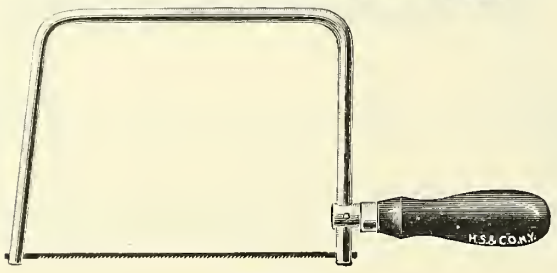


Frame is made of cold-drawn steel, especially tempered and highly finished. Blade is made of the best imported band-saw steel. Too highly tempered to make into loop at ends, so are equipped with pin fastening. Placed on a swivel, adjustable to any angle; $\frac{1}{16}$ inch wide, 6½ inches long and so evenly tempered it will cut light metal as easily as wood.

Depth under back, 4⅝ inches.

Complete, 1 blade with each frame, dozen $18.00
Blades, gross 6.00

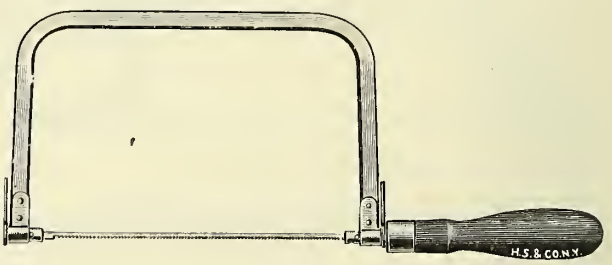
Griffin



No. 110

Nickel-plated wire frame, black hardwood handle, 4 inches under back. Blades have looped ends to attach to frame.

Complete, 1 dozen extra blades with each frame $4.00
Blades, gross 1.66



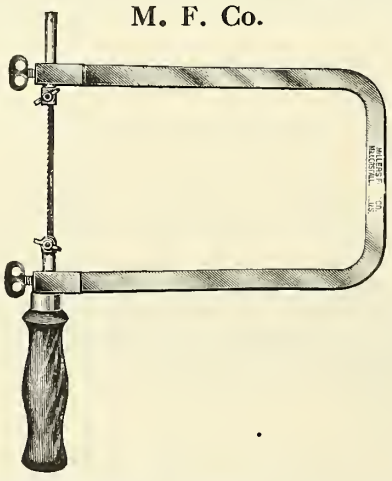
No. 125

Nickel-plated steel frame, black rubberoid handle, 4¼ inches under back. The 6½-inch blade has same pin fastening as F. P. M. described above.

Complete, 1 blade with each frame, dozen $14.00
Blades, gross 6.00

Fret or Bracket Saw Frames

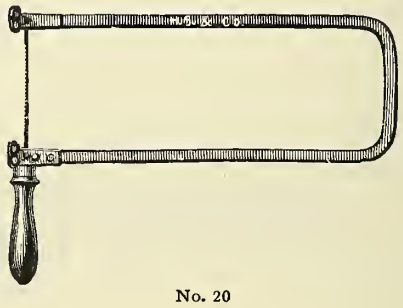
M. F. Co.



Nickel-plated, from best quality of spring steel. Holds blades from 3 to 5 inches.

Depth, inches	8	10	12	14	16
Without blades, dozen	$12.30	12.60	12.90	13.20	13.50

H. S. & Co.



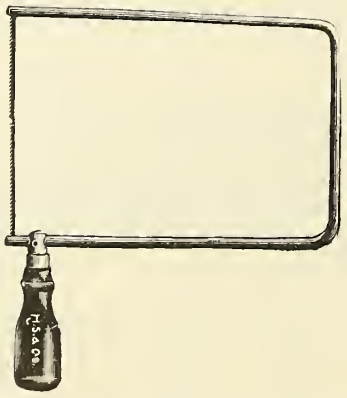
No. 20

Light, for school use.

8 inches deep, Steel, nickel-plated, without blades $13.00
12 inches deep, Steel, nickel-plated, without blades 16.00

For blades, see next page

Griffin

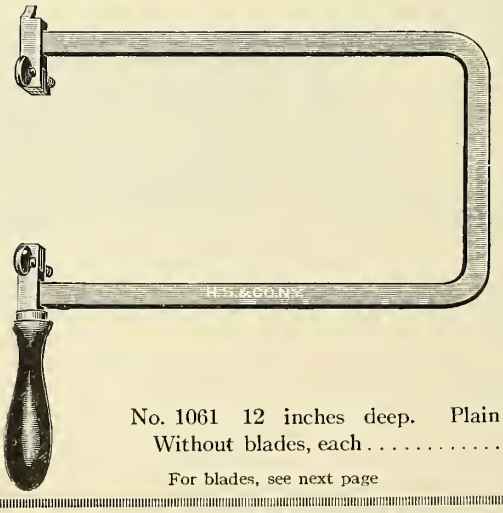


No. 170

Because of their simplicity and the ease with which new blades can be put into these frames, a large number of prominent manual training schools have adopted them.

8 inches deep, steel wire frame, nickel-plated, one dozen extra blades with each frame $5.50
Blades, gross 1.66

Imported

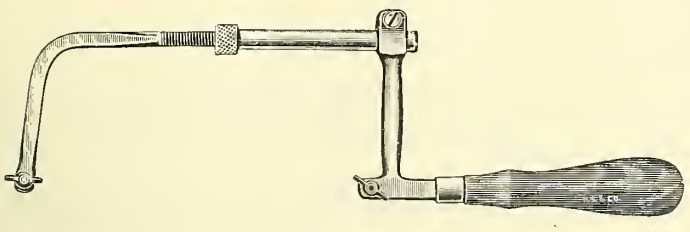


No. 1061 12 inches deep. Plain iron frame.
Without blades, each ..... $ .64

For blades, see next page

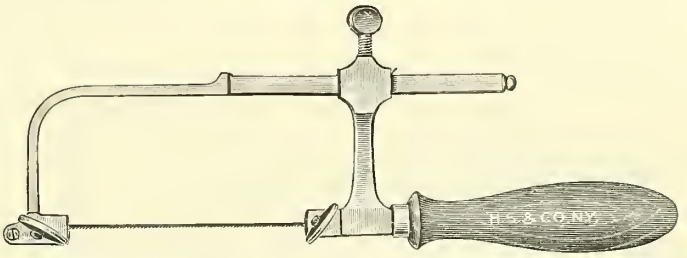
Jewelers Saw Frames

M. F. Co.



No. 600 Forged spring-steel, nickel-plated, cocobolo handle, 2¼ inches under back. Adjustable from 4 to 6 inches. Without blades, dozen $14.00

Imported



No. 10462 Plain steel, 2 inches under back. Adjustable from 2¾ to 6 inches. Without blades, dozen $5.00

No. 10465 Plain steel, 5 inches under back. Adjustable from 3 to 6 inches. Without blades, dozen 9.50

Fret or Scroll Saw Wood

(In Sheets)

24 inches long, 16 inches wide, $\frac{3}{16}$-inch thick. Fine clear stock.

Bass (single ply), dozen ..... $ 3.00
Gum (three ply), dozen 3.00

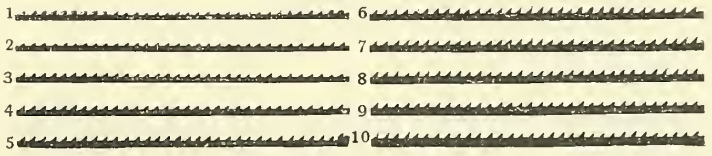
Fret or Scroll Saw Designs

(In Book Form)

Part I (large size) ..... $ .75
Part VI (small size) ..... .30

Saw Blades

Fret or Bracket, for Wood



Star

Nos.	000 to 6	7	8	9	10	11	12
5 inches, gross	$1.00	1.10	1.20	1.30	1.40	1.50	1.60

Griffin

Nos.			6	8	10
8 inches, gross			$1.00	1.20	1.40

Jewelers, for Metal

Fish Brand

Nos.	0	1	2	3	4	5	6	8
5 inches, gross	$1.60	1.60	1.60	1.60	1.60	1.70	1.70	2.20

Butcher Saws

Disston



No. 19 Flat Back

Beech handle, polished edge, brass screws. Polished blade 1¼ inches wide, 11 points.

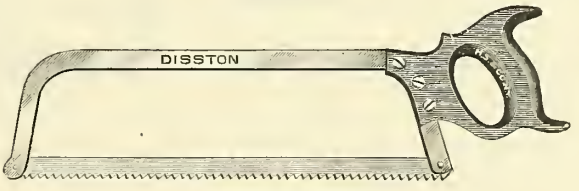
Length, inches	18	20	24	26
Dozen	$19.25	20.00	22.00	23.00

Extra blades, polished steel, 1 or 1¼ inches wide, 11 points to inch.

Inches	18	20	24	26
Dozen	$3.50	3.70	4.10	4.30

Kitchen Saws

Disston



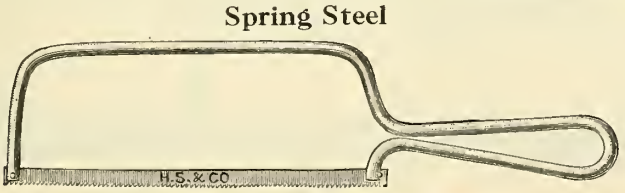
No. 18 Delaware

Heavy flat back, ⅝ x $\frac{3}{16}$-inch, bright blade, ¾-inch wide.

Length, inches	12	14	16
Dozen	$6.30	6.30	7.00

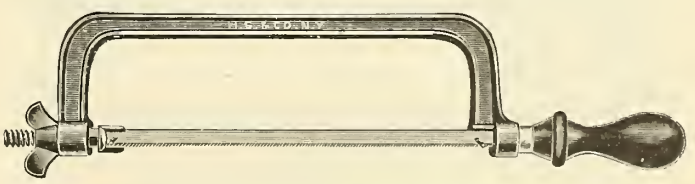
Hack Saw Frames

Spring Steel



Nos. 150 and 151. Nickel-plated Frame

No. 251 With one 8-inch blade. Frame $\frac{5}{16}$-inch diameter, 2⅞ inches under back to tooth edge, dozen $3.50
No. 150 With one 6-inch blade for jewelers use. Frame ¼-inch diameter, 2¼ inches under back to tooth edge, dozen 3.50
Extra blades for No. 150, gross 7.50



No. 30 Cast Iron, Black Enameled

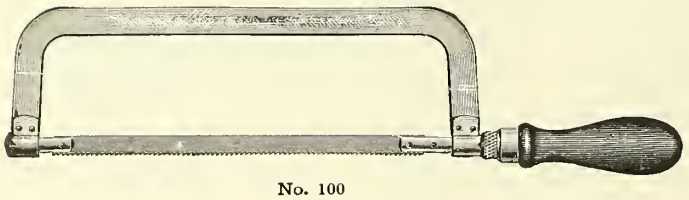
Holds 8-inch blades, 2⅜ inches between back and tooth edge, back ⅞x¼ inch.

Without blades, dozen $2.50

Hack Saw Frames

Rigid

H. S. & Co.

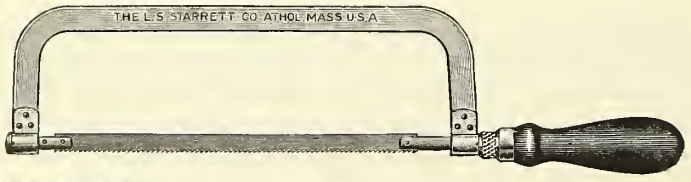


No. 100

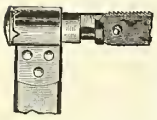
Steel, nickeled, 2¾ inches between back and tooth edge. Holds 8-inch blades in four different positions. The frame is very stiff and cannot be cramped by straining the blade.

With blade, each ..... $ .50

Starrett

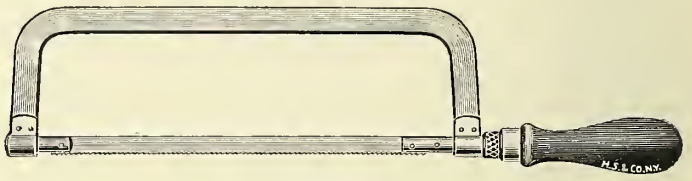


No. 140



Frames are finely finished and nickel-plated. Spring plungers overlap the ends of the saw, automatically holding it firmly in place. By pushing them slightly backward the saw may be instantly removed, thus supplying a most convenient way of attaching and detaching the blades. An improved nut within the handle, and turning with it, gives any desired tension to saw, which may be set at any angle. Holds 8-inch blades.

With one blade, each ..... $ .90



No. 141

This solid steel frame is very stiff, the stock being wider than commonly used, and it cannot be cramped by straining the blade. The saws may be set to cut in any one of four directions and tightened by turning the handle. It is well made and in every way just right. Polished and nickel-plated. Holds 12-inch blades in four different positions.

With one blade, each ..... $ .90

Adjustable

H. S. & Co.



No. 200

Steel, nickeled, 2¾ inches between back and tooth edge. Holds 8 to 12-inch blades in four different positions. The frame is wider and stiffer than usually used, and has our improved adjustable back.

With blade, each ..... $ .75

Star



No. 10

Compact, stiff frame, polished and nickeled steel, with extra strength in the middle of the back where there is the greatest strain.

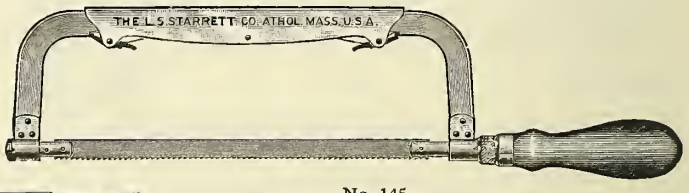
Extensible for blades from 8 to 12 inches, with scale for the different lengths on the back of the frame. Depth under back, 2⅜ inches.

Blades strained by turning handle may be faced in four directions.

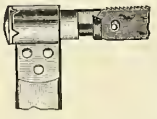
Knurled check nut screwing down and overlapping the end of the blade to hold it in place while it is being inserted in the frame.

Dozen, with 10-inch blade in each frame $15.50

Starrett

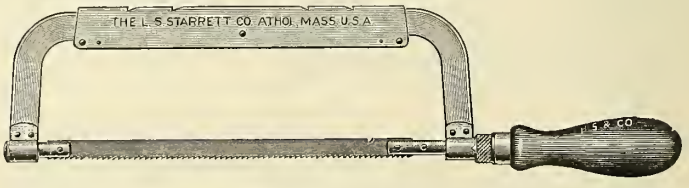


No. 145



Same general construction as Starrett No. 140 shown above, but equipped with adjustable or extension frame with improved spring pawls to securely hold blades from 8 to 12 inches long. Has spring plungers to hold saw as explained under No. 140.

With blade, each $1.25



No. 146

Nickel-plated. Exceptionally stiff and heavy frame. Holds 8 to 12-inch blades in any required angle; 2½ inches between back and tooth edge; back 1x⅜ inch.

With blade, each $1.00

Hack Saw Frames

Adjustable

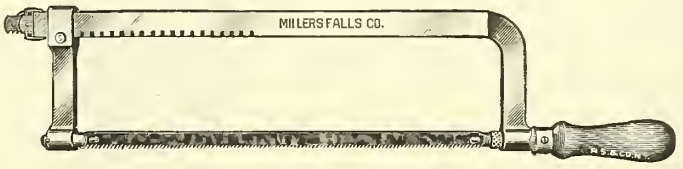
Star



No. 6

Stiff, strong back, of polished and nickeled steel. Quickly adjustable for blades from 6 to 12 inches long. Tension by turning handle. Blades may be faced in four directions. Depth under back, 2¾ inches.

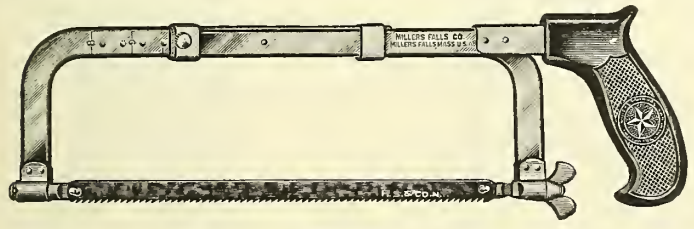
Dozen, with 12-inch blade in each frame..... $15.50



No. 29

Polished steel frames, nickeled and japanned, with back made of rectangular tubing, giving exceptional strength and lightness. Has receptacle with hinged cap for six spare blades. Sliding clamp adjustable to blades from 8 to 12 inches. Depth under back 3½ inches.

Dozen, 12-inch blade in each frame..... $20.00

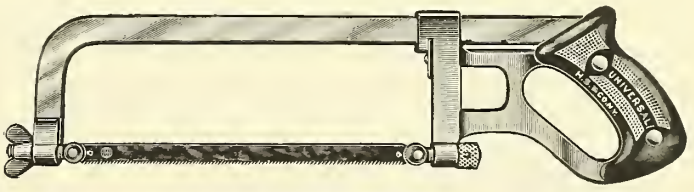


No. 1011

Pistol-Grip handle, black composition. Polished and nickeled steel frame. Adjustable for blades 8 to 12 inches with scale for the different lengths on back of frame. Depth under back 3½ inches. Perfect fitting handle secured to frame by a steel rib extending nearly the full length of handle.

Dozen, with 10-inch blade in each frame..... $18.00

Universal

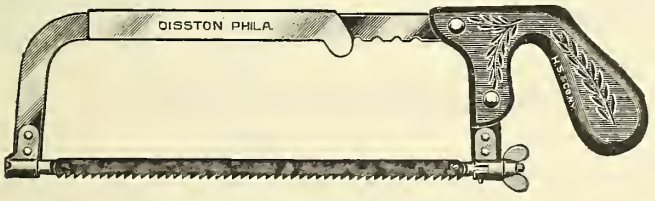


No. 12 Easy Grip

Rigid steel back, full nickel-plated, all small parts case-hardened. "Easy Grip" handles checked with Gun-Butt finish. Adjustable for blades 8 to 12 inches. Depth under back to tooth edge 3⅛ inches.

Dozen, with 12-inch blade in each frame..... $18.00

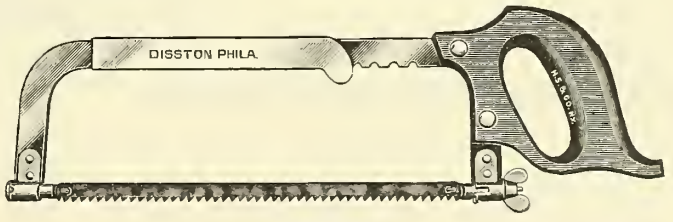
Disston



No. 35½

Pistol-Grip handle, applewood, polished edges, steel frame, nickel-plated, adjustable by half inches to take in blades 8 to 12 inches. Riveted sockets. Reversible stretchers, will not fall out while readjusting.

Frame only, dozen..... $16.00



No. 36½

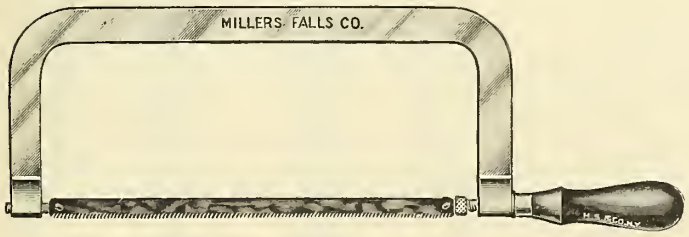
Closed hardwood handle, steel frame, nickel-plated, adjustable by half inches to take in blades 8 to 12 inches. Riveted sockets. Reversible stretchers, will not fall out while readjusting.

Frame only, dozen..... $16.00

Rigid

(Deep Cut)

Star

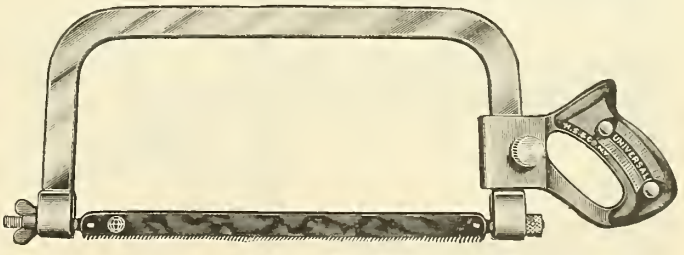


No. 15

Polished and nickeled frame of stiff, heavy steel, 1x¼-inch. Tension by turning handle. Blades may be faced in four directions. Knurled check nut to screw down and overlap the end of the blade to hold it in place while being adjusted in frame. Depth under back 5¼ inches.

Dozen, with 12-inch blade in each frame..... $19.50

Universal



No. 7 Easy Grip

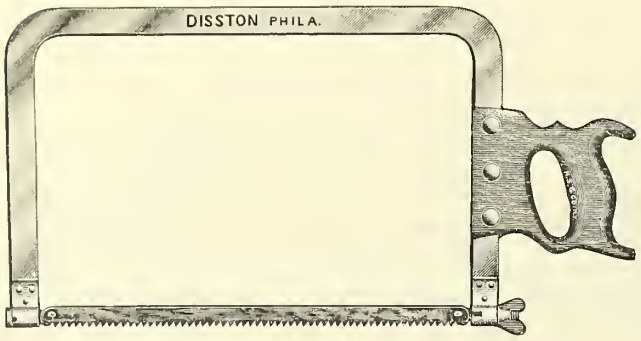
Distance from bottom of frame to tooth edge of saw is 6 inches.

Especially designed for Architectural Iron Workers and others requiring a frame of greater depth than the ordinary. The "Easy Grip" movable handle may be raised or lowered as convenience requires. Made of 1 by ¼-inch crucible steel, nickel-plated.

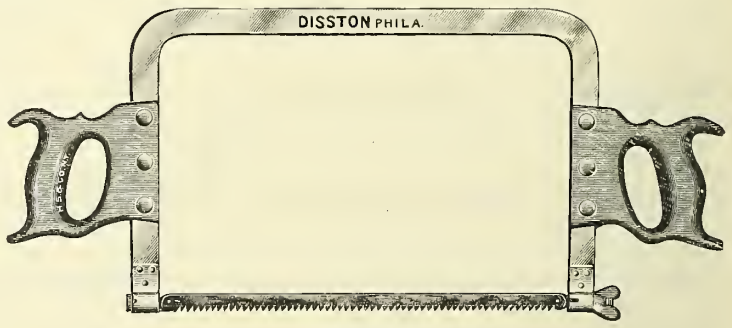
Dozen, with 12-inch blade in each frame..... $24.00

Rail Hack Saw Frames

Disston



Nos. 6, 7 and 8



Nos. 9 and 10

Steel frame, polished. Riveted sockets. Specially adapted for cutting off rails, iron beams, girders, etc., and very desirable for contractors use and large work generally.

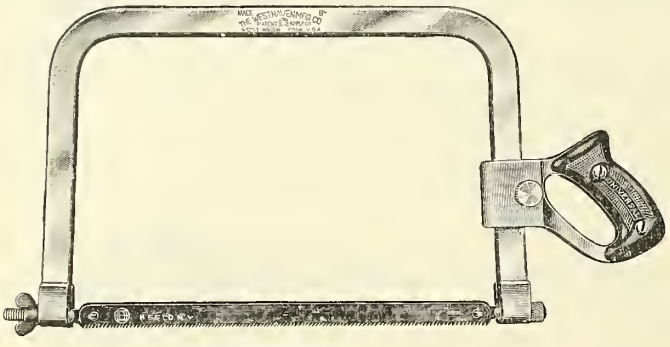
Single-Handle, Frames Only

No. 6 7¼ inches depth of frame, for 9-inch blades, dozen... $15.00
No. 7 10¼ inches depth of frame, for 12-inch blades, dozen... 18.00
No. 8 10¼ inches depth of frame, for 14-inch blades, dozen... 19.00

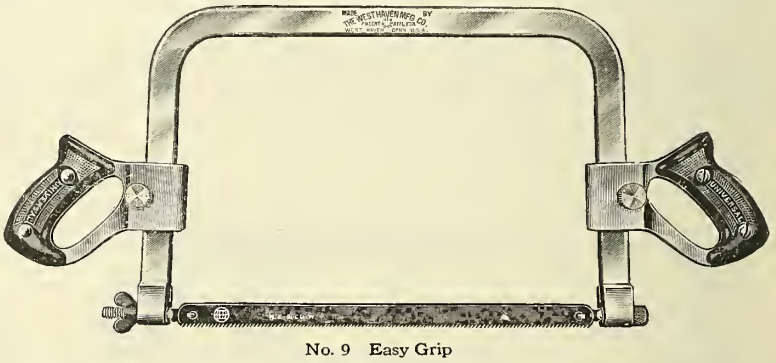
Double-Handle, for Two-Man Use, Frames Only

No. 9 10¼ inches depth of frame, for 16-inch blades, dozen.. $23.00
No. 10 10¼ inches depth of frame, for 18-inch blades, dozen.. 28.00

Universal



No. 8 Easy Grip



No. 9 Easy Grip

Distance from bottom of frame to tooth edge of saw is 10¼ inches. Made of 1x¼-inch crucible steel nickel-plated. For girders, beams and street railroad track work, etc. An important feature is the "Easy Grip" movable handle, which may be raised or lowered to suit depth of work when used for cutting rails in street.

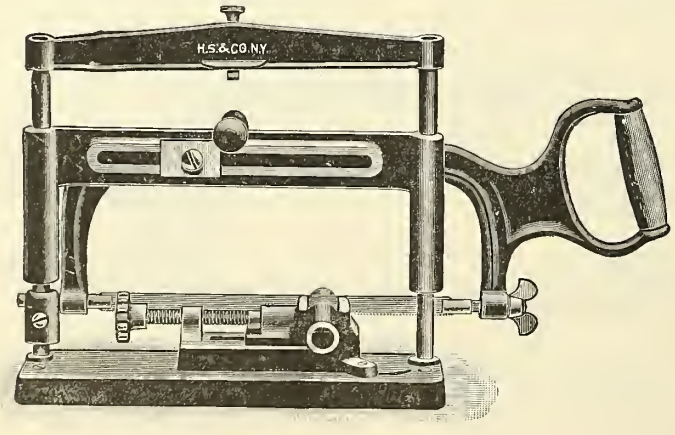
Single-Handle

With 12-inch blade, dozen $26.00
With 14-inch blade, dozen 27.00

Double-Handle

With 12-inch blade, dozen $28.00
With 14-inch blade, dozen 29.00

Bench Hack Saw



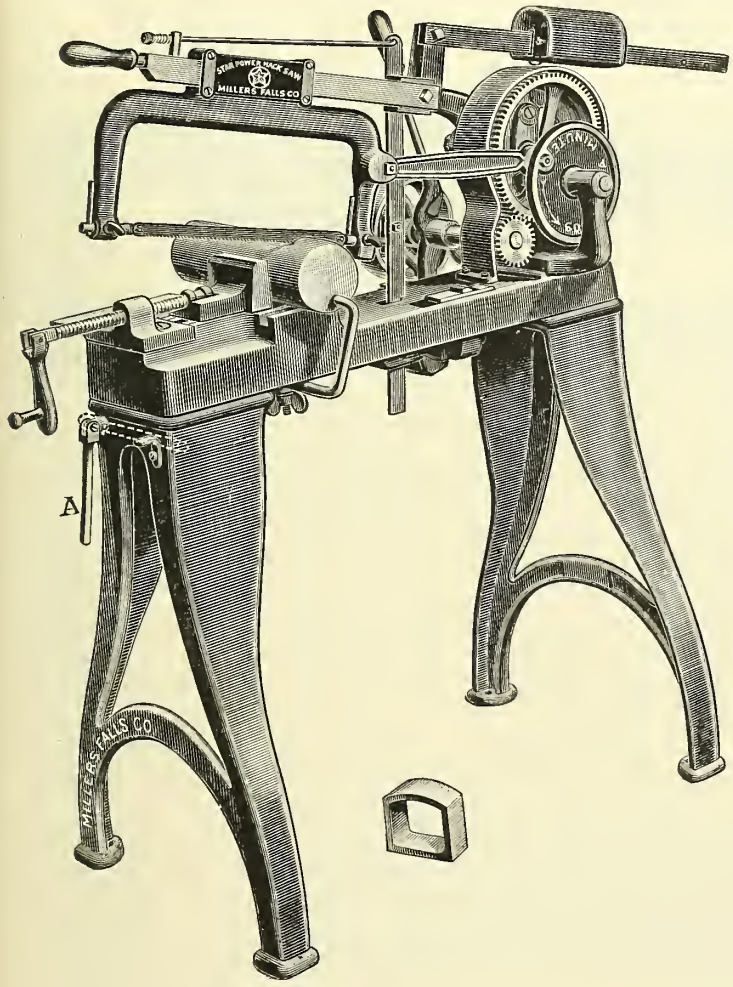
No. 1

This machine is made entirely of iron and steel, and is so constructed that it can readily and securely be fastened to any bench. Particularly suitable for cutting iron, steel or brass rod or tubing. The swivel vise with which it is supplied allows the operator to saw at an angle. The saw should be well strained in the frame when in use. Can also hold 8-inch blades when required. Vise opens 2 inches.

Each, with one 9-inch blade $3.50

Power Hack Saws

Star



Equipped with gear-drive, giving great steadiness to the stroke. Quick return movement of saw frame, thus saving time, the speed of back stroke being just twice that of cutting stroke.

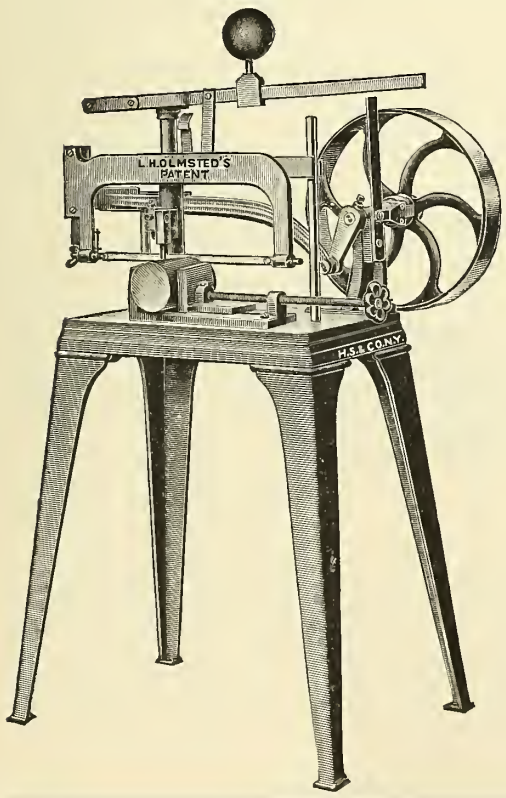
Saw frame slightly lifted on back stroke, prolonging the life of the blade.

Attachment provided which, by lifting lever A, as shown in illustration, holds the blade in suspension a trifle above the work. This permits the use of both hands in adjusting the work, or measuring it, etc. A support on the bed on the cut-off side of the blade to prevent the material from dropping off when cut is nearly finished. An adjusting screw in the head to take up any wear on the arm. A removable vise nut in the bed, which can be replaced in case of wear. Working parts placed under the bed away from dust and dirt.

Stops automatically when cut is made; ⅓ horse-power required.

Back geared 3 to 1. Height from floor to top of bed, 28 inches; floor space, 20x46 inches; strokes recommended per minute, 60; size of pulley, 2x6 inches; cutting capacity, 5x5 inches; length of blade, 12 inches; weight, boxed, 294 pounds; weight, crated, 258 pounds; weight, net, 215 pounds.

No. 90 Each..... $40.00



Olmsted Improved

This machine occupies small space and provides a firm support for saw frame and guide, thus insuring a true vertical cut through the work.

It has a swivel vise for holding the work with a pointer to indicate various angles. Is made entirely of steel and iron, working parts polished, other parts painted.

A stout post is firmly fixed in bedpiece and a sleeve, adjustable up and down, embraces post. To this sleeve is firmly secured a horizontal slideway upon which the saw frame slides. The head moves on a slideway that is supported by an upright post and extends into a deep vertical groove in the saw frame.

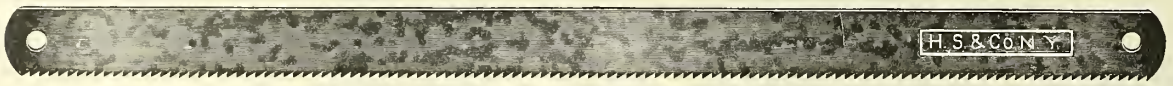
The entire length of the saw is in use when work the full capacity of the machine is being sawed.

Number	Type	Capacity Inches	Length of Saw Inches	Pulley Size Inches	R. P. M.	Space Required Inches	Weight Pounds	Each
*0	Bench	1¼x1¼	4½	6	175	7½x9	16	$8.50
1	Floor	2 x2	6	8	100	12 x15	40	15.00
2	Floor	3 x3	9	12	70	15 x20	75	23.00
3	Floor	4½x4½	12	14	50	20 x24	112	30.00
4	Floor	5 x6	14	12	60	20 x24	115	45.00
5	Floor	7 x8	17	14	50	24 x36	325	60.00

* No. 0, bench type, is the same design as illustration, except without legs.

Hack Saw Blades

H. S. & Co.



A high grade, dependable blade, recommended where quality is essential. These saws are made of a special tungsten alloy steel which gives maximum strength and hardness without brittleness. The milled teeth are sharp, with square-cutting points, set evenly and in such a manner that every tooth does its portion of the work. The "set" is just sufficient to insure a free, rapid and smooth cut, removing as little stock as possible.

In using Hack Saw Blades care should be taken to see that they are properly placed in the machine, having the saw stand plumb, with the tension depending on the size.

When used in power machines the blade should be placed with rake of the teeth forward, except when used in machines with draw cut, in which case the blade should be reversed. In hand-frames the blade should also be placed with the rake of teeth forward, bearing down on the forward stroke so that it will not slip, easing pressure on the return stroke, using about 50 strokes per minute. Do not bend sidewise.

When lubricant or compound is used, much greater efficiency can be obtained, as well as higher speed and longer life of the blade.

Coarse blades should not be used on light sheet-metal, tubing, very hard steel, copper, brass, etc.

The speed of saws should be varied according to the material being cut. Saws used in machines can be run to good advantage on soft steel about 100 strokes per minute, on annealed tool steel about 65 strokes per minute, on unannealed tool steel about 60 strokes per minute, when oil, compound or water is used; if saws run dry, about 50 strokes per minute should be the maximum.

Suggestions for Selecting Saws

In ordering, specify style, length, and purpose of use

Style A For general use—on cast-iron and steel, low carbon and cold-rolled steel and all solid metals under 16 gauge.

Style B For tubing, brass, copper and sheet-metal, light angle irons, wrought-iron pipe, 16 to 18 gauge.

Style C For brass tubing, sheet-steel and all metals thinner than 18 gauge.

Style D For heavy hand or light-power work. Will stand a considerable amount of hard work and rough usage.

Style E For use in large power frames.

Styles F and G. For use in high-speed power machines for heavy work.

Style H For extra heavy work in power machines.

Styles FA, FB, and FC. Hardened and tempered on cutting edge only, with flexible back. For general use. Especially recommended for difficult sawing where blade is liable to be strained or used by unskilled labor.

For Hand-Frames

Style A With regular teeth, 18 to inch.
Style B With fine teeth, 24 to inch.
Style C With extra fine teeth, 32 to inch.

Length, inches	6	7	8	9	10	11	12
Width, inch	7/16	7/16	7/16	7/16	1/2	1/2	1/2
Thickness, English Standard Gauge	24	24	24	24	23	23	23
Thickness, decimals of an inch	.022	.022	.022	.022	.025	.025	.025
Styles A, B, C, either style, gross	$7.00	7.50	8.00	9.00	10.00	11.00	12.00

For Heavy Hand-Frames and Light Power Machines

Style D 18 teeth, 5/8-inch wide, No. 21½ English Standard Gauge or .030 inch.

Length, inches	8	9	10	12	13	14
Style D, gross	$9.00	9.60	10.20	12.60	15.00	16.20

For Hand-Frames—Flexible Back

Style FA With regular teeth, 18 to inch.
Style FB With fine teeth, 24 to inch.
Style FC With extra fine teeth, 32 to inch.

Length, inches	6	7	8	9	10	11	12
Width, inch	7/16	7/16	7/16	7/16	1/2	1/2	1/2
Thickness, English-Standard Gauge	24	24	24	24	23	23	23
Thickness, decimals of an inch	.022	.022	.022	.022	.025	.025	.025
Styles FA, FB, FC, either style, gross	$7.00	7.50	8.00	9.00	10.00	11.00	12.00

For Medium-Weight Power Machines

Style E 14 teeth, ¾-inch wide, No. 21 English Standard Gauge or .032 inch.

Length (center to center of holes) inches	10	12	14	16	17
Style E, gross	$12.60	15.00	18.00	21.00	22.20

For High-Speed Power Machines

The lengths given refer to distance from center to center of holes, except in the 14-inch and 17-inch lengths, which are 13½ inches and 16½ inches, respectively, from center to center of holes.

Style F 14 teeth, ¾-inch wide, No. 18 English Standard Gauge or .049 inch.

Length, inches	12	14	16	17	18	19	20
Style F, gross	$18.00	21.60	25.20	27.60	29.40	31.50	33.50

Style G 12 teeth, 1-inch wide, No. 18 English Standard Gauge or .049 inch.

Length, inches	12	14	16	17	18	19
Style G, gross	$28.80	31.20	33.60	36.00	37.80	39.60
Length, inches	20	21	22	23	24	
Style G, gross	$42.00	44.20	46.20	48.00	50.40	

For Heavy Work in High-Speed Power Machines

Style H 12 teeth, 1-inch wide, No. 16 English Standard Gauge or .065 inch.

The lengths given refer to distance from center to center of holes, except in 17-inch size, which measures 16½ inches from center to center.

Length, inches	17	18	20	24
Style H, gross	$39.00	40.80	45.20	54.00

Hack Saw Blades

Star

Made with 14 teeth (regular) and 24 teeth (fine) to the inch. 14 teeth to the inch are supplied unless 24 teeth or fine is specified.



14 Teeth (Regular)

Adapted for all kinds of hack saw work and on all materials except thin stock and tubing with thin walls.



24 Teeth (Fine)

Specially designed for thin stock of all kinds, including tubing with thin walls.

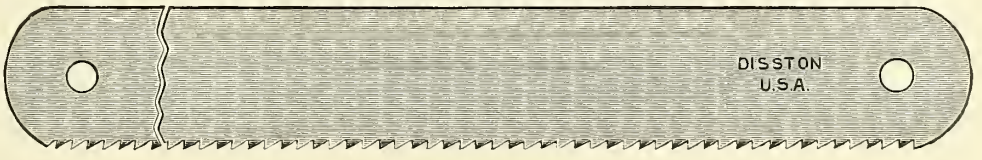
Made from the highest grade of steel, tempered to the utmost without injuring the toughness and toughened to the utmost possible without injuring the temper. Teeth perfectly milled and patent set; scientifically designed and absolutely correct as to width, thickness, and number of teeth to the inch.

Length of blade, inches	6	7	8	9	10	11	12	*12
Width of blade, inches	3/8	3/8	3/8	3/8	1/2	1/2	1/2	5/8
Weight of one gross, pounds	2 3/4	3	3 1/4	3 1/2	4 5/8	5	5 1/2	10
Dozen	$ .60	.65	.70	.75	.85	.95	1.00	1.35
Gross	7.00	7.50	8.00	9.00	10.00	11.00	12.00	16.00

*12x5/8-inch blade, made with 14 teeth only, for use in power machines.

Rail Hack Saw Blades

Disston



With Milled Teeth

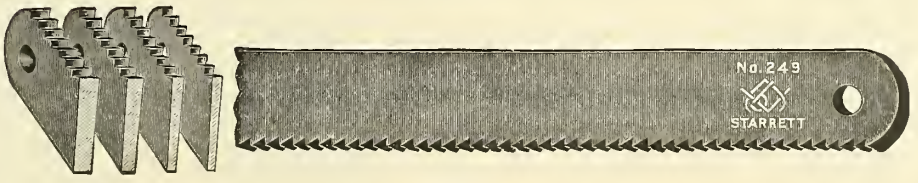
3/4-inch wide, 21 gauge, 15 points

Length of blade, inches	9	12	14	16	18
Dozen	$ .95	1.25	1.50	1.75	2.00

Length of blades measured from center to center of holes

Screw Slotting Saw Blades

Starrett



No. 249

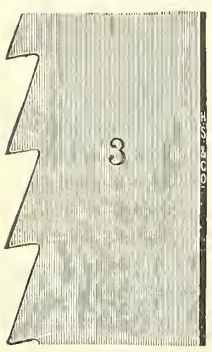
Made for cutting slots in screw-heads and can be used in any adjustable or 8-inch hack saw frame. They are hardened throughout, have 14 teeth to the inch, and taper in thickness from the teeth to the back, thus providing good clearance, which prevents binding and allows the blades to cut easily and quickly. All blades are 8 inches long by 1/2-inch wide. They are made in four different thicknesses, covering a wide range of work, and will be found invaluable in any machine shop.

No. 249A	Thickness at teeth, .049 inch, dozen	$1.50	Gross $18.00
No. 249B	Thickness at teeth, .065 inch, dozen	1.67	Gross 20.00
No. 249C	Thickness at teeth, .083 inch, dozen	1.83	Gross 22.00
No. 249D	Thickness at teeth, .109 inch, dozen	2.00	Gross 24.00
No. 249E	Set of four blades, one of each thickness,		Set .75

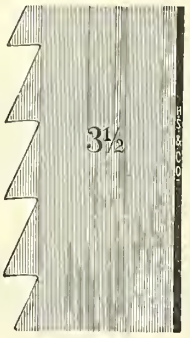
Narrow Band Saws

French

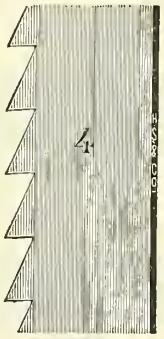
Genuine Peugeot Aîné



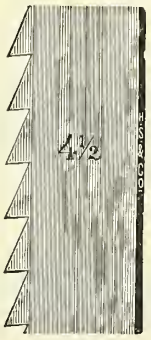
3 Points



3½ Points



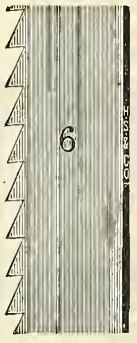
4 Points



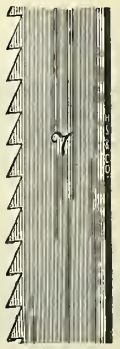
4½ Points



5 Points



6 Points

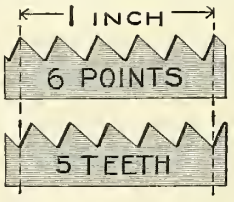


7 Points

The above cuts show the full sizes of the number of points per inch. In ordering, care should be taken not to confuse the points with the teeth, as there is one tooth less per inch than there are points. See illustration.



8 Points





9 Points

These are genuine celebrated Peugeot Aîné Band Saws, which we import direct, and of which we always carry a large and complete stock.

For general excellence of quality, for toughness and great endurance, finest of detail in manufacture, absolute uniformity, correctness of size and, in fact, for every-known point of necessity and perfection in Band Saws, these French Saws for years have been pre-eminently the best.

†Not Joined, Set or Filed

In Lengths of 19¾ Feet

Number	Width Inch	Gauge* Number	Points per Inch	Each
8	⅛	21	9	$1.06
9	3/16	20	6	1.06
10	..	..	7	1.06
13	3/16	21	6	1.06
14	..	..	7	1.06
17	¼	20	5	1.18
18	..	..	6	1.18
19	..	..	7	1.18
20	..	..	8	1.18
21	¼	21	5	1.18
22	..	..	6	1.18
23	..	..	7	1.18
24A	5/16	20	5	1.18
24B	..	..	6	1.18
24D	5/16	21	5	1.18
24E	..	..	6	1.18
24F	..	..	7	1.18
25	⅜	20	5	1.30
26	..	..	6	1.30
29	⅜	21	5	1.30
30	..	..	6	1.30
33	½	19	4½	1.50
34	..	..	5	1.50
37	½	20	4½	1.50
38	..	..	5	1.50
39	..	..	6	1.50
41	⅝	19	4	1.64
43	..	..	5	1.64
45	⅝	20	4	1.64
46	..	..	4½	1.64
47	..	..	5	1.64
49	¾	19	3½	2.12
50	..	..	4	2.12
54	¾	20	4	2.12
55	..	..	5	2.12
56	..	..	5	2.12
58	⅞	19	4	2.58
62	⅞	20	4	2.58
66	1	18	3¼	2.58
69	1	19	3	2.58
70	..	..	3½	2.58
71	..	..	4	2.57
74	1¼	18	3	3.16

In Lengths of 21½ Feet

Number	Width Inch	Gauge* Number	Points per Inch	Each
85	⅛	21	9	1.15
92	3/16	21	7	1.14
96	¼	20	6	1.28
97	..	..	7	1.28
99	¼	21	5	1.28
100	..	..	6	1.28
101	..	..	7	1.28
103	⅜	20	5	1.40
104	..	..	6	1.40
107	⅜	21	5	1.40
108	..	..	6	1.40
109	..	..	7	1.40
111	½	19	4½	1.66
112	..	..	5	1.66
115	½	20	4½	1.66
116	..	..	5	1.66
117	½	20	6	1.66
119	⅝	19	4	1.78
121	..	..	5	1.78
123	⅝	20	4	1.78
124	..	..	4½	1.78
128	¾	19	4	2.50
132	¾	20	4	2.50
134	..	..	5	2.50
140	⅞	20	4	2.80
147	1	19	3	2.80
148	..	..	3½	2.80
149	..	..	4	2.80
152	1¼	18	3	3.42
155	1⅜	18	3	4.18
160	1½	18	3	5.00

In Coils of 300 Feet

The following sizes can be furnished in any length desired up to 300 feet:

3/16-inch wide, 21 *gauge, 7 points per inch, per 100 feet..... $5.35
¼-inch wide, 21 *gauge, 6 points per inch, per 100 feet..... 5.95
⅜-inch wide, 21 *gauge, 5 points per inch, per 100 feet..... 6.55
½-inch wide, 20 *gauge, 5 points per inch, per 100 feet..... 7.75
⅝-inch wide, 19 *gauge, 4 points per inch, per 100 feet..... 8.35

*English Standard or Stubs Gauge

†Joining, Setting and Filing

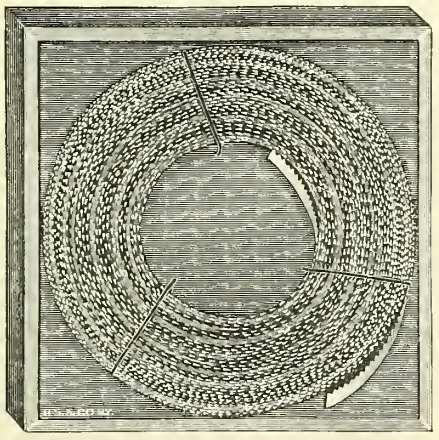
	Joining or Brazing					Setting	Filing
Width, inches.....	⅛ to ½	⅝ to ⅞	1 to 1¼	1⅜ to 1½	1¾ to 2½		
Each.....	$ .30	.40	.50	.60	1.05	Per foot.....$ .01½	Per foot.....$ .01½

For general information, see page 512

Narrow Band Saws

Disston

Made of Disston high-grade crucible steel, hardened and tempered by special processes.
Give full particulars when ordering as to width, gauge, points per inch, class of work to be done, etc.



Furnished Set and Filed, Not Joined

Width Inches	*Gauge	Per Foot	For Joining Each
1/4	21 or 22	$ .13	$ .15
3/8	21 or 22	.14	.15
1/2	21 or 22	.15	.15
5/8	21 or 22	.17	.20
3/4	20 or 21	.19	.20
7/8	20 or 21	.21	.20
1	20 or 21	.23	.25
1 1/8	20	.25	.25
1 1/4	19 or 20	.27	.25
1 3/8	19 or 20	.30	.30
1 1/2	19 or 20	.33	.30
1 3/4	19	.36	.30

Tempered for Sawing Metal, add 50 per cent to above list

Soft Back, Same Value as "Soft Back"

Hardened on tooth-edge only

Width Inch	*Gauge	Points	Per Foot	For Joining Each
1/4	23	16, 19, 22 or 26	$ .08 1/2	$ .15
3/8	23	16, 19, 22 or 26	.10 1/2	.15
1/2	21	14, 16, 18 or 22	.11 1/2	.15
1/2	23	16, 19, 22 or 26		

Width Inch	*Gauge	Points	Per Foot	For Joining Each
5/8	21	14, 16, 18 or 22	$ .13 1/2	$ .20
5/8	23	14, 16, 18 or 22		
3/4	21	14, 16 or 18	.15 1/2	.20

Wide Band Saws

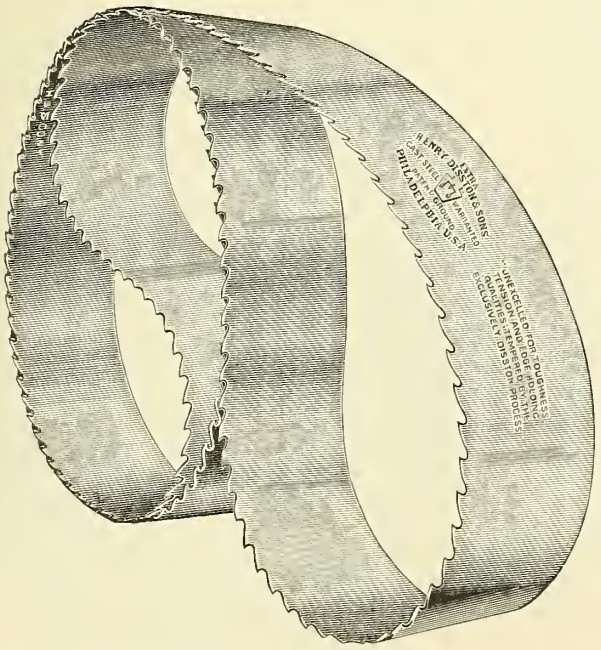
Disston

Made of Disston high-grade crucible steel. Hardened and tempered by special processes

Instructions for ordering

When ordering state whether right or left-hand, gauge or thickness, space, depth and shape of teeth, straight or crowning back. If the saws are to be crowning on back, we supply them 1/64-inch crowning to each five feet in length, unless otherwise instructed.

Furnished Set, Sharpened and Joined Complete



Width Inches	*Gauge	Per Foot
2	18 to 20	$ .80
2 1/2	18 to 20	1.00
3	18 to 20	1.20
3 1/2	18 to 20	1.40
4	17 to 19	1.60
4 1/2	17 to 19	1.80
5	17 to 19	2.00
5 1/2	17 to 19	2.20
6	17 to 19	2.40
7	16 to 18	2.80
8	14 to 16	3.20
9	14 to 16	3.60
10	14 to 16	4.00
11	14 to 16	4.50
12	13 to 15	5.00
13	13 to 15	6.00
14	13 to 15	7.00
15	12 to 14	8.50
16	12 to 14	10.00
17	12 to 14	14.00
18	12 to 14	18.00

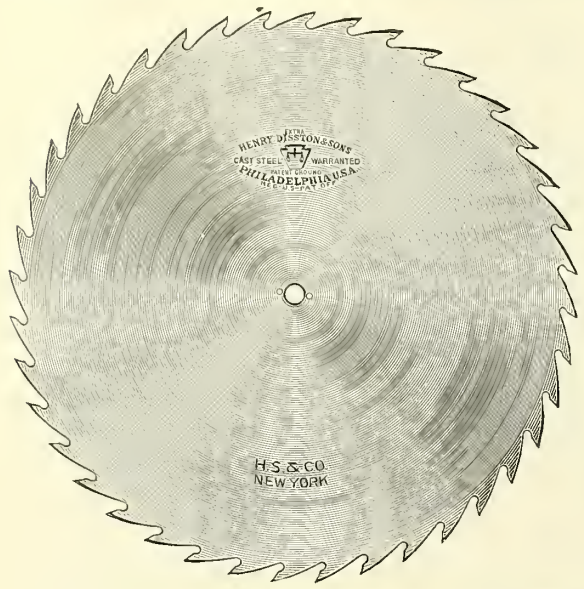
*English Standard or Stubs Gauge.

Saws of odd widths, not listed, take price of next wider size listed.
Saws of heavier gauge than listed, add 5 per cent. to list for each gauge heavier.
No extra charge for saws one or two gauges thinner than list; when more than two gauges thinner, add 5 per cent. to list for each gauge.

Double-Edge: List price per foot, all widths, advance 10 per cent. over list prices of single-edge saws as above.

Toothed Blanks, same price as finished saws.

For general information see page 512



Solid Tooth Circular Saws

Disston

Extra quality, patent ground and tempered. Superior workmanship guaranteed. (See page 512)

When ordering Circular Saws be particular to state—
Diameter in inches.
Thickness or Gauge at center (Stubs or English Standard Gauge).
Thickness or Gauge at rim.
Number of Points to inch.
Size of Mandrel Hole.
Size of Pin Holes (if any).
Distance between Pin Holes from center to center.
Kind of Lumber to be sawed.
Whether for Crosscut or Rip Sawing.
Circular Saws of uneven diameters not listed, take price of next larger size listed.
Circular Saws for Bone, Horn and Ivory, add 50 per cent. to list.
No extra charge for Saws one gauge thicker than list.
No extra charge for Saws one, two, or three gauges thinner than list; when more than three gauges thinner, add 5 per cent. to list for each gauge.
Circular Saws 48 inches and larger, thinner than 10 gauge, not warranted.
Circular Saws 42 inches or less in diameter beveled one gauge without extra charge; 44 inches or larger, beveled two gauges without extra charge.
Circular Saws hollow-ground or concaved, add for each gauge hollow-ground or concaved double the price listed for beveling.

Diameter Inches	Thickness Gauge*	Size of Hole Inches	Each	Extra for Each Gauge Heavier	Beveling New Saws (Grinding or Beveling Old Saws Extra) Per Gauge	Extra for Setting and Sharpening Rip	Extra for Setting and Sharpening Cross-Cut
1	24	3/8	$1.00	$ .01	$ .06	$ .03	$ .04
1 1/2	24	3/8	1.00	.01	.07	.03	.05
2	23	3/8	1.00	.01 1/2	.08	.04	.05
2 1/2	22	3/8	1.00	.02	.09	.04	.06
3	21	1/2	1.00	.02 1/2	.10	.05	.06
3 1/2	20	1/2	1.00	.03	.12	.05	.07
4	19	3/4	1.20	.03	.14	.06	.07
5	19	3/4	1.50	.04	.16	.06	.08
6	18	3/4	1.80	.05	.18	.07	.10
7	18	3/4	2.10	.06	.20	.08	.11
8	18	7/8	2.40	.08	.22	.10	.13
9	17	7/8	2.80	.10	.25	.11	.14
10	16	1	3.30	.12	.28	.12	.16
11	16	1	3.90	.16	.30	.13	.18
12	15	1	4.40	.20	.35	.15	.20
14	14	1 1/8	5.30	.25	.40	.18	.23
16	14	1 1/8	6.50	.30	.50	.20	.25
18	13	1 1/4	8.00	.40	.60	.23	.28
20	13	1 5/16	9.50	.50	.70	.25	.32
22	12	1 5/16	11.50	.60	.80	.28	.35
24	11	1 3/8	13.50	.70	.90	.31	.40
26	11	1 3/8	16.00	.85	1.05	.35	.45
28	10	1 1/2	18.50	1.00	1.20	.38	.50
30	10	1 1/2	21.00	1.15	1.30	.42	.55
32	10	1 5/8	24.00	1.30	1.40	.45	.60
34	9	1 5/8	27.00	1.50	1.55	.50	.65
36	9	1 5/8	31.00	1.80	1.70	.55	.70
38	9	1 5/8	35.00	2.00	1.85	.60	.75
40	9	2	41.00	2.30	2.00	.65	.80
42	8	2	47.00	2.60	2.20	...	.85
44	8	2	55.00	3.00	2.40	...	.90
46	8	2	65.00	3.50	2.60	...	1.00
48	8	2	75.00	4.00	2.80	...	1.10
50	7	2	85.00	4.50	3.00	...	1.20
52	7	2	95.00	5.00	3.25	...	1.30
54	7	2	105.00	6.00	3.50	...	1.40
56	7	2	120.00	7.00	3.75	...	1.50
58	7	2	135.00	8.00	4.05	...	1.60
60	6	2	150.00	9.00	4.35	...	1.70
62	6	2	170.00	10.00	4.65	...	1.80
64	6	2	190.00	12.00	5.00	...	1.90
66	6	2	210.00	15.00	5.35	...	2.00
68	5	2	235.00	18.00	5.75	...	2.10
70	5	2	265.00	21.00	6.15	...	2.20
72	5	2	300.00	24.00	6.55	...	2.30
74	5	2	340.00	27.00	7.00	...	2.40
76	5	2	390.00	30.00	7.50	...	2.50
78	5	2	465.00	34.00	8.10	...	2.60
80	5	2	550.00	38.00	8.80	...	2.70
82	5	2	640.00	43.00	9.60	...	2.80
84	5	2	730.00	48.00	10.50	...	3.00

*English Standard or Stubs Gauge.

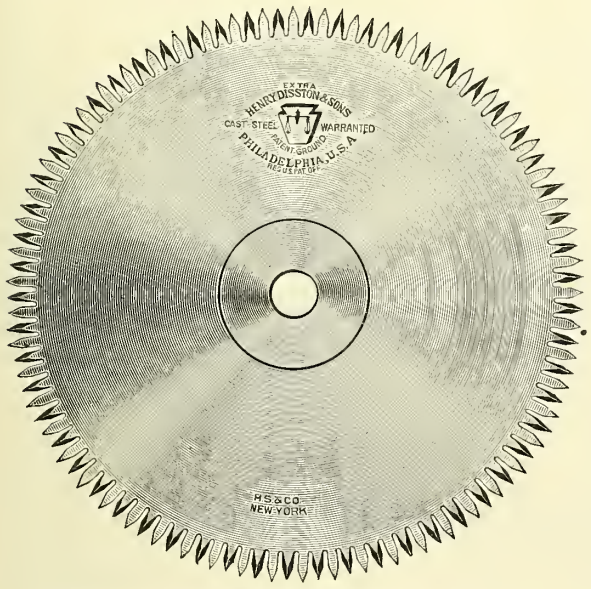
Inserted Tooth Circular Saws furnished at special prices on receipt of information as to gauge, bevel and style of tooth, or work to be done. Inserting chisel teeth in old circular saws at special prices.

Circular Mitre Saws

Disston

Sharpened, ready for use. Taper ground for clearance to run without set

With Plain Teeth



Especially adapted for smooth cutting, such as cabinet and cigar-box work.

With Cleaner Teeth



Cuts as smooth for ripping as for cross-cutting. A greater number of cleaner teeth are put in for ripping than for cross-cutting.

When ordering, give size of center hole, also diameter of collars on mandrel

Diameter Inches	Gauge at Collar Line	Gauge at Teeth and Hole	Extra for Each Gauge Heavier	Extra for Each Additional Gauge Beveling	Each
4	21	18	$ .03	$ .14	$3.00
5	20	17	.04	.16	3.60
6	20	17	.05	.18	4.20
7	19	16	.06	.20	4.80
8	19	16	.08	.22	5.40
9	18	15	.10	.25	6.00
10	18	15	.12	.28	6.70
11	17	14	.16	.30	7.50
12	17	14	$ .20	$ .35	$ 8.30
14	16	13	.25	.40	9.80
16	16	13	.30	.50	11.60
18	15	12	.40	.60	13.70
20	15	12	.50	.70	16.20
22	14	11	.60	.80	19.00
24	14	11	.70	.90	22.00

Novelty or Combination Saws

Disston

Sharpened, ready for use. Taper ground for clearance, to run without set

For Crosscutting



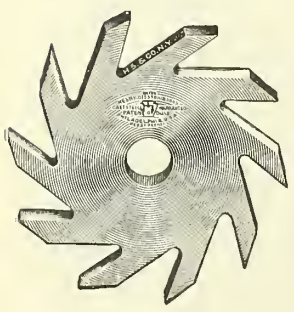
For Ripping



These two saws are especially adapted for cutting hard wood where a clean smooth cut is required. Will cut as smoothly for cross-cutting as for ripping. When made for ripping, three crosscut teeth (instead of five) are combined with one cleaner, thereby permitting the insertion of more cleaner teeth. List prices and instructions for ordering same as above.

Grooving Saws

Disston

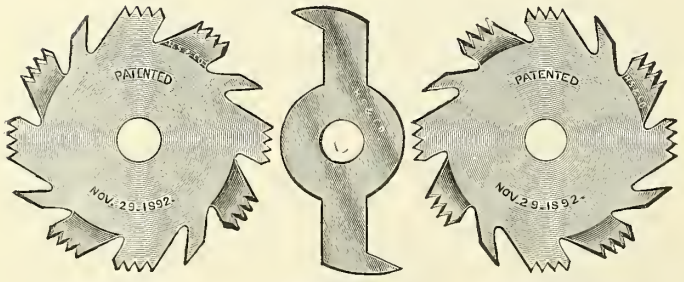


Thickness, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Space of teeth, inches	1/2	1	1	1 1/4	1 1/2	1 3/4	2	2	2
Diameter, 3 inches	$1.60	2.20	4.00	4.60	5.20	5.80	6.40	7.50	8.50
Diameter, 4 inches	1.80	2.50	4.80	5.50	6.20	6.80	7.60	8.80	10.00
Diameter, 5 inches	2.00	2.80	5.60	6.40	7.20	8.00	8.80	10.20	12.00
Diameter, 6 inches	2.30	3.20	6.40	7.30	8.20	9.10	10.00	11.60	14.00
Diameter, 7 inches	2.70	3.70	7.20	8.20	9.20	10.20	11.20	13.20	16.00
Diameter, 8 inches	3.20	4.30	8.00	9.20	10.40	11.60	12.70	15.00	18.00
Diameter, 9 inches	3.80	5.00	9.00	10.30	11.60	12.90	14.30	16.80	20.00
Diameter, 10 inches	4.40	5.80	10.00	11.40	12.90	14.40	15.90	18.80	22.00
Diameter, 11 inches	5.00	6.70	11.00	12.60	14.20	15.90	17.60	20.80	24.00
Diameter, 12 inches	5.70	7.70	12.00	13.80	15.60	17.40	19.20	23.00	26.00
Diameter, 14 inches	7.00	9.80	14.00	16.00	18.00	20.00	22.00	26.00	30.00
Diameter, 16 inches	8.40	12.00	16.00	18.30	20.60	22.90	25.20	30.00	35.00

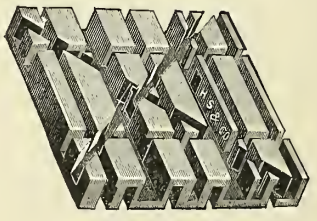
Bevel Grooving Saws, add 10 per cent. to above prices.
Grooving Saws with teeth shaped and backed off, add 50 per cent. to above prices.
Special Grooving Saws made to order, special prices.

Adjustable Grooving Saws or Dado Heads

Huther



Outside Cutter — Inside Cutter — Outside Cutter



Showing Grooves Cut

Arranged in Sets as follows:

No. 1 Set ..... cuts 1/8 to 3/8 by 1/8 inch
No. 2 Set ..... cuts 1/8 to 5/8 by 1/8 inch
No. 3 Set ..... cuts 1/8 to 3/4 by 1/16 inch
No. 4 Set ..... cuts 1/8 to 1 by 1/16 inch
No. 5 Set ..... cuts 1/8 to 1 1/2 by 1/16 inch
No. 6 Set ..... cuts 1/8 to 2 by 1/16 inch
No. 7 Set ..... cuts 1/8 to 3 by 1/16 inch
No. 8 Set ..... cuts 1/8 to 4 by 1/16 inch

Special sets made to cut from 4 to 8 inches wide.
Prices on application.
As outside cutters are 1/8 inch thick, 3/16 inch groove cannot be cut.

For cutting any width groove from 1/8 to 4 inches or over.

This groover consists of two outside saws, each of which is a groover in itself, and as many inside cutters as required.

The inside cutters are made 1/16, 1/8 and 1/4-inch thick, so that any width groove measurable in sixteenths may be cut.

The outside cutters are made 1/8-inch thick.

It will cut a perfect groove, either with or across the grain, and will not leave a rough edge, as is the case with ordinary groovers.

The outside cutters can be used singly, together, or in connection with as many or as few inside cutters as required to cut the necessary width groove.

Diameter, inches	6	7	8	9	10	11	12	14	16	18	20
No. 1 Set	$5.80	6.80	7.60	8.35	9.15	9.75	10.85	13.30	15.80	18.30	19.80
No. 2 Set	7.05	8.15	9.05	9.90	10.80	11.60	12.95	15.40	17.90	20.40	22.90
No. 3 Set	8.65	9.85	10.85	11.90	13.00	13.90	15.45	18.00	20.50	23.00	25.50
No. 4 Set	9.90	11.20	12.30	13.45	14.65	15.75	17.55	20.00	22.50	25.00	27.50
No. 5 Set	12.40	13.90	15.20	16.55	17.95	19.45	21.75	24.25	26.75	29.25	31.75
No. 6 Set	14.90	16.60	18.10	19.65	21.25	23.15	25.95	28.50	31.00	33.50	36.00
No. 7 Set	20.50	22.60	24.50	26.45	28.45	30.75	34.35	38.90	43.80	47.90	54.00
No. 8 Set	26.10	28.60	30.90	33.25	35.65	38.35	42.75	49.30	54.60	62.30	72.00

In ordering, state the number of set, or when special, the greatest width of groove to be cut, diameter of groover, and size of hole wanted.
Extra inside cutters can be had at any time. Prices on application.

Circular Knives

For Cork, Leather, Paper or Cloth

Disston

When ordering specify diameter, gauge, size of hole, whether beveled on one or both sides, depth of bevel and material to be cut. Knives two gauges heavier than list are supplied without extra charge. Five per cent. is charged for each additional gauge over two.



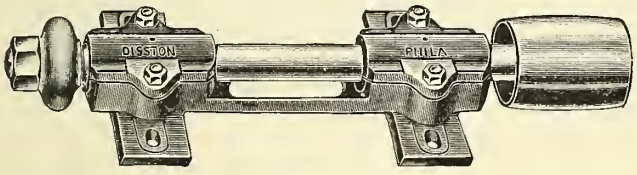
14 gauge	To 10 inches	per inch in diameter	$ .35
12 gauge	11 and 12 inches	per inch in diameter	.40
11 gauge	13 and 14 inches	per inch in diameter	.45
10 gauge	15 and 16 inches	per inch in diameter	.50
9 gauge	17 and 18 inches	per inch in diameter	.55
9 gauge	19 and 20 inches	per inch in diameter	.60
8 gauge	21 and 22 inches	per inch in diameter	.65
8 gauge	23 and 24 inches	per inch in diameter	.70
7 gauge	25 and 26 inches	per inch in diameter	.75
7 gauge	27 and 28 inches	per inch in diameter	.80
6 gauge	29 and 30 inches	per inch in diameter	.85
6 gauge	31 and 32 inches	per inch in diameter	.95

Mandrels for Circular Saws

With Self-oiling Boxes

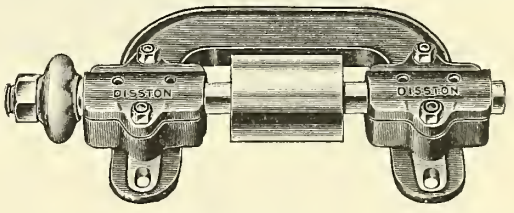
Disston

Shafts are of steel, accurately turned, possessing a safe margin of strength to prevent springing or undue vibration under the heaviest feed or pressure that may be put on the saw they are designed to carry. All Collars or Flanges are of sufficient diameter to give proper support to the saw, accurately machined and recessed, giving a perfect bearing on the blade. The Pulleys are turned up after being placed on shaft. The Boxes, extra long and heavy, are of grey iron, well fitted and babbitted, insuring true balance and smooth running.



Nos. 301 to 310

Connected Box with Pulley on End, made with pulley on right-hand side, with left-hand thread, unless otherwise ordered.



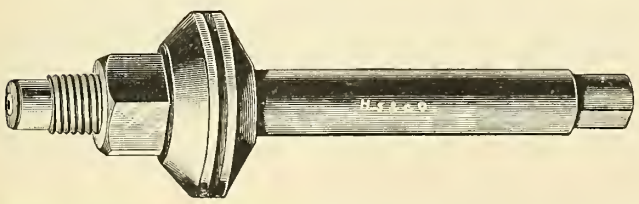
Nos. 201 to 210

Yoke with Pulley in center.

Number	Length over all Inches	From Center to Center of Boxes Inches	Each	Diameter of Shaft Inches	Hole in Saw Inches	Diameter of Pulley Inches	Face of Pulley Inches	Diameter of Collar Inches	Number	Length over all Inches	From Center to Center of Boxes Inches	Each
	Nos. 201 to 210			These dimensions for all Disston Mandrels on this page						Nos. 301 to 310		
201	15½	8⅜	$7.00	1 1/16	1	2½	3½	2½	301	19	8¼	$6.50
202	17¼	9 13/16	7.75	1 3/16	1⅛	3	4	3	302	21½	9¾	7.25
203	19½	11¼	9.00	1 5/16	1¼	3½	4½	3½	303	23¾	11½	8.75
204	21¾	12⅞	10.00	1 7/16	1 5/16	4	5	4	304	26¾	12¾	9.75
205	24¼	14 13/16	11.25	1 7/16	1 5/16	4½	5½	4½	305	29¾	14¾	11.00
206	26¼	16¾	12.50	1 7/16	1⅜	5	6	5	306	32¼	16¾	12.25
207	28½	18⅞	13.25	1 7/16	1⅜	5½	6½	5½	307	35	18¾	13.00
208	30½	20½	16.00	1 9/16	1½	6	7	6	308	37⅝	20½	15.50
209	33	22	22.00	1 11/16	1⅝	7	8	6	309	41	22	21.50
210	35	23½	23.50	1 13/16	1⅝	8	8	6	310	42¾	23½	23.00

Lathe Arbors

B-M. Co.



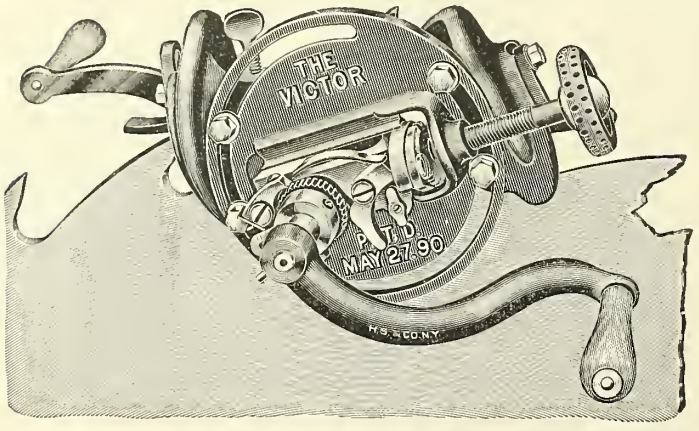
Made of tool steel, nuts and centers hardened.
For small circular saws and grinding wheels.

For diameter hole, inch	¼	5/16	⅜	½	⅝	¾
Each	$ .80	1.10	1.40	1.60	2.20	2.40

Saw Gummers

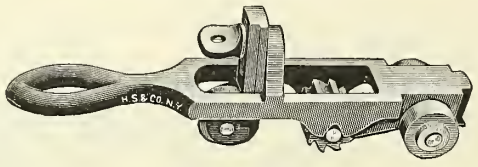
Disston

Victor Self-Feeding



Cutter Grinder

For Holding the Cutter of Saw Gummers in Position During Process of Sharpening



The stone should have a perfectly straight face and turn from the operator. Lower the adjustable frame of grinder until the cutter touches the stone, then adjust the spring in proper position.

Furnished with No. 1 shaft for cutters, 1 inch to 1¼ inches.
Furnished with No. 2 shaft for cutters ¾ inch and ⅞ inch.
Furnished with No. 3 shaft for cutters, ⅜ inch and ½ inch.
Give full particulars when ordering.

Each..... $1.25

Directions for Use

The lighter parts are malleable iron, with steel shaft, combining strength and lightness. The Victor will gum all circular saws as well as mill and cross-cut. Illustration shows Victor at work on 60-inch circular saw.

Place the gummer on saw with feed-screw towards the front and carriage drawn well back; cutter resting on back of tooth next to gullet to be gummed. Feed-screw should point in direction the cutter is to cut. Clamp the machine to saw by tightening the two clamp-screws at bottom of clamps.

Set the notch of the brass gauge over point of tooth and secure by means of the screw. To adjust for uniform position on each tooth set the screw or "L" gauge on teeth, using whichever best suits the saw being gummed. Throw pawl into ratchet wheel on cutter-shaft, which will prevent cutter turning backwards. The cutter is liable to be broken if reversed while in gullet.

Stand behind the saw, try the crank and if it does not turn freely, back the cutter until it does; then throw the feed-pawl into circular rack on feed-screw and gum until gullet is chambered to required depth.

Then set the stop under cutter-shaft to rocking-lever to prevent feed-pawl from turning feed-screw. This will cause the feed to stop at this point and make all gullets the same depth. The first tooth being gummed, throw out feed-pawl and screw cutter to starting point. Loosen clamp-screws and move gummer to next tooth, placing gauge on point as before; screw up clamp-screws, throw in feed-pawl and gum until stop is reached, which was adjusted on first tooth gummed.

If all gauges and stops are adjusted on first tooth, all gullets will be of the same depth. If gummer at first does not point in proper direction, loosen four screws that hold clamp to circular plate and turn plate until feed-screw reaches proper position. Tighten the four screws and clamp machine to saw. Will gum at any angle from horizontal to perpendicular.

No. 1, or large shaft, suitable for 1, 1⅛, 1¼, 1⅜ and 1½-inch cutters.
The No. 2, or medium shaft, suitable for ½, ⅝, ¾ and ⅞-inch cutters.
The No. 3, or small shaft, for ⅜-inch cutters.

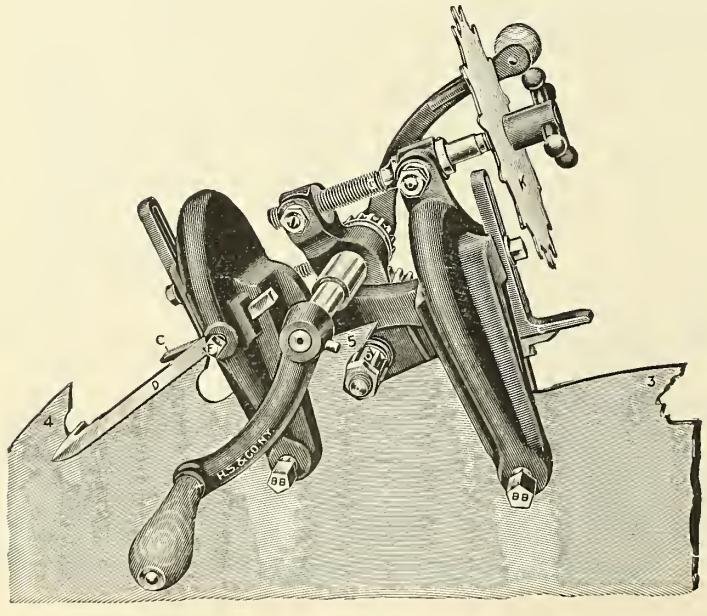
When Ordering Gummers State Size of Cutters Wanted

Extra shafts can be furnished at $2.00 each so that all above sizes may be used in one machine if so desired.

Complete with one cutter-shaft, cutter-grinder and three cutters, each..... $18.00

Double-Geared No. 1

Or Chambering Machine for Circular Saws 40 Inches and Larger



Directions for Using

Run cutter back by means of screw G as far as necessary; place machine on saw, with cutter close up in chamber of tooth to be gummed.

If teeth are regular and same distance apart, start cutter in any chamber; but if they are irregular, make them even by commencing in the smallest tooth. After gumming a few times teeth must become regular. E is a set screw to regular depth of gullet. Fasten machine to saw by means of screws BB, and proceed to gum first tooth, one point of star being struck at each revolution by projection on handle until arrested by set-screw E. Remove machine to next tooth, after running cutter back and proceed as before.

Cutter is arranged to slide on its axis; when one portion is dull, remove a washer from back to front, and so continue until whole face of cutter is dull.

The ratchet by which cutter is moved prevents any back motion.

Including cutter-grinder (shown above) and 3 cutters of any of the following sizes: 1, 1⅛, 1¼, 1⅜ and 1½ inches. When ordering, specify the size wanted.

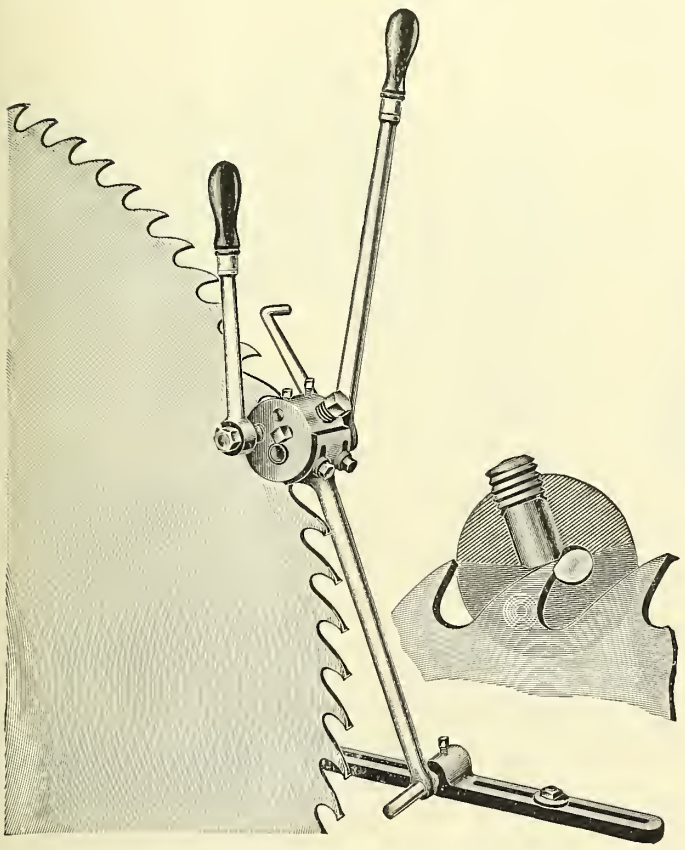
One-inch cutter is the smallest size that can be used on this gummer.

Each..... $20.00

Swages

Disston

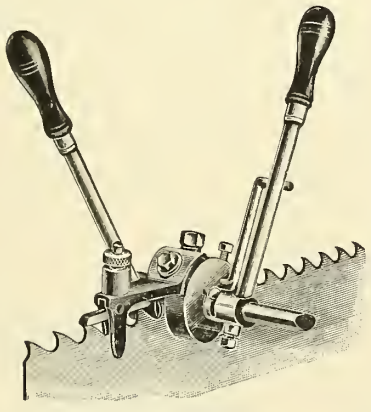
Eccentric



For Circular Saws

When ordering send sketch of teeth.

No. 0 Eccentric Swage, adapted for circular saws from 6 to 12 gauge in thickness, each $50.00

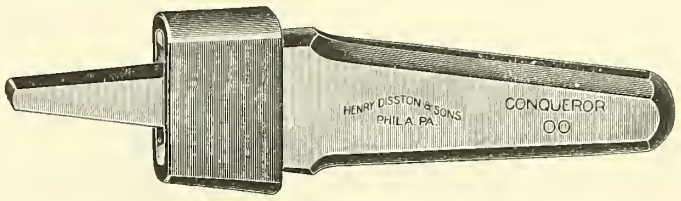


For Band Saws

By use of extra brackets, can be used for cylinder and circular saws. Made in three sizes. No. 1 adapted for saws 12 to 16 gauge; No. 2, 16 to 19 gauge; No. 3, 20 gauge and lighter. When ordering, state thickness of saws on which Swage is to be used and send sketch of teeth.

	Each
No. 1	$40.00
No. 2	35.00
No. 3	30.00

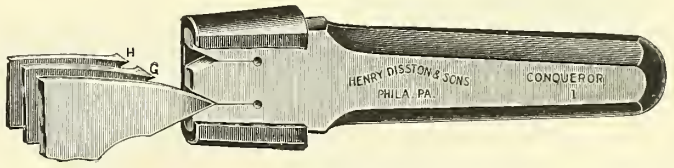
Conqueror



Jumper or Upset

The projecting tongue, resting on face of tooth, acts as a guide to obtain the proper angle for swaging. Indispensable to any sawyer who uses the spread set.

No. 00 As illustrated with tongue projecting $\frac{9}{16}$ inch, each $3.50
No. 0 With tongue projecting $\frac{1}{2}$ inch, each 3.00



The upper opening being rounded on the bottom, takes its bearing on center of tooth, spreading and shaping it as shown on section of tooth H. The lower opening (in which tooth is shown in illustration) is used for squaring up and leaves the tooth as shown at G.

The bottom of openings being slotted it is impossible to blunt or injure the fine cutting edge of the tooth.

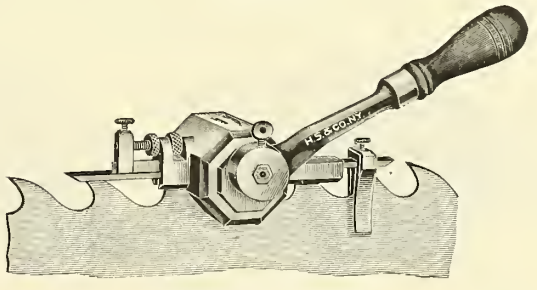
Hardened before the sleeve is driven on, when the hardening composition passes freely through slots at bottom of openings, thus insuring even and correct hardening in that portion of the swage where it is most required.

	Each
No. 1 For large Circular Saws	$2.75
No. 2 For small Circular and Mill Saws, not heavier than 10 gauge	2.25
No. 3 For small Circular and narrow Band Saws, not heavier than 15 gauge	1.75
No. 4 For Band Saws	2.25

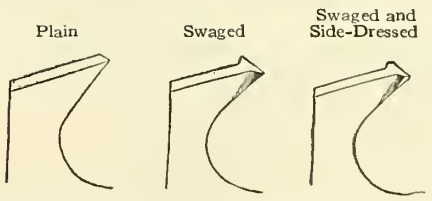
Packed one in wooden box.

Swage Shaper

Disston



For Band and Gang Saws



This shaper can be taken apart by loosening three thumb-screws. The dies fit snugly in body, and will not twist or come out of line.

All wearing parts are best tool steel, accurately machined and milled to a perfect fit.

Designed to make all teeth of uniform width and give them the necessary "back" and "under-cut" for proper clearance and smooth sawing. Readily adjusted to rapidly shape teeth on saws of any thickness.

Each $28.00

When ordering, state thickness of saw and space of teeth on which shaper is to be used

Circular Saw Guards

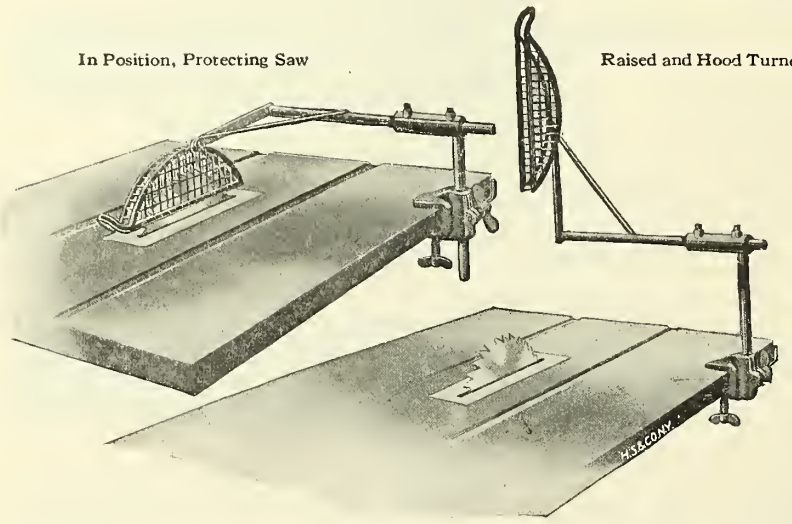
Wire Hood

These guards are substantially made and have no complicated parts to get out of order. All parts of the saw remain in plain view. Maximum protection is afforded, while the operation is not interrupted in any way. Easily and rapidly adjusted and removed without use of wrenches or other tools.

Table Attached Type

In Position, Protecting Saw

Raised and Hood Turned Up



Can Also Be Swung Aside

No. 1

This guard has been designed for use on the smaller size tables. It may be used for rip or cut-off work of limited width and is attached to right side of table with pivoted steel thumb-screw. The vertical shaft is secured by a clamping handle, one turn of which releases the shaft, permitting hood to be raised or lowered, or entire guard to be turned out of the way. Equipped with a horizontal shaft having reach of 20 inches from side of table and wire hood for saws 16 inches in diameter and under, or when ordered with 10, 12 or 14-inch hood.

Each $9.00

No. 2

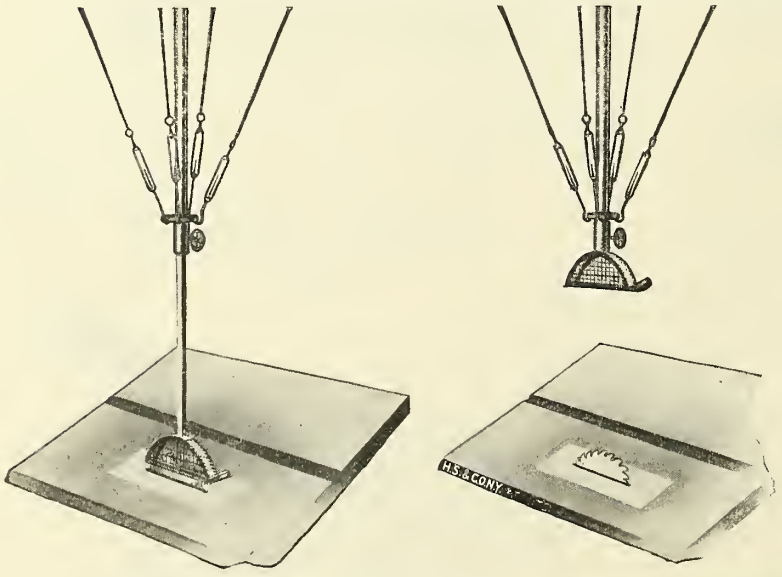
Same general design as No. 1, except heavier in construction, and is equipped with 26-inch horizontal shaft.

With 10, 12, 14 or 16-inch hood, each $10.00
With 18-inch hood, each 10.50

When ordering, state diameter of largest saw used, also distance from saw to right side of table.

Ceiling Suspended Type

Leaving table entirely clear for wide work, furnished complete with the exception of the long pipe from ceiling, which is standard 1-inch pipe



No. 3

This guard can be used on stationary, sliding or tilting tables and will take saws up to 18 inches in diameter. Is perfectly rigid and suspended directly over the saw. Hand wheel screw, adjustable by one turn, permits rapid adjustment of hood to any desired position. Guard may be raised 24 inches from table, which is always clear for wide work.

With 10, 12, 14, 16 or 18-inch hood, each $10.00

No. 4

This Guard operates on double pipes and with a counter weight, which makes it automatic for all thicknesses of material. A drop-forged dog, fitted to back of hood, prevents fly-backs.

With 10, 12 or 16-inch hood, each $14.00
With 18 or 20-inch hood, each 15.00
With 24-inch hood, each 17.00

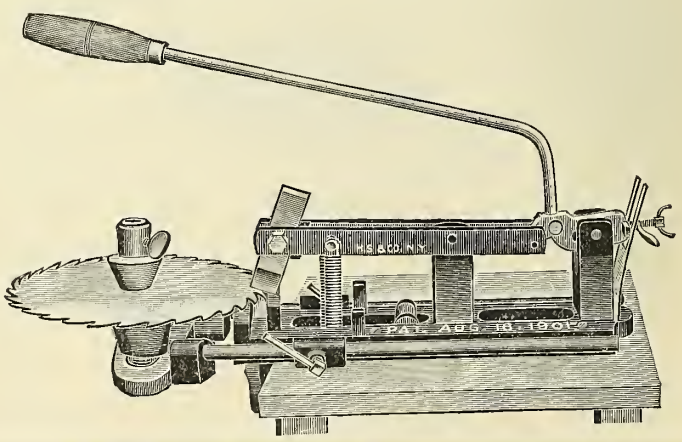
When ordering, state diameter of largest size saw used.

Saw Setting Machine for Circular Saws

H. S. & Co.

The objection heretofore to Circular Saw Setting Machines has been that it was almost impossible to get a uniform stroke and bevel. This machine overcomes this objection. The hammer can be adjusted to come down with a light or heavy blow, according to the gauge or thickness of the saw and the angle can also be regulated to accommodate any bevel. After the machine is once set or adjusted, every blow will be uniform, resulting in a properly set saw

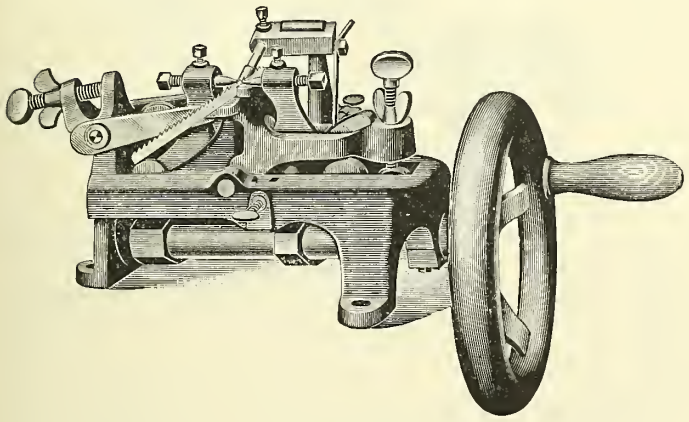
No. 1 For saws 3 inches to 10 inches diameter, each $12.50
No. 2 For saws 5 inches to 24 inches diameter, each 15.60



For Circular Saw Filing Machine, see page 542

Saw Setting Machines for Narrow Band Saws

H. S. & Co. Improved



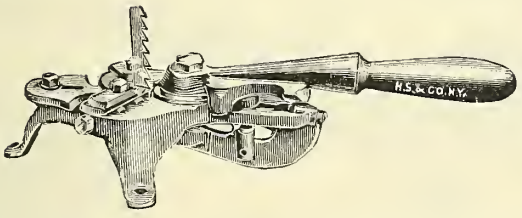
This device will set saws from ⅛ inch to 1½ inches wide and is very rapid. Being mechanical in action, no skill is required and anyone can set a saw in a very few minutes, just as perfectly as hand-setting, which requires a much longer time.

Vise automatically grips the blade while tooth is being set, which prevents twisting of narrow saws.

Each $21.00

For band saw filing machine and combination setting and filing machines see page 542.

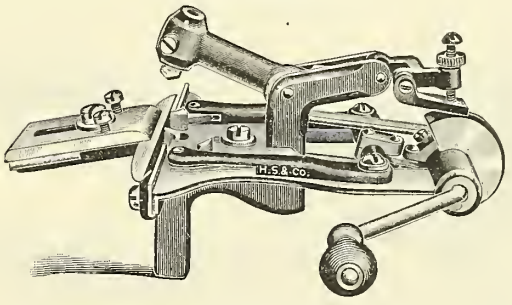
Little Giant



This device is made to set a saw while it is on the machine or hanging over a peg. It sets both sides of the saw at one operation and in a very few minutes.

No. 12, each $10.00

Cunningham

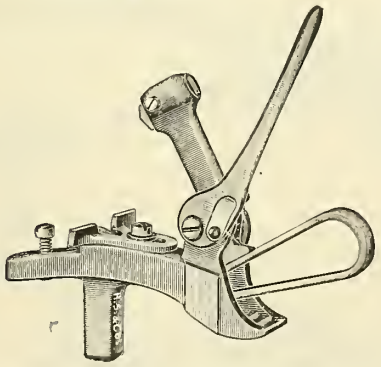


To set this machine, raise hammer perpendicularly; loosen large screw in jaw; place saw with tooth resting on anvil in proper position; put thin slide against back of saw; draw cap about ⅛ inch over back of saw and tighten large screw in jaw; the amount of set is regulated by turning a screw in lever on cam at back of machine. Will set all saws up to 2¼ inches in width.

No. 11, each $12.50

Saw Sets

Spring Lever

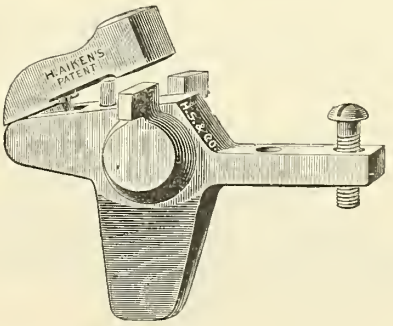


This little set is designed especially for all kinds of hand saws, also circular saws, to sixteen gauge. It will set all sizes of teeth, and do perfect and satisfactory work.

The amount of set is varied by spring at back and screw in front.

Dozen $12.00

Aiken Genuine



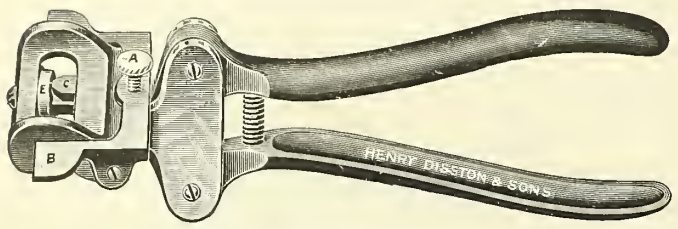
Hammer type. Highest grade of cast steel.

No. 1. For hand saws, each $1.30

Saw Sets

Disston

Triumph

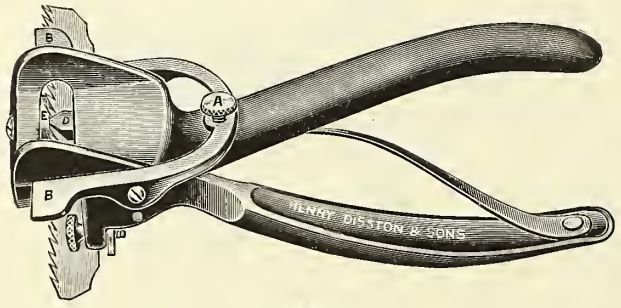


Barff Finish, Polished Head

The principal feature of this set is the use of two plungers operated by two levers or handles; pressure on lower lever forcing plunger "D" against body of saw, holding it rigid while a continuation of pressure on upper lever operates plunger "C" in setting the tooth. Gauge "B" is for regulating the depth of set. The anvil "E" is fitted with four beveled surfaces, suitable for different sizes of teeth.

No. 8 10½ inches overall. For circular and crosscut saws, 12 gauge and lighter, dozen $18.00
No. 18 8¾ inches overall. For circular and crosscut saws, 14 gauge and lighter, dozen 15.00
No. 28 7½ inches overall. For hand saws, back saws, web saws, narrow band saws, etc., 10 points to the inch and coarser, dozen 11.00
No. 280 7½ inches overall. For hand saws, back saws, web saws, butcher saw blades, etc., from 10 to 16 points, dozen .. 11.00

Monarch



Barff Finish

For hand, crosscut, circular and all small saws.
For setting saws ¾ inch and wider.

No. 2 Small size, dozen $8.00

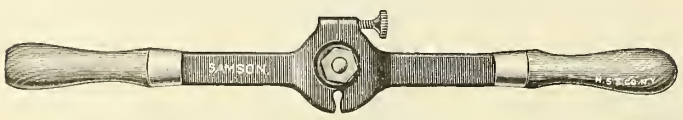
Spring



For Band, Shingle or Veneer Saws

No. 2 Iron handle, as shown above, 8 inches long, each $1.50
No. 1 Wood handle, as shown above, 7 inches long, each 1.50
No. 3 Wood handle, as shown above, 15 inches long, each 3.50

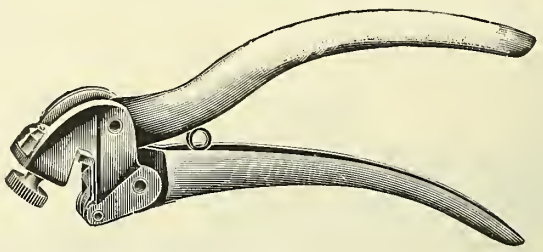
Samson



Made of best refined cast steel, in two sections, fastened with bolt, which serves as axis. Readily adjusted to suit any thickness of saw.

No. 1 24 inches overall, wooden handle, each $3.50
No. 2 13 inches overall, iron handle, each 1.75

Taintors



No. 7

This Saw Set consists of a frame to which are attached two movable handles, an anvil and punch. A spring opens the handles. It is self-adjusting, excepting turning of anvil to change setting.

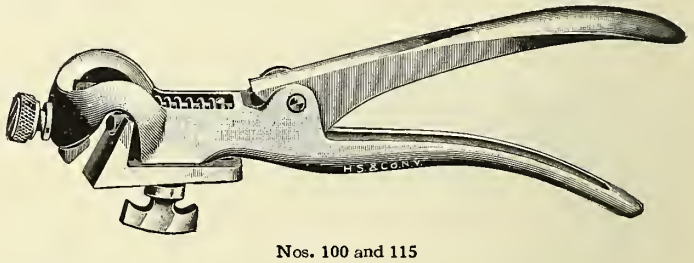
The faces of the steel anvil are numbered so that any setting may be repeated.

Dozen $12.00
Anvil, each ..... .15
Punch, each ..... .10
Set Screws and Washers ..... .10

No. 7½ same as No. 7 with following additions: A double plunger, one side for fine the other for coarse teeth. Hardened ears which glide easily over the teeth. A screw instead of pin for changing the plunger.

Dozen $16.00

Morrill Pattern

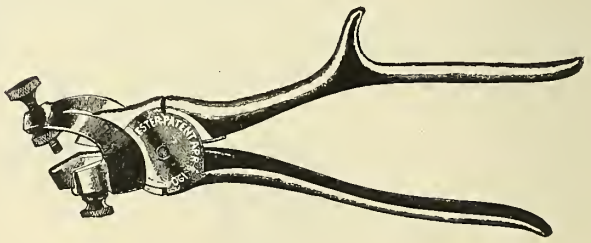


Nos. 100 and 115

For hand, band and jig saws from the widest made down to ½ inch. Hardened anvil and plunger, tempered steel springs.

No. 100 Polished, dozen $12.00
No. 115 Gunmetal finish, with heavy nickeled trimmings, dozen 16.00

Lester Pattern



Both hammer and anvil are the same length, are carefully machined to correct angles and the latter is properly hardened. The hammer has a hardened, removable steel plate attached to face.

The leverage is designed so that little power is required.

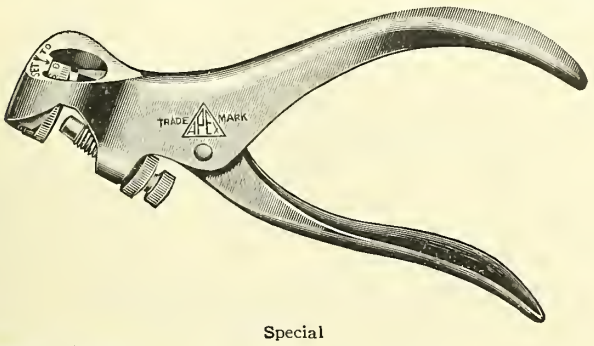
The finest back saw can be set as easily and accurately as a crosscut saw; adjustment is quick and without danger of kinking blade. No vise needed with this set.

No. 80 Full polish, dozen $20.00

SEE DISCOUNT SHEET

Saw Sets

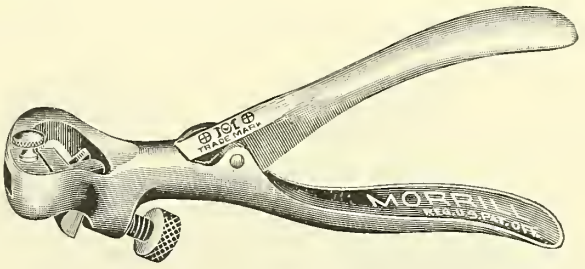
Genuine Morrill



Special

Length 6⅛ inches.
For Hand Saws from the widest made down to ½ inch and not over 16 gauge. Note—16 gauge is .0625 inches.
Made of polished semi and tool steel. The anvil is set on an angle, which enables the plunger to be made stronger and more evenly tempered, thus preventing chipping at end. The gauge screw is provided with lock-nut, which prevents it from working loose while in use.

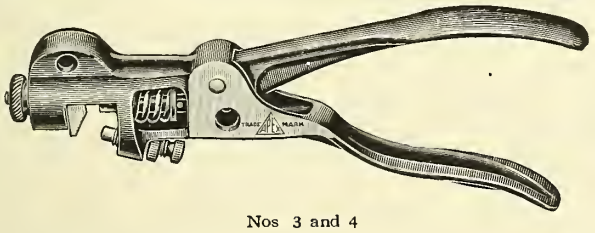
Dozen $13.00



No. 10

Length 6¾ inches.
For Hand, Band, Jig, Butcher, Fret and all fine Saws not over 16 gauge.
Made of polished semi and tool steel.
This saw set has a narrow plunger and projecting gauge block, for very fine work.

Dozen $12.50



Nos 3 and 4

Nos. 3 and 4

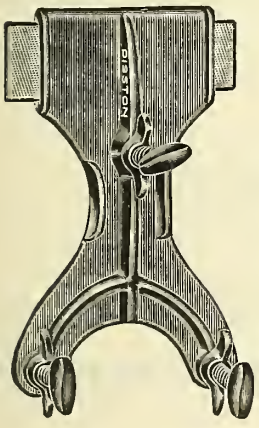
Length 9⅜ inches. Made of cast finished semi and tool steel.
No. 3. Pointed plunger, for cross-cut and circular saws, single tooth, from 14 to 20 gauge.
No. 4. Square plunger, for cross-cut M and champion tooth saws, double tooth, from 14 to 20 gauge.
Note—14 gauge, .0781 inch, 20 gauge, .0375 inch.

Dozen $16.50

Side Files

These side files regulate the saw teeth after setting, as it is impossible to set a saw absolutely even, and an uneven set will make a rough cut. Adjustable to any width. Bodies are of malleable iron, case hardened tooth rest, steel slides and screw adjustment to set file.

Disston

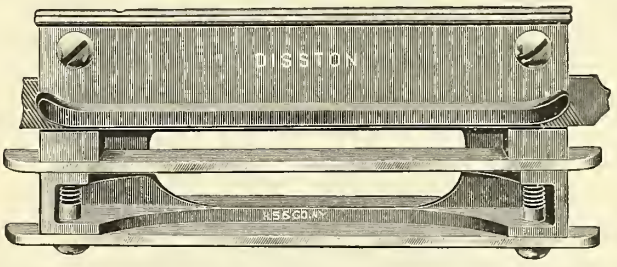


Improved for Circular Saws

No. 1, or large size, suitable for saws 40 inches diameter and larger.
No. 2, or medium size, suitable for saws 38 to 24 inches diameter.
No. 3, or small size, suitable for saws 24 inches diameter and smaller.

	Each
File for Side File	$ .30
Frame	.75
Complete	1.05

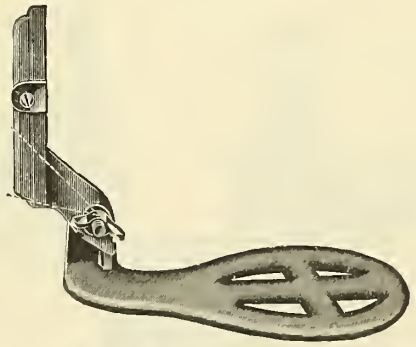
For Band and Gang Saws



Each $3.00

Combination Saw Jointer

Karle

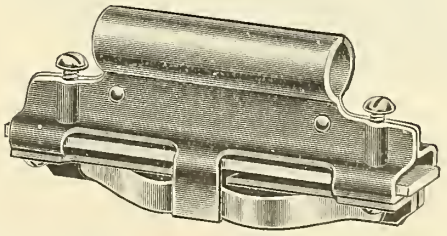


For Band and Circular Saws, to be used while saws are running at full speed.
Malleable iron frame holding emery stick. Eliminates cracking and breaking of saws.

Each $1.50

Saw Jointer and Skate Sharpener

Pike Perfect



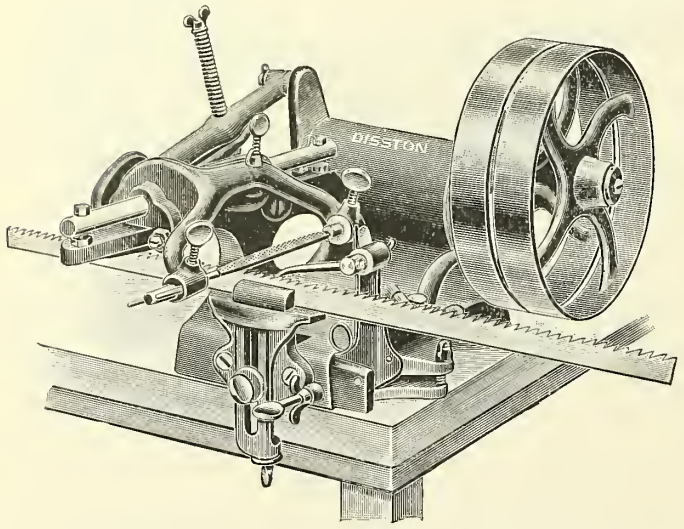
Adjustable to any thickness of blade. Furnished with a flat file. Joints the teeth absolutely true. Can be adjusted in a moment to the largest crosscut or the finest hand saw. Always sets square on the teeth. Will joint or square any straight edge. An excellent skate sharpener.
Made of steel, practically indestructible.

Each ..... $ .50

Saw Filing Machines

For Narrow Band Saws

H. S. & Co. Automatic



These machines are strongly made and easily adjusted, requiring no attention after being started. They will take saws from $\frac{1}{8}$ to $1\frac{1}{2}$ inches wide, with teeth $\frac{1}{16}$ to $\frac{5}{8}$-inch space, and will file old saws with uneven teeth as well as new ones. As all teeth are filed to same height, they will keep sharp longer and each will do its proportionate amount of work, which prevents breakage. Uses 6-inch taper saw files and should run 50 to 60 revolutions per minute.

Each (as illustrated)..... $36.00

For Circular Saws

Black Diamond Automatic

Files saws from 4 to 16 inches in diameter and from 3 to 15 teeth per inch. Speed 80 revolutions per minute. Uses slim taper or ordinary taper files; tight and loose pulleys, 9x1¼ inches. Weight, 60 pounds.

Each $45.00

Saw Setting and Filing Machines

"The Only" Combination With Belt Drive

Is practically two machines in one, and is changed from a setter to a filer in a few seconds.

Occupies only 16x22 inches bench room.

The saw passes through the machine vertically hanging from a peg overhead, thus dispensing with filing wheels, which occupy valuable space in the shop.

The file carriage has a positive motion and cannot file deeper in the brazes or other soft spots.

It uses the regular slim taper or taper saw files, or machine files if preferred.

All working parts are of tempered tool steel, and are interchangeable.

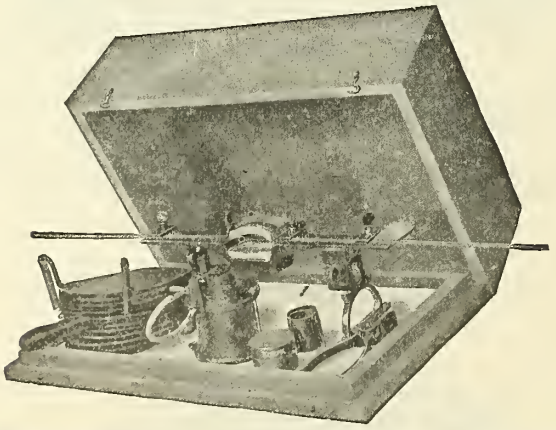
Made in Three Sizes

Number	Width of Saws Inches	Feed	Weight Pounds	Pulleys Tight and Loose Inches	Speed	Each
1	$\frac{1}{16}$ to $1\frac{1}{2}$	3 to 15 pts. to inch	55	9x1¼	80 R.P.M.	$45.00
2	$\frac{1}{16}$ to $2\frac{1}{2}$	2 to 15 pts. to inch	60	9x1¼	80 R.P.M.	50.00
3	¼ to $4\frac{1}{2}$	8 pts. to 1½ inches space	100	12x1¾	60 R.P.M.	75.00

Can be furnished motor driven if desired.

Brazing Machine

For Narrow Band Saws



It has a hardened plate to guide in filing the laps (a very essential point in procuring a perfect braze).

It has double "leather" bellows, no rubber. It has clamps so arranged that the braze can be finished on it.

It has a small vertical vise for clamping the saw while filing the brass out of the teeth.

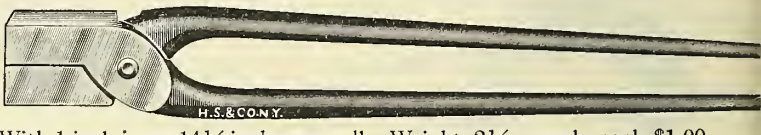
It has an asbestos fire-pot to retain the heat, thus being necessary to use charcoal only on wide saws; also has an asbestos-covered bench, making it perfectly safe.

Kerosine Oil is used in the lamp.

Shipping weight, 22 pounds, each..... $10.00

Brazing Tongs

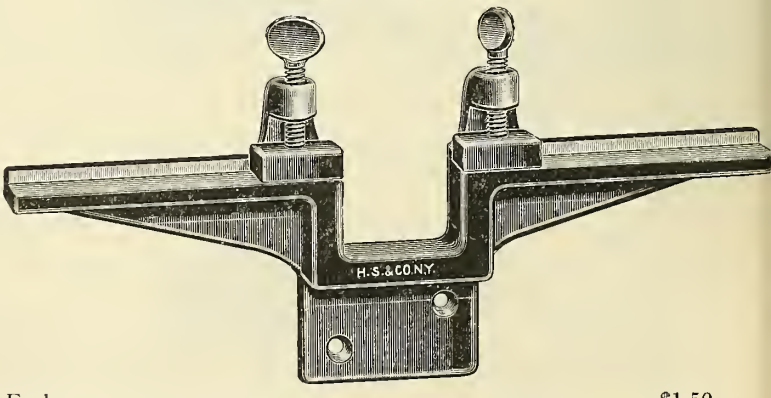
For Narrow Band Saws



With 1 inch jaws, 14½ inches overall. Weight, 2½ pounds, each $1.00

Brazing Clamp

For Narrow Band Saws

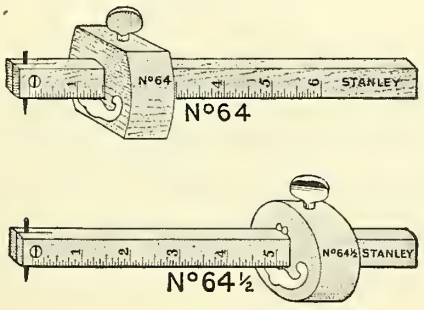


Each..... $1.50

Marking Gauges

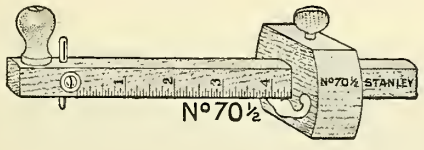
Single Bar

Stanley Wood



Made of selected wood and highly polished. Bars in all numbers are oval in form and graduated in 16ths of an inch for 6 inches from the point. Gauges having a brass thumb-screw have bar protected by a brass shoe. Face plates are brass, inserted in the head to prevent wear. The marking points (one each) are of tempered steel, and adjustable. They are securely locked by screws, but can be readily removed for sharpening.

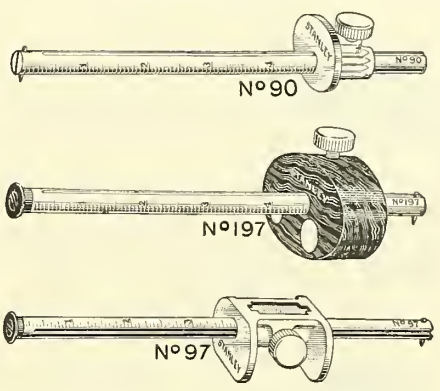
		Dozen
No. 64	Beech, boxwood screw, square head, face plates	$2.40
No. 64¼	Beech, brass screw, square head, face plates	3.00
No. 65	Boxwood, brass screw, square head, face plates	4.20
No. 64½	Beech, brass screw, oval head, face plates	3.60
No. 65½	Boxwood, brass screw, oval head, face plates	4.80



Made of selected wood, highly polished. Bar is oval in form and graduated in 16ths of an inch for 6 inches from the point. Face plates are brass inserted in the head to prevent wear. Blade is specially tempered and sharpened. Is adjustable and securely locked by a screw, but can be readily removed for sharpening.

No. 70½ Beech with knob, boxwood screw, cutting point, face plates ½x1⅞ inches, dozen $4.00

Stanley Steel



All these Gauges have steel bars, and the heads are either machined castings or selected rosewood, with brass face plates inserted. Two types of cutters are used—one a pin point, the other a roller cutter which can be used close into rabbets or corners and is recommended for working across the grain, over knots, etc. Some numbers combine both styles of markers by having one at each end of the bar. Where there is a marker at each end of the bar, the heads are double faced. The bars in those Gauges having a metal head can be set so that either a narrow or wide gauging surface is obtained. Where two cutters are fitted on one bar, there are graduations for each cutter.

All parts are finely finished, and the metal bars and heads are nickel-plated.

Bars are 6½ inches long. Graduated in 16ths of an inch for five inches.

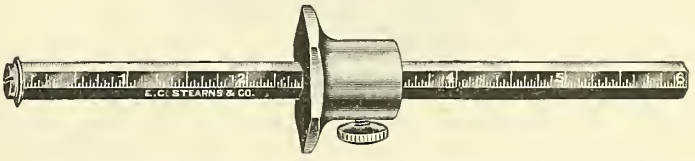
		Dozen
No. 90	Metal head, pin point	$3.48
No. 97	Metal head, pin point and roller cutter	5.64
No. 197	Rosewood head, pin point and roller cutter	6.60

Pattern Makers Type

Has bar 9 inches long, not graduated, and has roller cutters only.

No. 297 Rosewood head, dozen $7.44

Stearns Steel



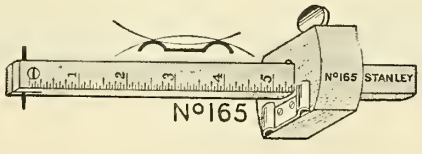
Single hexagonal beam, 6 inches long, gauges to 5¼ inches. Roller cutter.

No. 9 Dozen $12.00

With Circular Face Plates

(For Marking Curves as Well as Ordinary Work)

Stanley Wood



This device consists of a brass face with two ribs, and when attached to one side of a gauge head will enable the operator to run a gauge line with perfect steadiness and accuracy around curves of any degree, either concave or convex.

No. 164½ Beech, brass screw, oval head, brass-face plate and shoe, dozen $4.60

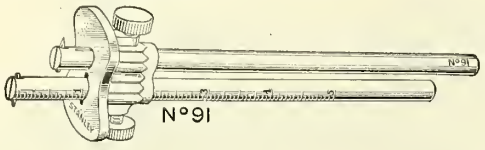
No. 165 Boxwood, brass screw, square head, brass-face plate and shoe, dozen 5.20

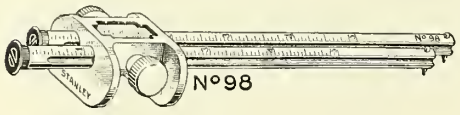
Mortise Gauges

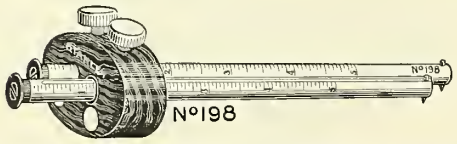
Double Bar

Mortise Gauges differ from Marking Gauges in that they require two independent marking points, but any of these Gauges may be used as a Marking Gauge.

Stanley Steel Bar







All these gauges have steel bars and the heads are either machined castings or selected rosewood with brass face plates inserted. Two types of cutters are used—one a pin point, the other a roller cutter which can be used close into rabbets or corners and is recommended for working across the grain, over knots, etc. Numbers 98 and 198 combine both styles of markers by having one at each end of bar. Where there is a marker at each end of bar, the heads are double faced and graduations are provided for each.

The bars of the metal head type can be set so that either a narrow or wide gauging surface is obtained.

Bars are 6½ inches long, graduated in sixteenths of an inch for five inches.

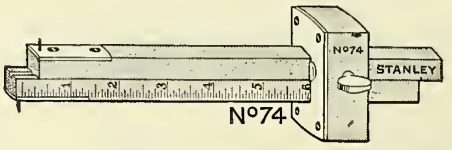
		Dozen
No. 91	Metal Head, Pin Points	$6.72
No. 98	Metal Head, Pin Points and Roller Cutter	8.76
No. 198	Rosewood Head, Pin Points and Roller Cutter	9.60

Pattern Makers Type

Bars are 9 inches long, not graduated and have roller cutters only.

No. 298	Rosewood Head	$10.56

Stanley Wood

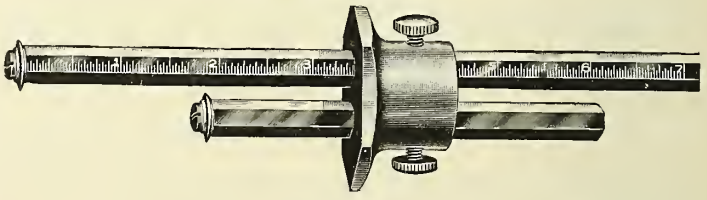


Have two independent bars working in the same head. One pin is affixed to each bar. One side of the mortise is marked and the Gauge turned over for the other mark.

Bars and heads are made of selected wood and highly polished. Bars are oval in form and graduated in 16ths of an inch for 6 inches from point. Bars of Nos. 71 and 74 are protected by brass shoe.

		Dozen
No. 72	Beech Boxwood Screw	$3.00
No. 71	Beech Brass Screw, Head Plated	4.80
No. 74	Boxwood Brass Screw, Head Full Plated	7.20

Stearns Metal



No. 19

Highly finished in full nickel-plate. The heads are turned from the solid bar in automatic screw machines. The sharp, tempered steel marking roller is held by a set screw with very thin head, which admits marking up close in a rabbet or corner.

No. 19 With Roller Cutters and Double Hexagonal Beams—Long Beam, 8 inches, gauges to 7 inches. Short Beam, 4⅛ inches, gauges to 3¼ inches.

Dozen		$22.00

Slide Single Bar

Stanley Wood



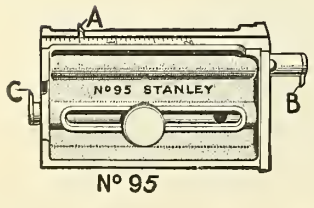
Have a brass slide working in the wood bar. One of the marking points or pins is affixed to one end of this slide, the other to the end of the bar itself. These points mark both sides of the mortise at the same time. The pins extend through the bar to allow a single point when the Gauge is used as a Marking Gauge

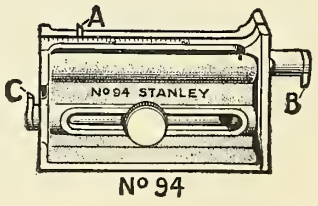
Both bar and head made of selected wood and highly polished. The bar is oval in form and graduated in 16ths of an inch for 3 inches from point. Has face plate inserted in the head to prevent wear. Bar is protected by a brass shoe.

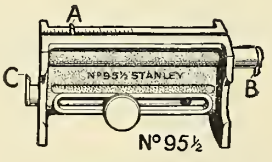
No. 77	Rosewood, Brass Slide, Screw Adjustment, Face Plates, dozen	$7.20

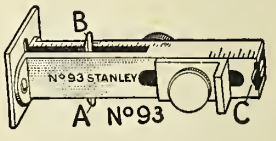
Butt Gauges

Stanley









In hanging doors, there are three measurements to be marked—the location of butt on the casing, the location of butt on the door, and the thickness of butt on both casing and door. The term "Butt Gauge" covers a Gauge having three cutters, purposely arranged so that no change of setting is necessary when hanging several doors. In reality these tools comprise Rabbet Gauges, Marking Gauges and Mortise Gauges of a scope sufficient for all door trim, including lock plates, strike plates, etc.

In the illustrations the various cutters are marked by a letter which, in the several cuts, designates the cutter doing the same work. Cutter "A," which marks from the rabbet in the jamb, and cutter "B" which marks from the edge of the door engaged in closing, are mounted on the same bar and set by one adjustment with proper allowance for clearance; cutter "C" marks the thickness of the butt.

When casings have a nailed-on strike instead of being rabbeted, a Marking Gauge which will work on a ledge as narrow as ⅛ inch is required. In this case the same distance is marked from the edge of the casing and from the edge of the door not engaged when closing. Gauges 94 and 93 can be used on such work, cutter B marking for the butt and cutter "C" for its thickness. Gauges 94 and 95 are made so that they can be used as inside or outside squares for squaring the edge of the butt on either the door or jamb.

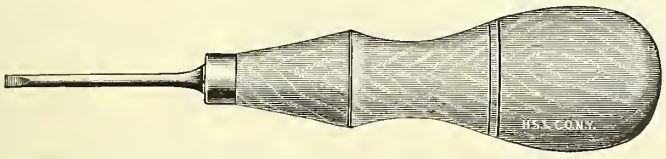
All Bars are locked by set screws and are graduated in sixteenths of an inch. Nos. 93, 94 and 95 are graduated for 2 inches, and No. 95½ for 1½ inches.

		Dozen
No. 95	Iron Body, Steel Bars, Nickel-Plated	$9.00
No. 94	Iron Body, Steel Bars, Nickel-Plated	12.00
No. 95½	Iron Body, Steel Bars, Nickel-Plated	7.20
No. 93	Steel Head, Brass Slide, Nickel-Plated	9.00

Handled Awls

Brad

H. S. & Co.



English. Collier pattern. Forged blades, maple handles.

Inches	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	2	2 1/4	2 1/2
Dozen	$ .84	.84	.84	.84	.90	.96	1.00	1.06	1.18	1.28	1.40

Hurwood

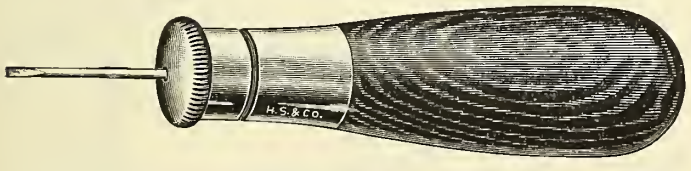


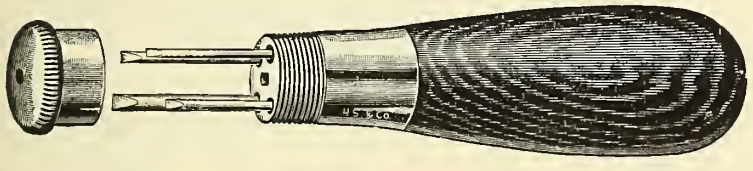
Blade, shank and head formed of one piece of steel. Two patented projecting wings under the head, together with a rivet which passes through the steel ferrule, handle and shank securely fastens the blade in the handle. The handles are stained black. Points are carefully tempered.

No. 17 1¼ and 1½ inches, flat point, dozen..... $3.00

Magazine Brad

B M. Co.

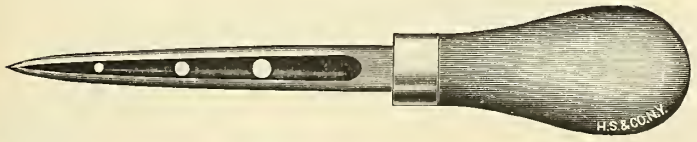




No. 1 Hardwood handle, with 4 blades, dozen..... $6.00

Belt

Lothrop



With holes or eyes in blades to pull lace through holes in belt, dozen..... $6.00

Scratch

H. S. & Co.



English. Collier pattern. Forged blades, maple handles.

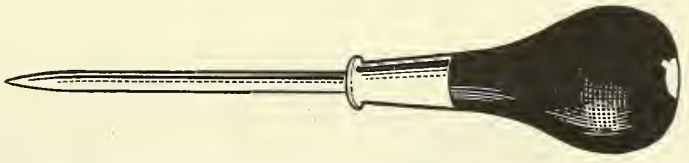
Inches	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2
Dozen	$ .85	1.00	1.30	1.50	1.60	1.80	2.00	2.20	2.40

Buck Bros.

Heavy forged blades, applewood handles.

No. 86 3, 3½, 4 or 4½ inches, dozen..... $1.40

Hurwood

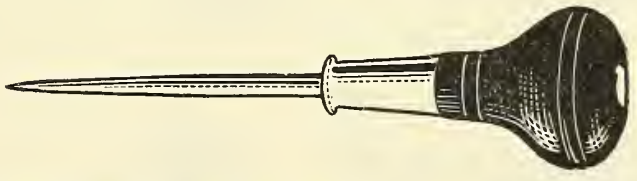


Blade, shank and head formed from one piece of steel. Handle securely attached to blades by rivet and two projecting wings under head. The handles are stained black and the points are carefully tempered.

No. 6 2¾-inch blade, ¼-inch diameter, needle point, dozen... $3.00
No. 7 3½-inch blade, ¼-inch diameter, needle point, dozen... 3.24

Tinners

Hurwood



Same construction as Nos. 6 and 7 above.

No. 8 3¾-inch blade, ¼-inch diameter, needle point, dozen... $3.48

Upholsterers or Cane Seating

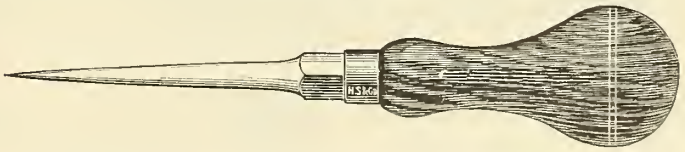
Buck Bros.



The tang is driven entirely through the handle and riveted.
Blade 3½ inches long, applewood handle, dozen..... $4.60

Carpet

H. S. & Co.



No. 300 4-inch blade. Rosewood handle, riveted, dozen..... $6.70

Awl Blades

Peg



Assorted, gross $1.60

Stabbing



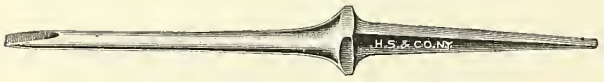
Assorted, gross $3.20

For Awl Hafts, see next page

Brad

H. S. & Co.

English, Collier Pattern, Forged



Inches	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	2	2¼	2½
Gross	$2.00	2.00	2.00	2.00	2.40	2.75	3.10	3.50	4.00	4.50	5.00

Scratch

H. S. & Co.

English, Collier Pattern, Forged

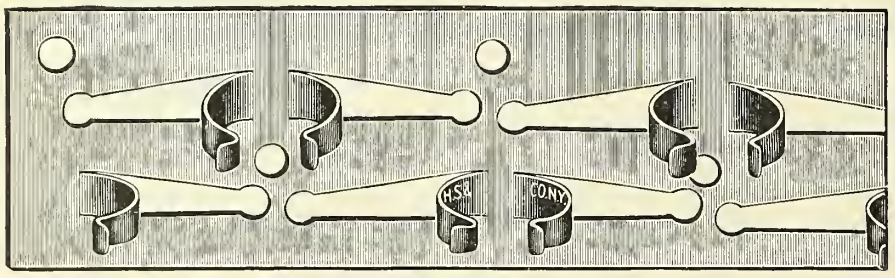


Inches	1½	2	2½	3	3½	4	4½	5	5½
Dozen	$ .60	.60	.70	.80	1.00	1.20	1.40	1.60	1.80

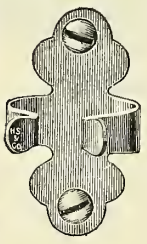
Tool Racks

Brass

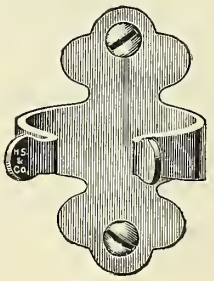
Below illustrations are full size



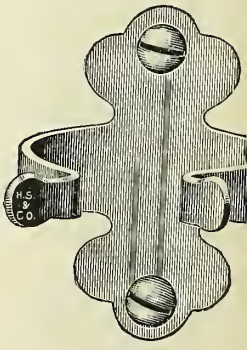
No. 230



No. 235



No. 236

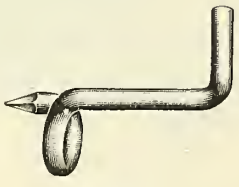


No. 237

Numbers	230	231	232
Width of clasp inside, inches	⅝	⅞	1⅛
In two-foot lengths, dozen	$2.35	2.75	3.95

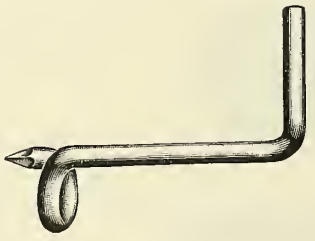
Numbers	235	236	237
Width of clasp inside, inches	⅝	⅞	1⅛
Dozen	$ .25	.33	.45

Steel Wire—Tinned



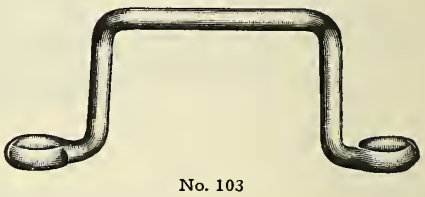
No. 101

For miscellaneous small tools, dozen.. $ .24



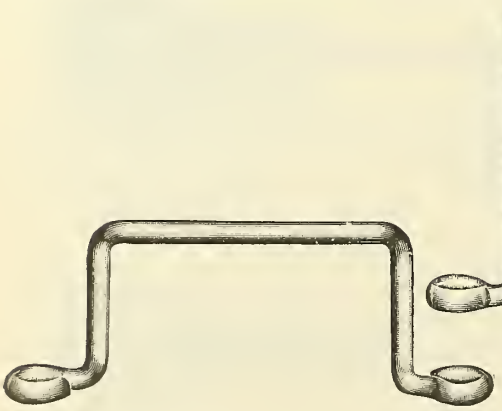
No. 102

For miscellaneous tools, dozen..... $ .24



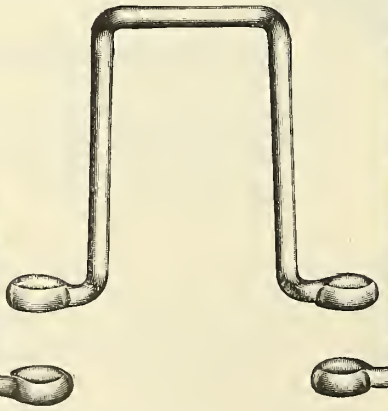
No. 103

For miscellaneous small pliers, etc., dozen..... $ .32



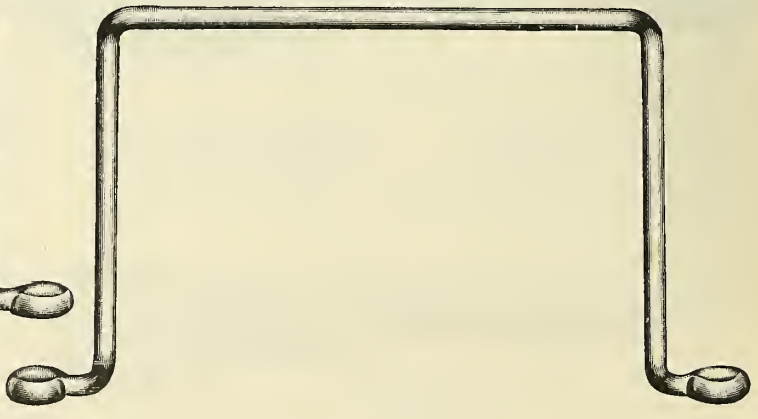
No. 104

For miscellaneous pliers, etc. dozen..... $ .36



No. 105

For Marking Gauges, etc., dozen..... $ .36

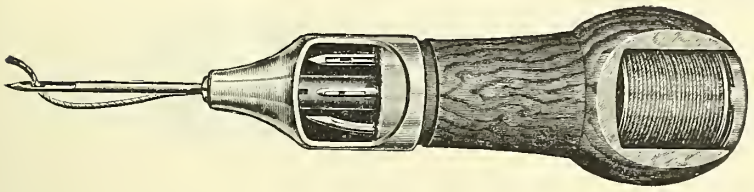


No. 106

For Oil Stones, etc., dozen..... $ .40

Automatic Sewing Awl

Stewart



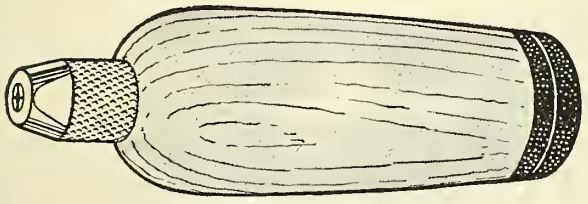
A sewing device which feeds the thread from a spool or bobbin in the handle, or bobbin can be removed and thread passed through end of handle from large ball as the tension is entirely independent from the bobbin.

Contains two needles (one No. 8 straight and one No. 8 curved) contained in receptacles underneath the ferrule which tightens the needle in chuck. They have a special diamond point which will penetrate any thickness of leather with ease, but any sewing-machine needle may be used. It is suitable for mending harness, shoes, tents, awnings, pulley belts and carpets, saddles, sails, suit cases, rugs, buggy tops, dashboards, or any heavy material. Full directions with each awl.

Each $1.00

Awl Hafts

Stanley



No. X-6 Improved, half-size

Fitted with four-jaw chuck, machined and tempered.

The locking nut is knurled so that the chuck may be quickly closed or opened.

A wrench is furnished with each tool for securing the Awl rigidly in the chuck, the sides of the locking nut are flattened to permit use of wrench.

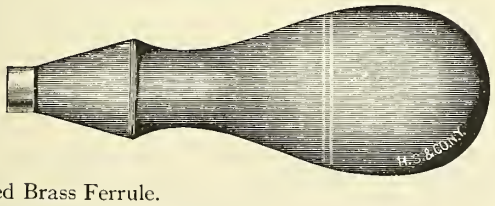
The handle is made of selected hickory specially finished and the end is neatly leathered.

No. X-6 4 inches long, gross $28.80

No. 6 3¾ inches long, same construction but nut not knurled and not so well finished as X-6, gross 12.00

Handles

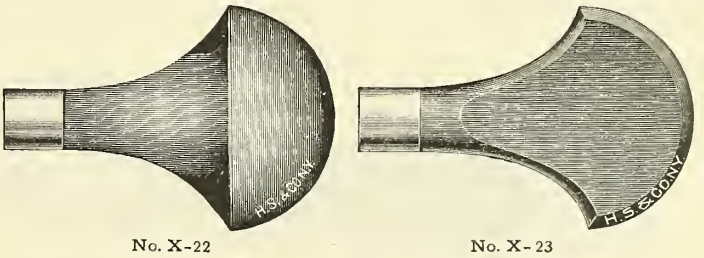
Brad Awl



Stamped Brass Ferrule.

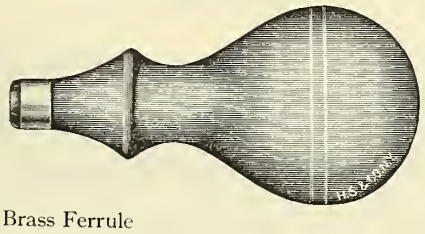
Number	1	2	3	4
Diameter of ferrule, inch	3/8	3/8	7/16	1/2
Length, inches	3¼	3½	3¾	4
Maple, gross	$2.85	3.00	3.25	3.40

Gravers



No. X-22 No. X-23

Scratch Awl



Stamped Brass Ferrule

Number	1	2	3	4
Diameter of ferrule, inch	3/8	3/8	7/16	1/2
Length, inches	2¼	3	3¼	3½
Maple, gross	$4.00	4.00	4.00	4.00



No. X-26 No. X-27

In two sizes.

Diameter of head, 1⅛ and 1¼ inches.

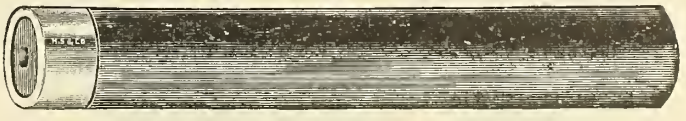
Whole length, 1⅝ and 2 inches.

Nos. X-22, X-23, X-26, X-27, rosewood, polished, gross..... $8.00

Small Tool



No. 79A Cocobola. Heavy brass ferrule. 2⅝ inches overall, 5/16-inch diameter of ferrule, gross $12.00



No. 47C. Straight

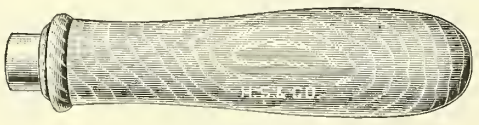
Stamped Brass Ferrule.

No.	1	2	3	4
Diameter of ferrule, inch	3/8	1/2	5/8	3/4
Length, inches	4	4	4	4
Rosewood, gross	$12.00	12.00	12.00	12.00
Maple, gross	6.00	6.00	6.00	6.00

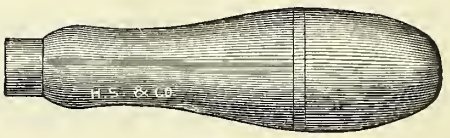
File Handles

H. S. & Co.

Brass Stamped Ferrules



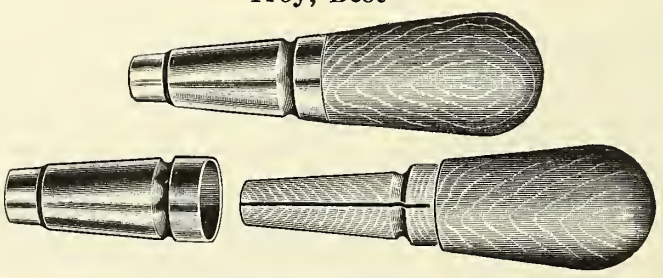
Maple



Bass

Number	1	2	3	4	5
Diameter of ferrule, inch	½	⅝	¾	⅞	1
Length overall, inches	4¼	4½	4¾	5	5¼
Bass, gross	$3.10	3.40	3.70	4.00	4.20
Maple, gross	5.70	6.20	6.60	6.80	7.00

Troy, Best

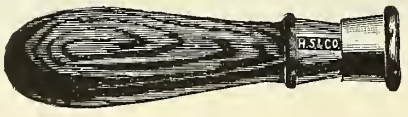


Handle with Ferrule Removed

The steel ferrule is locked to the wood by heavy grooves, making separation impossible. The ferrule is continued over end of handle, thereby protecting the wood from wear and preventing any "wobble" of the file.

	Gross
No. 1, for 4 to 5-inch files	$9.00
No. 2, for 6 to 8-inch files	11.00
No. 3, for 10 to 12-inch files	12.00
No. 4, for 14 to 16-inch files	13.50
No. 5, for 18 to 20-inch files	15.00

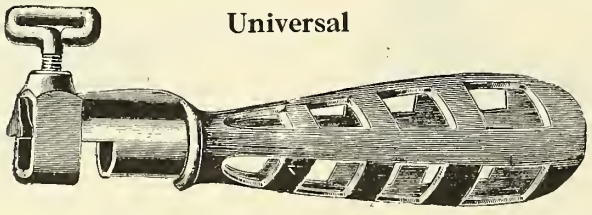
Lock Jaw



	Gross
No. 1, for files 13 inches and larger	$6.00
No. 2, for files 9 to 12 inches	5.50
No. 3, for files 7 to 10 inches	5.25
No. 4, for files 5 to 8 inches	5.00
No. 4½, for files 4 to 7 inches	4.75
No. 5, for files 2 to 5 inches	4.50

These handles are hardwood, with coppered malleable iron ferrules and will rigidly hold any make of file or any other tanged tool, whether the tang is flat, round or square. Specially adapted for files, screwdrivers, chisels, etc.

Universal



Malleable iron, japanned.

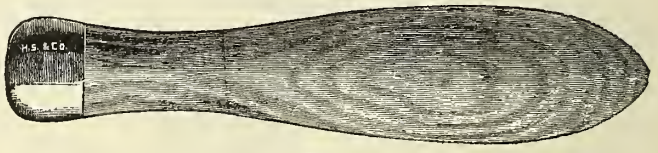
Holds files with tangs of all sizes and shapes from a 14-inch mill file to the smallest in use, also a variety of shanks of different shapes and sizes not exceeding ⅜-inch square or flat.

Serves many of the purposes of a hand vise.

Length 5¼ inches.

Dozen $1.50

Spun Ferrule



Birch

Heavy Spun Brass Ferrule.

Number	00	0	1	2	3	4
Diameter of ferrules, inches	1⅜	1¼	1 1/16	15/16	13/16	⅝
Length, inches	5¾	5⅜	5¼	4¾	4½	4
Dozen	$ .85	.80	.75	.70	.65	.60

Soldering Copper Handles

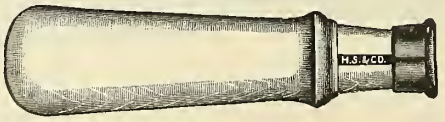
H. S. & Co.



Oak

5½ inches long, wire ferrule, 1½ inches diameter, gross $3.00

Lock Jaw



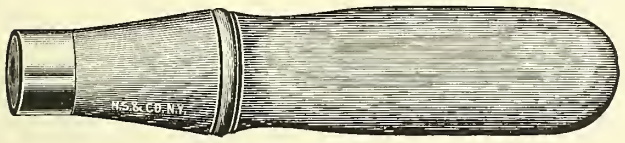
Same construction as lock-jaw file handles described above.

No. 6 Gross $8.00

Chisel Handles

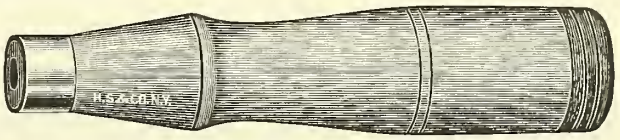
For Tanged Firmer Chisels

H. S. & Co. and Buck Bros.



Heavy Brass Ferrules

Number	1	2	3	4	5	6
Diameter of ferrule, inch	½	9/16	5/8	¾	7/8	1
Length, inches	5	5¼	5½	6	6½	7
H. S. & Co., Hickory, gross	$6.75	7.30	7.85	8.45	9.00	9.60
Buck Bros., Extra Quality Applewood, gross	$6.60	7.80	8.64	10.20	12.00	14.40



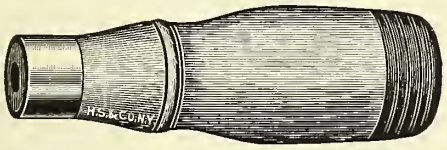
Leather Head. Heavy Brass Ferrule

Number	1	2	3	4	5	6
Diameter of ferrule, inch	½	9/16	5/8	¾	7/8	1
Length, inches	5	5¼	5½	6	6½	7
H. S. & Co. Hickory, gross	$9.00	9.50	10.00	10.50	11.10	11.70
Buck Bros. Extra Quality, Hickory, gross	$10.80	12.00	13.20	15.00	18.00	19.80

For Butt Chisels

Buck Bros.

Tanged



Leather Head. Heavy Brass Ferrule

Number	5	6
Diameter of ferrule, inch	7/8	1
Length, inches	4¼	4½
Hickory, gross	$10.50	11.10

Socket

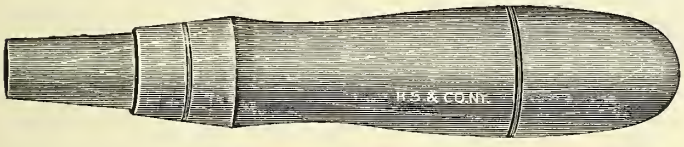


Leather Head

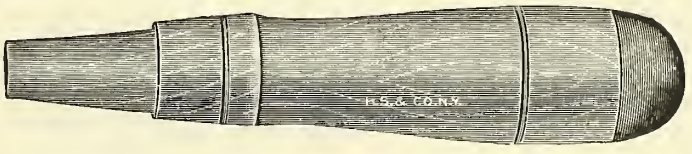
Number	1	2	3
Diameter under shoulder, inch	½	9/16	11/16
Length to shoulder, inches	2¾	3	3¼
Length overall, inches	3¾	4¼	4½
Hickory, gross	$7.20	7.20	7.20

For Socket Firmer Chisels

H. S. & Co.



Number	3	4	5	6
Diameter under shoulder, inch	5/8	¾	7/8	1
Length to shoulder, inches	4¼	4½	4¾	5
Length, inches	5½	6	6½	7
Hickory, gross	$5.00	5.65	6.25	6.90

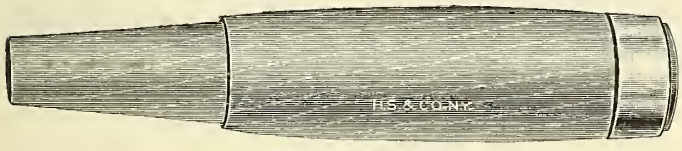


Leather Head

Number	3	4	5	6
Diameter under shoulder, inch	5/8	¾	7/8	1
Length to shoulder, inches	4¼	4½	4¾	5
Length, inches	5½	6	6½	7
Hickory, gross	$7.50	8.15	8.75	9.35

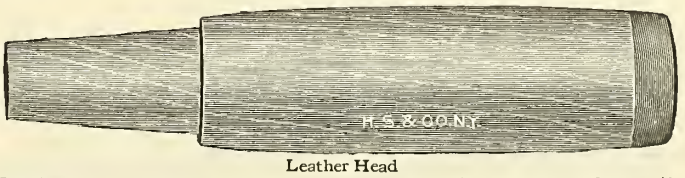
For Socket Framing Chisels

H. S. & Co.



Plain Iron Ring

Number	4	5	6	7
Diameter under shoulder, inches	¾	7/8	1	1⅛
Length to shoulder, inches	4	4¼	4½	4¾
Length inches	6	6¼	6½	7
Hickory, gross	$8.15	8.75	9.40	10.00



Leather Head

Number	4	5	6	7
Diameter under shoulder, inches	¾	7/8	1	1⅛
Length to shoulder, inches	4	4¼	4½	4¾
Length, overall, inches	6	6¼	6½	7
Hickory, gross	$8.15	8.75	9.40	10.00

For Deck Chisels

H. S. & Co.



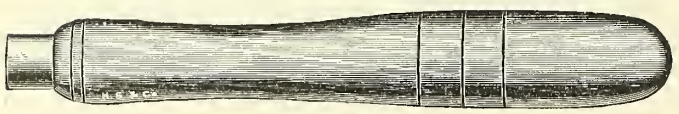
Hickory, with galvanized iron ring. 1⅜ inches diameter, 7 inches long, gross $10.00

Handles

For Turning Tools

H. S. & Co.

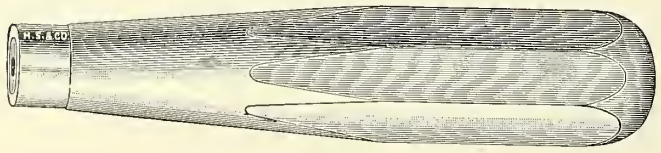
With Heavy Brass Ferrule



Number	1	2	3	4	5	6
Diameter of Ferrule, inch	1/2	9/16	5/8	3/4	7/8	1
Length, inches	8 3/4	9	9 1/4	9 1/2	9 3/4	10
Maple, gross	$14.40	16.80	18.00	20.40	21.60	24.00

For Carving Tools

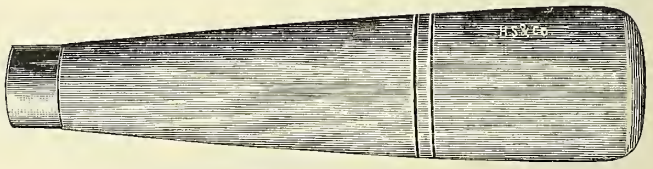
H. S. & Co.



Octagon—Stamped Brass Ferrule

Our Octagon Carving Tool Handle has all the important features of a round handle, and in addition has an octagonal body which prevents the tool from rolling, and which also affords the best possible grip. The round top, which fits into the palm of the hand, adapts it to continued use to the best advantage.

Number	1	2	3	4	5
Length, inch	4 1/4	4 3/8	4 1/2	4 3/4	5
Diameter of Ferrule, inch	1/2	9/16	5/8	3/4	7/8
Octagon Maple, gross	$8.50	9.00	9.50	10.00	10.50



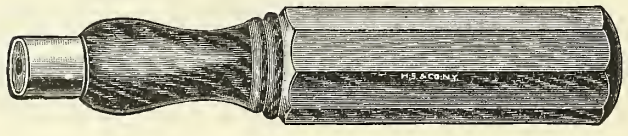
Round—Stamped Brass Ferrule

Number	1	2	3	4	5
Length, inches	4 1/4	4 3/8	4 1/2	4 3/4	5
Diameter of Ferrule, inch	1/2	9/16	5/8	3/4	7/8
Round Maple, gross	$4.50	4.50	5.60	5.60	5.60

For Screwdrivers

H. S. & Co.

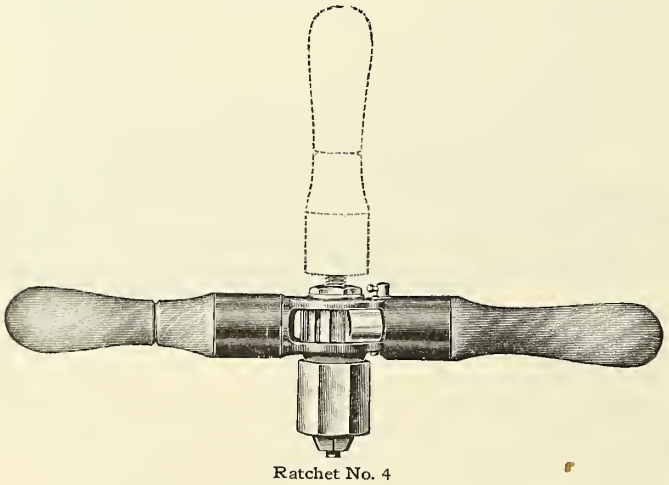
No. 79 Octagon Rosewood. Heavy Brass Ferrule



Number	1	2	3	4	5	6	7	8
Ferrule, inch	3/8	7/16	7/16	1/2	1/2	5/8	3/4	7/8
Thickness, inches	3/4	3/4	7/8	1	1 1/16	1 1/8	1 1/4	1 3/8
Length, inches	4	4 1/4	4 1/2	4 3/4	5	5 1/2	5 3/4	6
Dozen	$1.80	2.20	2.40	2.60	2.80	3.20	3.40	3.90

For Augers

Pratt

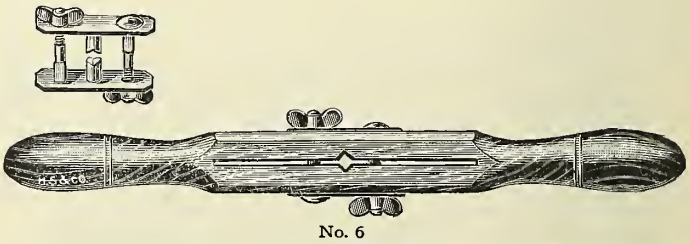


Ratchet No. 4

Ash, with metal parts nickeled. Chuck jaws will admit almost all sizes of bit stock and auger shanks. May be used as a ratchet drill. Detachable handle, which may be placed at right angles to fixed one. Ratchet works either to right or left or may be locked so that tool may be used without ratchet.

Length, 15 inches, dozen $32.00

Peck



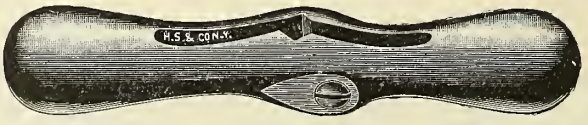
No. 6

Maple, iron bound, exceptionally strong and durable. Adjustable to all sizes of augers. The small cut shows the iron clamp, which is firmly inserted in the wooden handle and binds the auger. Length 18 inches.

Dozen $4.00

For Bits

H. S. & Co.



Malleable Iron

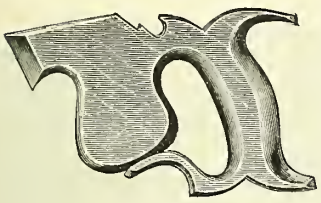
No. 1 Adjustable, dozen $1.25

Saw Handles

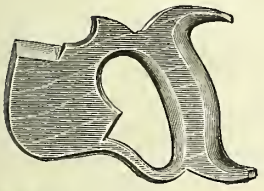
For Hand Saws

Each handle on Hand Saws is separately slit, bored and fitted to its blade, insuring the correct "hang" to the saw when entering the work.

The stock handle, bored and slit, will not fit holes in the blade from which old handle has been taken, for the reason given above.



For Disston Saws		16 Inches	18–20 Inches	22–24 Inches	26 Inches	28 Inches
No. 7	Beech (slit only), dozen	$2.25	2.25	2.25	2.50	2.75
No. D8	Apple, carved (bored and slit), dozen	....	3.00	3.25	4.00	
No. 120	Apple, carved (bored and slit), dozen	....	....	4.25	5.00	
No. 12 & 112	Apple, carved (bored and slit), dozen	....	5.25	5.50	6.50	6.75
No. 16	Apple, carved (bored and slit), dozen	....	4.00	4.25	5.00	5.25
No. D20, D23	Apple, carved (bored and slit), dozen	....	....	4.25	5.00	
			16-18 Inches	20-22 Inches	24-26 Inches	
No. D115	Rosewood, carved (bored and slit), dozen	....	9.85	10.25	10.65	
For H. S. & Co. Saws	Apple, carved (bored and slit), dozen		3.60	3.60	4.45	



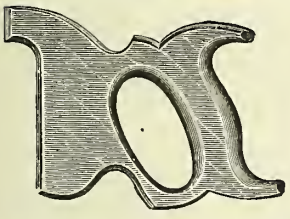
For Back Saws

Applewood, back cut out and slit, not bored. For H. S. & Co., or Disston No. 4.

Size, inches	8	10	12	14	16
Dozen	$2.75	2.75	2.75	3.00	3.00

For Disston No. 4, 18, 20, 22, 24 or 26 inches long. 4 inches under back. When ordering specify which size is wanted. Dozen $3.50

For Disston No. 4, 18, 20, 22, 24 or 26 inches long. 5 inches under back. When ordering specify which size is wanted. Dozen $4.00

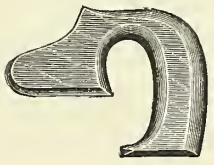


For Butcher Saws

Disston

Beech, No. 19, slit only.

Size, inches	18--20	24--26
Dozen	$2.00	2.00



For Compass Saws

Disston

Beech, No. 2, slit only.

Size, inches	10–12	14–16
Dozen	$1.10	1.10



No. 1



No. 2



Nos. 3 and 4

Saw Screws

Brass—Disston

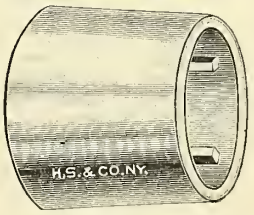
No. 1 Centennial, gross	$2.40
No. 2 Centennial, gross	2.70
No. 3 Centennial, small, warranted superior, gross	3.45
No. 4 Centennial, large, warranted superior, gross	4.60

Number and Kinds of Screws in Hand Saws

No. 7	28-inch	Three	No. 2, One No. 4.
	26-inch	One	No. 1, Two No. 2, One No. 4.
	24-inch	Three	No. 1, One No. 3.
	22-inch and under	Two	No. 1, One No. 3.
D8	26-inch	Three	No. 2, One No. 4.
	24-inch and under	Three	No. 1, One No. 3.
Nos. 120, D115, D20 D23	26-inch	Four	No. 2, One No. 4.
	24-inch and under	Three	No. 1, One No. 3.
Nos. 12, 112	28 and 26-inch	Three	No. 2, One No. 4.
	24-inch	Three	No. 1, One No. 3.
	22-inch and under	Two	No. 1, One No. 3.
No. 16	28-inch	Three	No. 2, One No. 4.
	26, 24 and 22-inch	Three	No. 1, One No. 3.
	20-inch and under	Two	No. 1, One No. 3.
H. S. & Co.	16, 18 and 20-inch	Two	No. 1, One No. 3.
	22-inch	Three	No. 1, One No. 3.
	24 and 26-inch	Three	No. 2, One No. 4.

Ferrules

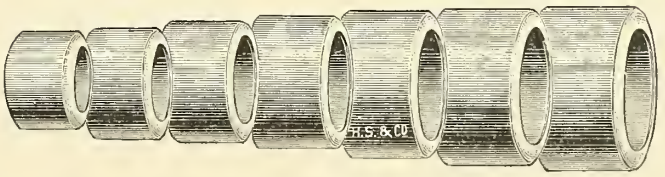
Malleable Iron



With Inside Lugs

Diameter, inches	¾	⅞	1	1⅛	1¼	1⅜
Length, inches	¾	⅞	1	1⅛	1¼	1¼
Gross	$1.40	2.00	2.80	4.10	4.60	7.50

Stamped Brass



Number	00	0	1	2	3	4	5	6	7	8	9	10	11
Diam., inch.	1	15/16	⅞	13/16	¾	11/16	⅝	9/16	½	7/16	⅜	5/16	¼
Gross	$1.56	1.30	1.10	.88	.75	.70	.65	.55	.45	.45	.45	.45	.45

Hammer Wedges

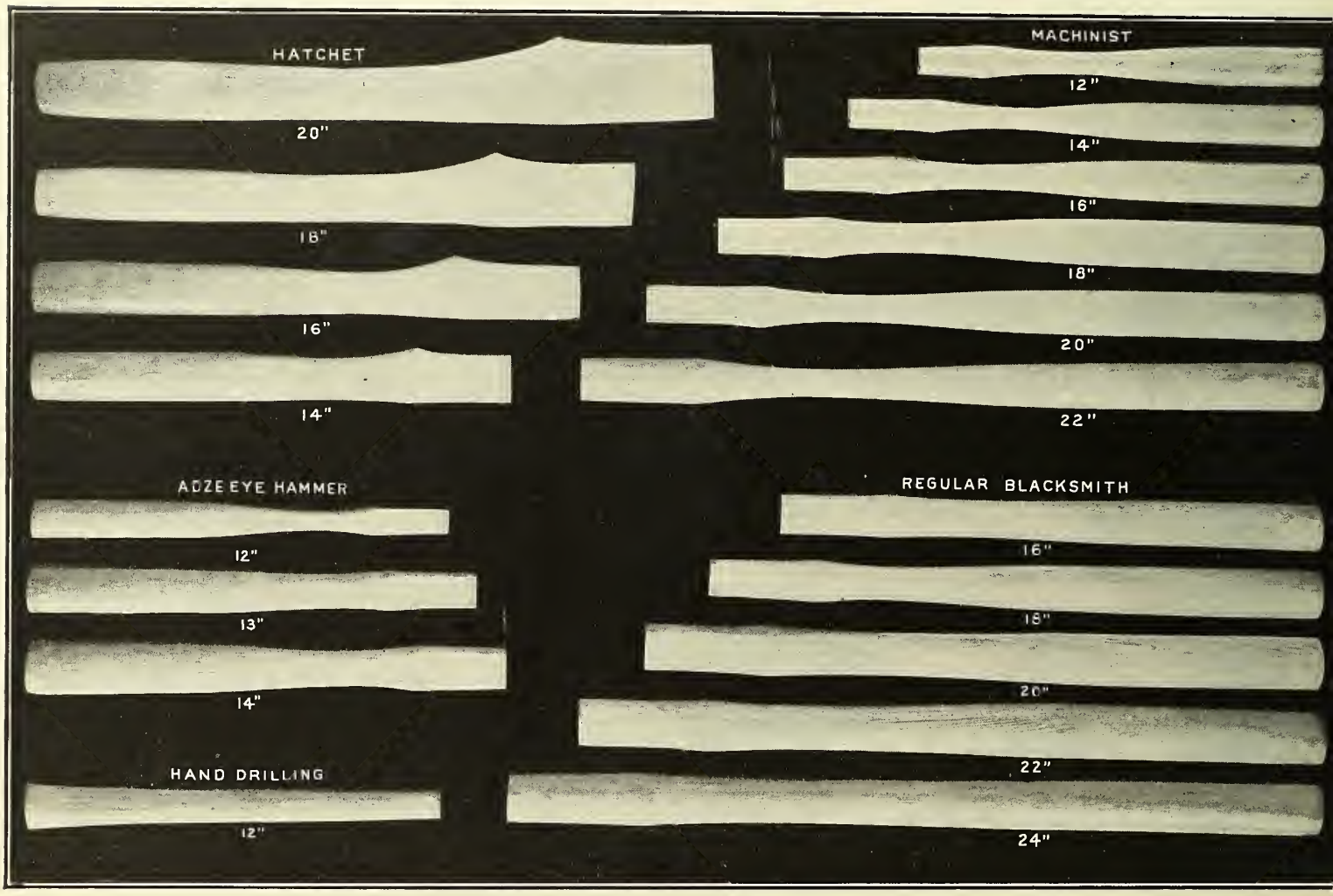
Cast Iron

Slightly tapered. Small, approximate size ½-inch long, ¼-inch wide. Medium, approximate size, ⅝-inch long, 5/16-inch wide. Large, approximate size ⅞-inch long, 7/16-inch wide, per pound ..... $ .30

White Hickory Handles

H. S. & Co.

Specially selected second growth, straight grained, well shaped and finished



Illustrations show sizes and styles carried in stock

Hatchet, size, inches			12	13	14	15	16	17	18	19	20
Dozen			$1.10	1.10	1.10	1.10	1.30	1.50	1.75	1.95	2.15
Sizes carried in stock, 14, 16, 18 and 20 inch.											
Machinist, size, inches	12	13	14	15	16	17	18	19	20	22	24
Dozen	$1.10	1.10	1.10	1.10	1.20	1.30	1.30	1.60	1.60	1.75	2.00
Sizes carried in stock, 12, 14, 16, 18, 20 and 22 inch.											
Regular Blacksmith, size, inches	12	13	14	15	16	17	18	19	20	22	24
See next page for taper blacksmith:.											
Dozen	$1.10	1.10	1.10	1.10	1.20	1.30	1.30	1.60	1.60	1.75	2.00
Sizes carried in stock, 16, 18, 20, 22 and 24 inch.											
Adze Eye Hammer, size, inches								12	13	14	15
Dozen								$1.10	1.10	1.10	1.10
Sizes carried in stock, 12, 13 and 14 inch.											

Hand drilling, New York Pattern, 12 inch size only, dozen $2.00

Carried in stock.

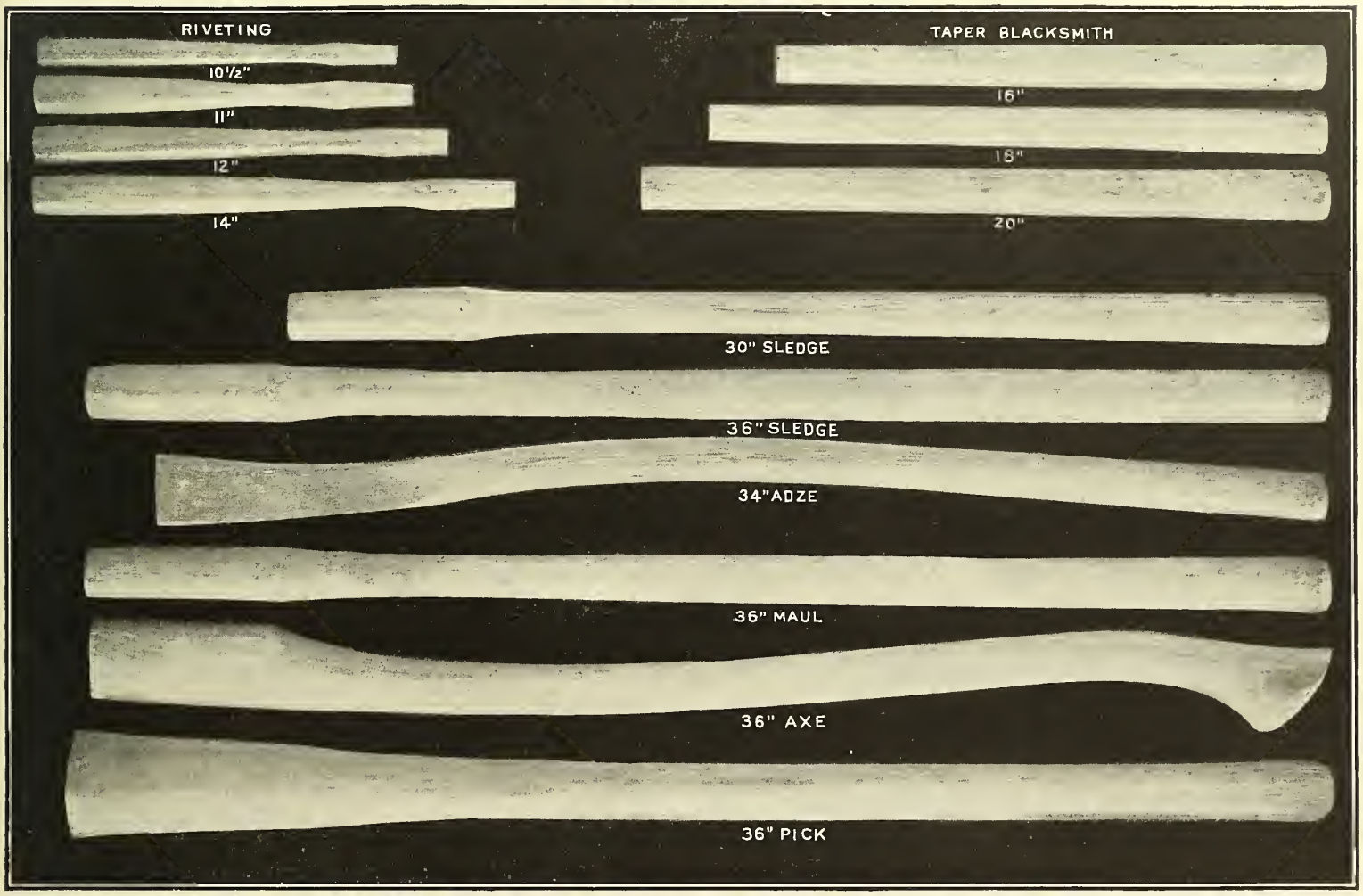
The sizes which we carry in stock are the ones most generally in use. All other sizes listed will be supplied in quantity, direct from our mill, without unnecessary delay.

See next page for balance of white hickory handle listing

White Hickory Handles

H. S. & Co.

Specially selected second growth, straight grained, well shaped and finished



Illustrations show sizes and styles carried in stock

Riveting, size, inches	10½	11	12	13	14	15	16	17	18	19	20
Dozen	$1.10	1.10	1.10	1.10	1.10	1.10	1.20	1.30	1.30	1.60	1.60
Sizes carried in stock, 10½, 11, 12 and 14 inch.											
Taper Blacksmith, size, inches (see preceding page for regular blacksmith)									16	18	20
Dozen									$1.20	1.30	1.60
All sizes carried in stock.											
Sledge, size, inches	24	26	28	30	32	34	36	38	40	42	
Dozen	$2.00	2.40	2.40	2.70	2.70	3.20	3.20	3.30	4.00	4.60	
Sizes carried in stock, 30 and 36 inch.											
Maul, size, inches	24	26	28	30	32	34	36	38	40	42	
Dozen	$2.00	2.40	2.40	2.70	2.70	3.20	3.20	3.30	4.00	4.60	
36-inch size only carried in stock.											
Adze, size, inches									32	34	36
Dozen									$4.00	4.00	4.00
34-inch size only carried in stock.											
Axe, size, inches								30	32	34	36
Dozen								$4.65	4.65	4.65	4.65
36-inch size only carried in stock.											
Pick, 36-inch size only carried in stock, dozen											$5.40

The sizes which we carry in stock are the ones most generally in use. All other sizes listed will be supplied, in quantity, direct from our mill, without unnecessary delay.

See preceding page for balance of white hickory handle listing

Firmer Chisels

Buck Bros.

Tanged

Buck Brothers, in their manufacture of chisels and other carpenter tools, use Genuine Jessop Tool Steel, imported direct from Sheffield, England.

Jessop Tool Steel is undoubtedly the best made and is exceptionally uniform in quality. All Buck Tools are carefully made and finished by experienced workmen and each one is subjected to a rigid inspection and test before leaving the factory.

They are fully warranted by the makers against all defects in material and workmanship and have been favorite tools with wood-working mechanics since 1853.



No. 1 Plain Edge

Sharpened ready for use, the 1-inch chisel is 5½ inches long from bolster to point.

Size, inch	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2
Dozen	$2.00	2.00	2.00	2.00	2.05	2.20	2.40	2.50
Size, inches	5/8	3/4	7/8	1	1¼	1½	1¾	2
Dozen	$2.65	2.85	3.20	3.40	4.50	5.50	6.60	7.90



No. 29 Beveled Edge

Sharpened ready for use. The 1-inch chisel is 5½ inches long from bolster to point.

Size, inch	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2
Dozen	$4.15	4.15	4.15	4.20	4.25	4.35	4.55	4.75
Size, inches	5/8	3/4	7/8	1	1¼	1½	1¾	2
Dozen	$4.95	5.10	5.35	5.75	7.50	8.60	10.75	12.35



No. 2 Plain Edge

Best quality polished applewood handles, with cast brass ferrules. Sharpened ready for use, the 1-inch chisel is 5½ inches long from bolster to point.

Size, inch	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2
Dozen	$2.50	2.50	2.55	2.60	2.70	2.85	3.15	3.15
Size, inches	5/8	3/4	7/8	1	1¼	1½	1¾	2
Dozen	$3.40	3.70	4.10	4.30	5.60	6.70	8.00	9.40

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼, 1½, 1¾ and 2 inches)	$4.80
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼ and 1½ inches)	3.80



No. 30 Beveled Edge

Leather tipped, polished-hickory handles, of extra quality with cast brass ferrules. Sharpened ready for use. The 1-inch chisel is 5½ inches from bolster to point.

Size, inch	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2
Dozen	$4.70	4.70	4.80	4.85	5.00	5.10	5.30	5.45
Size, inches	5/8	3/4	7/8	1	1¼	1½	1¾	2
Dozen	$5.80	6.05	6.25	6.70	8.75	9.90	12.35	13.90

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼, 1½, 1¾ and 2 inches)	$7.75
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼ and 1½ inches)	6.30

Socket



No. 35 Plain Edge

With polished applewood handles, sharpened ready for use. The 1-inch chisel has 5½-inch blade.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	$4.20	4.25	4.35	4.45	4.60	4.75	4.85	5.30
Size, inches	3/4	7/8	1	1¼	1½	1¾	2	
Dozen	$5.70	6.05	6.55	7.20	7.80	8.70	9.65	

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼, 1½, 1¾ and 2 inches)	$5.85
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼ and 1½ inches)	5.25



No. 36 Beveled Edge

Extra quality, polished hickory handles with leather tips. Sharpened ready for use. The 1-inch chisel has 5½-inch blade.

Size, inch	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	$6.00	6.15	6.40	6.80	7.20	7.75
Size, inches	7/8	1	1¼	1½	1¾	2
Dozen	$8.10	8.60	9.90	10.65	12.50	13.80

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼, 1½, 1¾ and 2 inches)	$ 8.65
Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1¼ and 1½ inches)	7.50

Paring Chisels

Buck Bros.

Tanged



No. 11 Plain Edge

Not sharpened. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch	⅛	3/16	¼	5/16	⅜	7/16	½	⅝
Dozen	$2.80	2.80	2.80	2.90	2.90	3.20	3.20	3.55
Size, inches	¾	⅞	1	1¼	1½	1¾	2	
Dozen	$4.00	4.30	5.25	7.15	8.60	10.15	12.50	



No. 31 Beveled Edge

Not sharpened. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch	⅛	3/16	¼	5/16	⅜	7/16	½	⅝
Dozen	$5.75	5.80	5.90	6.00	6.00	6.15	6.15	6.50
Size, inches	¾	⅞	1	1¼	1½	1¾	2	
Dozen	$6.90	7.30	8.20	10.90	12.40	14.80	17.40	



No. 12 Plain Edge

Handled with best quality polished applewood. Cast brass ferrules. Sharpened ready for use. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch	⅛	3/16	¼	5/16	⅜	½	⅝	¾
Dozen	$3.85	3.90	4.00	4.15	4.25	4.45	5.00	5.50
Size, inches	⅞	1	1¼	1½	1¾	2		
Dozen	$5.90	6.85	8.90	10.60	12.25	14.70		

In Sets of 12

Set A (containing ⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾ and 2 inches)	$ 7.45
Set B (containing ⅛, 3/16, ¼, 5/16, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, and 1½ inches)	5.85



No. 32 Beveled Edge

Leather-tipped, polished hickory handles of extra quality. Cast brass ferrules. Sharpened ready for use. The 1-inch chisel is 8½ inches long from bolster to point.

Size, inch	⅛	3/16	¼	5/16	⅜	½	⅝	¾
Dozen	$7.20	7.20	7.20	7.30	7.35	7.50	8.10	8.50
Size, inches	⅞	1	1¼	1½	1¾	2		
Dozen	$8.90	9.85	12.70	14.50	17.10	19.65		

In Sets of 12

Set A (containing ⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾ and 2 inches)	$11.25
Set B (containing ⅛, 3/16, ¼, 5/16, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼ and 1½ inches)	9.40

Socket



No. 43 Plain Edge

Polished applewood handle, sharpened ready for use. All sizes have 8-inch blades.

Size, inch	⅛	¼	⅜	½	⅝	¾
Dozen	$5.60	5.85	6.25	6.75	7.40	8.25
Size, inches	⅞	1	1¼	1½	1¾	2
Dozen	$8.70	9.20	10.35	11.25	12.40	14.00



No. 44 Beveled Edge

Leather tipped, best quality hickory handles, sharpened ready for use. All sizes have 8-inch blades.

Size, inch	⅛	¼	⅜	½	⅝	¾
Dozen	$8.10	8.35	8.75	9.25	10.00	10.80
Size, inches	⅞	1	1¼	1½	1¾	2
Dozen	$11.45	12.10	13.90	15.20	17.10	19.00

Bent Shank, Tanged



No. 15 Plain Edge

Best quality applewood handles, with cast brass ferrules, sharpened ready for use. The 1-inch chisel is 8½ inches from bolster to point.

Size, inch	⅛	3/16	¼	5/16	⅜	½	⅝	¾
Dozen	$5.25	5.50	5.65	5.85	6.00	6.30	7.20	7.90
Size, inches	⅞	1	1⅛	1¼	1½	1¾	2	
Dozen	$8.50	10.00	11.25	12.90	15.55	18.00	21.60	



No. 15¼ Beveled Edge

Leather tipped, best quality hickory handles, with cast brass ferrules, sharpened ready for use. The 1-inch chisel is 8½ inches from bolster to point.

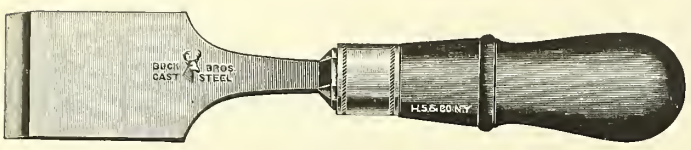
Size, inch	⅛	3/16	¼	5/16	⅜	½	⅝	¾
Dozen	$8.60	8.80	8.85	9.00	9.10	9.35	10.30	10.90
Size, inches	⅞	1	1⅛	1¼	1½	1¾	2	
Dozen	$11.50	13.00	15.00	16.70	19.45	22.85	26.55	

Butt or Pocket Chisels

Used for fitting Butts when hanging doors. Owing to size they are sometimes called Pocket Chisels

Buck Bros.

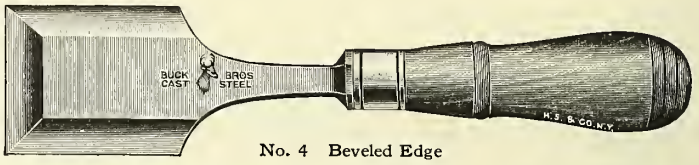
Tanged



No. 3 Plain Edge

Handled and sharpened ready for use. 9 inches long overall.

Size, inch	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	$2.50	2.60	2.85	3.15	3.40	3.70
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	$4.10	4.30	5.60	6.70	8.00	9.40

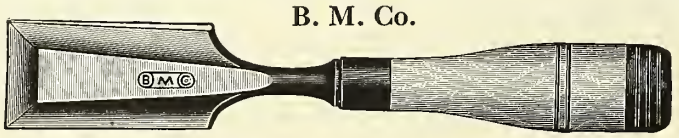


No. 4 Beveled Edge

Leather tipped, polished hickory handles. Sharpened ready for use, 9 inches long overall.

Size, inch	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	$4.70	4.85	5.10	5.45	5.80	6.05
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	$6.25	6.70	8.75	9.90	12.35	13.90

B. M. Co.



No. 27 Beveled Edge

No. 27 With leather tipped, polished hickory handles. Sharpened ready for use. 1½-inch chisels are 8¼ inches long overall.

Size, inches	1	1 1/4	1 1/2	1 3/4	2
Dozen	$6.70	8.75	9.90	12.35	13.90

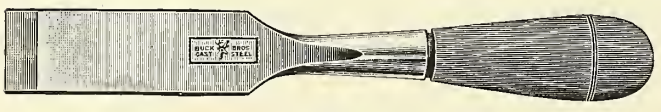
Set in Canvas Roll

No. 10 Containing 4 No. 27 beveled edge tanged butt chisels. Sizes, 3/8, 3/4, 1 and 1½ inches and 1 No. 7 notching chisel, size 1½ inches.

Set $4.50

Buck Bros.

Socket



No. 38 Plain Edge

Length of blade, 3¾ inches. Sharpened ready for use.

Size, inch	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	$3.00	3.15	3.35	3.55	3.90	4.20
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	$4.50	4.90	5.40	5.90	6.60	7.40

Assorted in Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches) $4.35

In Sets of 6

Set I (containing 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches) 2.65



No. 39 Beveled Edge

Length of blade, 3¾ inches. Sharpened, ready for use. Leather tipped, polished hickory handles.

Size, inch	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	$4.80	4.95	5.15	5.45	5.80	6.20
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	$6.50	6.90	7.95	8.55	10.00	11.05

Assorted in Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches) $6.95

In Sets of 6

Set I (containing 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches) 3.85

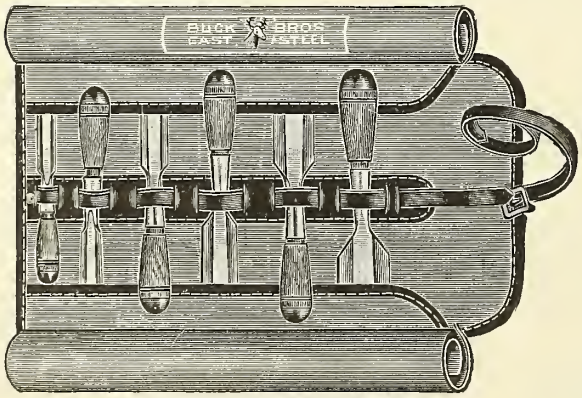


Illustration shows set No. 39-I

Sets in Canvas Rolls

Plain Edge

No. 38A (containing 12 chisels, sizes, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches) $5.50

No. 38-I (containing 6 chisels, sizes, 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches) 3.60

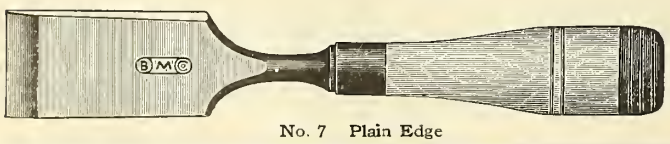
Beveled Edge

No. 39A (containing 12 chisels, sizes, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches) $8.15

No. 39-I (containing 6 chisels, sizes, 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 inches) 4.80

Notching Chisels

B. M. Co.



No. 7 Plain Edge

Sharpened ready for use. Best Quality Leather Top, Hickory Handles. 1½-inch chisels are 8¼ inches long overall. Thin but very strong and stiff. All woodworkers, especially stair builders, will appreciate this feature.

Size, inches	1	1 1/4	1 1/2	1 3/4	2
Dozen	$4.30	5.60	6.70	8.00	9.40

Chisels

Socket Mortise
Buck Bros.



No. 48

The 3/8-inch size has 6 3/4-inch blade. With polished hickory handle. Sharpened, ready for use.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	$7.50	8.00	8.50	8.80	9.25	9.75	10.30	12.00

Deck
Buck Bros.



No. 52

Handled, not sharpened. Length of blade 5 to 6 inches.

Size, inches	1 1/4	1 1/2
Dozen	$11.25	12.00

Floor
H. S. & Co.



No. 60

Made thin to cut flooring, etc. Must not be used for prying or ripping, as the No. 85 is intended for that purpose.
2 1/2 inches wide, 18 inches long. Made of 3/4-inch octagon steel, dozen $12.00

Floor, with Offset
For Plumbers, Electricians, etc.
Buck Bros.



No. 57 1/2

Length, overall, 10 inches.

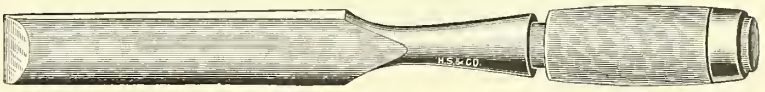
No. 57 Plain edge.

Size, inch	1/2	5/8	3/4	7/8	1
Dozen	$3.50	3.75	4.00	4.25	4.50

No. 57 1/2 Beveled edge.

Size, inch	1/2	5/8	3/4	7/8	1
Dozen	$5.50	5.75	6.00	6.25	6.50

Socket Framing
Buck Bros.



No. 56

No. 56 With polished hickory handle, not sharpened, 7 to 8 inch blades.

Size, inch	1/4	3/8	1/2	5/8	3/4	7/8
Dozen	$6.00	6.40	6.60	6.75	7.25	7.50
Size, inches	1	1 1/4	1 1/2	1 3/4	2	
Dozen	$8.00	9.00	10.00	11.00	12.00	

Carpenters Slicks
Witherby



No. 45 Socket Handle

Size, inches	3	3 1/2
Each	$1.95	2.10

Ripping
H. S. & Co.



No. 85

Are intended for ripping down partitions and similar rough work and can be subjected to very hard usage.
1 1/2 inches wide, 18 inches long. Made of 3/4-inch octagon steel, dozen $9.60

Plumbers
H. S. & Co.



No. 50

1 inch wide, 11 inches long. Made of best quality 5/8-inch octagon steel, dozen $5.20

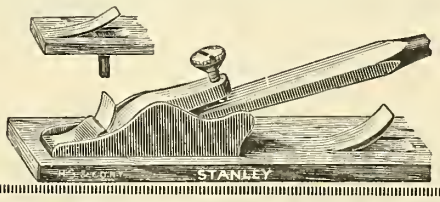
Plumbers Gouge
H. S. & Co.



No. 52

1 inch wide, 11 inches long, 5/8-inch best quality octagon steel, dozen $8.00

Adjustable Chisel Gauge
(Blind Nail Tool)
Stanley



A principal use of this simple device will be found in finishing work where blind-nailing is required.

By attaching the gauge to a 1/4-inch chisel (with beveled edge up), a shaving of any thickness can be raised with precision, and when glued down this shaving will fit its recess perfectly.

No. 96 2 1/4 inches long, nickel-plated, dozen $2.40

Firmer Gouges

Buck Bros.

Tanged

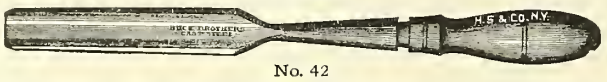


No. 7

Outside bevel, regular sweep, sharpened ready for use. The 1 inch gouge is 5½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	$2.00	2.00	2.00	2.05	2.15	2.35	2.45	2.65
Size, inches		3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen		$2.90	3.30	3.50	4.90	6.00	7.30	9.00

Socket



No. 42

Outside bevel, regular sweep, sharpened ready for use. The 1-inch gouge has 5½-inch blade.

Handled with first quality applewood.

Size, inches	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	$4.60	5.00	5.35	5.60	5.80	6.40
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	$7.00	7.50	8.40	9.20	10.25	11.40

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches) $7.25

Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4 and 1 1/2 inches) 6.30



No. 8

No. 8. Outside bevel, regular sweep.

No. 10. Inside bevel, regular sweep.

Best quality polished applewood handles with cast brass ferrules sharpened ready for use. The 1 inch gouge is 5½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
No. 8. Dozen	$3.15	3.20	3.30	3.45	3.60	3.85	3.85	4.10
No. 10. Dozen	3.70	3.75	3.85	4.00	4.15	4.40	4.40	4.60
Size, inches		3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
No. 8. Dozen		$4.45	4.90	5.10	6.70	8.00	9.45	11.20
No. 10. Dozen		5.00	5.40	5.65	7.30	8.55	10.10	11.85

No. 8 Outside Bevel, in Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches) $5.80

Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4 and 1 1/2 inches) 4.60

Paring Gouges

Buck Bros.

Tanged

All paring gouges are beveled inside and have three sweeps, regular, middle and flat, as illustrated on opposite side. Customers are particularly requested when ordering to name the sweep wanted.



No. 13

Not sharpened. The 1-inch gouge is 8½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	$4.65	4.65	4.70	4.80	4.80	5.10	5.10	5.40
Size, inches	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
Dozen	$5.90	6.15	7.15	9.35	9.95	10.90	13.15	15.60



No. 14

Handled with first quality applewood and sharpened ready for use. The 1-inch Gouge is 8½ inches long from bolster to point.

Size, inch	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Dozen	$6.20	6.25	6.35	6.50	6.65	6.85	7.40	7.90
Size, inches		7/8	1	1 1/4	1 1/2	1 3/4	2	
Dozen		$8.25	9.25	11.65	13.40	16.00	18.40	

In Sets of 12

Set A (containing 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches) $10.15

Set B (containing 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4 and 1 1/2 inches) 8.25

Bent Shank, Tanged



No. 15½

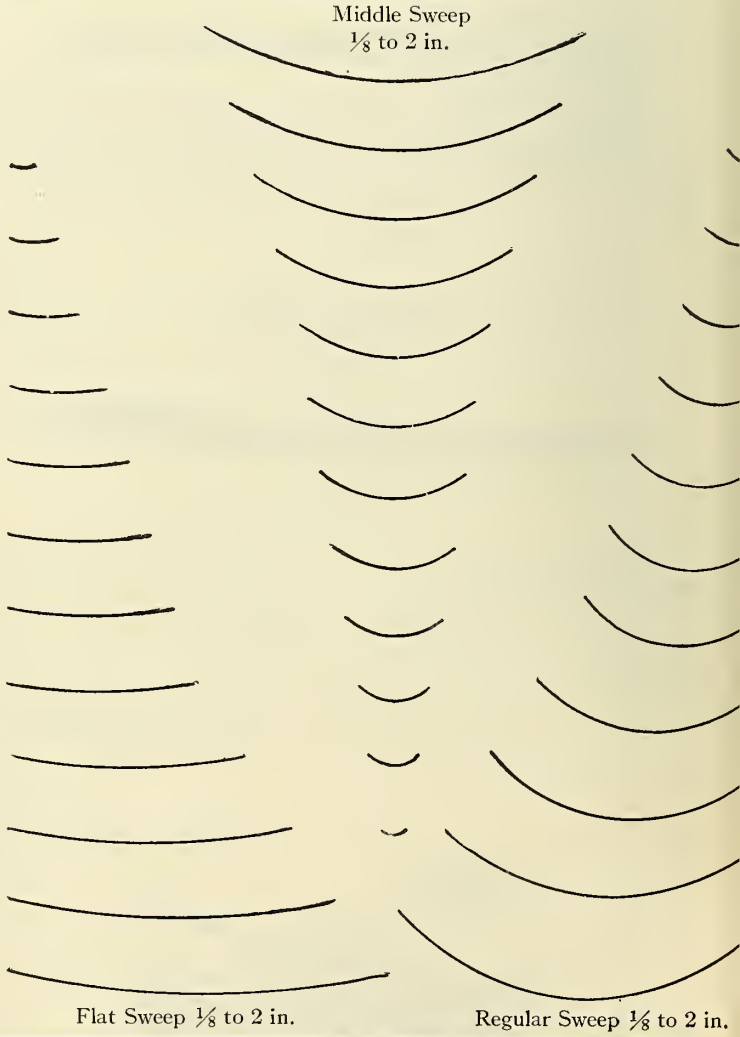
The 1-inch Gouge is 8½ inches long from bolster to point.

Handled and sharpened ready for use.

Size, inch	1/8	1/4	3/8	1/2	5/8	3/4
Dozen	$7.90	8.40	8.75	9.60	10.40	11.00
Size, inches	7/8	1	1 1/4	1 1/2	1 3/4	2
Dozen	$11.40	12.60	15.90	17.50	20.00	23.00

Sweeps—Full Size Cuts

Middle Sweep
1/8 to 2 in.



Flat Sweep 1/8 to 2 in.

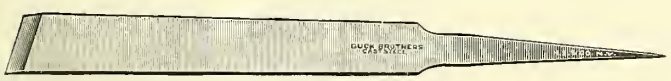
Regular Sweep 1/8 to 2 in.

SEE DISCOUNT SHEET

Turning Tools for Wood

Buck Bros.

Chisels



Not sharpened

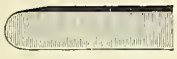
No. 21 The 1-inch chisel is 11 inches long overall.

No. 23 Long and strong. The 1-inch chisel is 13 inches long overall.

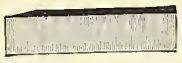
Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
No. 21 Dozen	$3.00	3.00	3.00	3.20	3.20	3.45	3.45	3.75
No. 23 Dozen	$4.15	4.15	4.30	4.30	4.50	4.50	4.85	
Size, inches	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	
No. 21 Dozen	$4.10	4.50	5.10	6.20	7.70	9.20	10.70	
No. 23 Dozen	5.40	5.80	6.75	8.25	10.50	13.50	16.75	



No. 19 Skew Point



No. 19 1/4 Round Point



No. 19 1/2 Square Point



No. 19 3/4 Spear Point

Best quality applewood handles, with cast brass ferrules. Sharpened ready for use. The 1-inch chisel has about 6 1/4-inch blade.

Size, inch	1/4	3/8	1/2	5/8	3/4	7/8	1
No. 19 Skew, dozen	$4.25	4.50	5.00	5.40	6.00	6.70	7.60
No. 19 1/4 Round, dozen	5.00	5.25	5.75	6.15	6.70	7.50	8.35
No. 19 1/2 Square, dozen	5.00	5.25	5.75	6.15	6.70	7.50	8.35
No. 19 3/4 Spear, dozen	5.00	5.25	5.75	6.15	6.70	7.50	8.35

H. S. & Co.
Beading



Not sharpened

Size inch	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Each	$ .70	.70	.70	.80	.90	1.10	1.30	1.50

Hustler



Top View



Bottom View

Not Sharpened

Size, inch	1/8	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1
Each	$ .50	.55	.60	.65	.80	.95	1.10	1.25	1.50

Gouges



Not sharpened

No. 22 The 1-inch gouge is 11 inches long overall.

No. 24 Long and strong. The 1-inch gouge is 13 inches long overall.

Size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8
No. 22 Dozen	$3.65	3.70	3.70	4.00	4.00	4.40	4.40	4.70
No. 24 Dozen	....	....	5.80	6.00	6.00	....	7.00	7.70
Size, inches	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	
No. 22 Dozen	$5.35	6.00	6.70	8.45	10.80	12.55	15.20	
No. 24 Dozen	8.75	10.10	11.10	13.50	16.90	18.75	21.50	



No. 20 Best quality applewood handles, with cast brass ferrules. The 1-inch gouge has 6 1/4-inch blade. Sharpened, ready for use.

Size, inch	1/4	3/8	1/2	5/8	3/4	7/8	1
Dozen	$5.50	5.90	6.25	6.65	7.50	8.55	9.45

Parting



No. 18

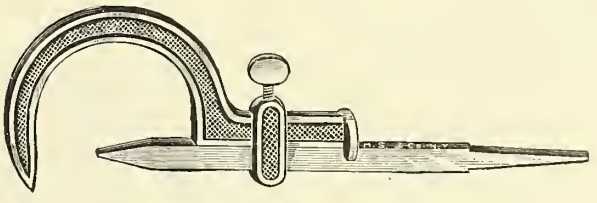
Length 8 1/2 to 9 1/2 inches over all. Not sharpened. Without handles.

Size, inch	1/2	5/8	3/4
Dozen	$4.50	5.00	5.50

No. 18 1/2 Handled. Sharpened ready for use.

Size, inch	1/2	5/8	3/4
Dozen	$6.30	6.80	7.30

Sizing



No. 25

Opens to 4 inches. The blades are made of best English cast steel, properly tempered.

	Dozen
Without handles, not sharpened	$15.00
Handled and sharpened	16.80

H. S. & Co.
Gauges



Steel. Gauges from 2/16 to 16/16 inch by 16ths, each $1.00

Wood-Carving Tools

London

Genuine S. J. Addis

These tools are the standard of the wood carver and are the very best on the market, made of the best tool steel, carefully tempered. Each tool is thoroughly inspected to insure its being perfect.

We are exclusive agents in the United States, importing direct and carrying a large and assorted stock of the various styles, sizes and sweeps.

All tangs are shouldered to prevent creeping and splitting the handles.



Straight



Long Bend



Short Bend



Veining Tool No. 11 $\frac{1}{64}$ Inch

All sweeps up to 1 inch are illustrated full size on the next two pages, but it must be born in mind that in a few cases the tools will vary slightly from the diagrams, as it is almost impossible to exactly reproduce the sweeps of some of the gouges, etc. The illustrations, however, will be of value in making up orders, matching tools to be replaced, etc. We carry in stock—Tools Nos. 1 to 8, up to 1½ inch. Tools Nos. 9 to 20, up to 1¼ inch. Tools Nos. 21 to 46, up to 1 inch.

Nos. 1 to 11 and 20, 21, 31, 32, 39, 40 begin with $\frac{1}{32}$ inch. All other sizes begin with $\frac{1}{16}$ inch. $\frac{5}{64}$ and $\frac{7}{64}$ Tools are made in No. 11 only. No. 22 is right corner, No. 23 left.

We also carry in stock a very fine, short veining tool, No. 11, $\frac{1}{64}$ inch, for engraving varnished work, illustrated above.

How Carving Tools Are Measured

Nos. 1 to 32, width of cutting edge, measured in a straight line from point to point.

Nos. 41 to 46, length of one side of cutting edge.

(*Not handled or sharpened.) (Any size tool smaller than smallest size listed takes that list)

Up to, Inches	½	9/16	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
No. 1 and 2, straight, dozen	....	....	$2.40	2.80	3.20	3.40	4.20	4.60	5.00	5.60	6.80	8.20
Each	....	....	.20	.24	.27	.29	.35	.39	.42	.47	.57	.69
No. 3 to 9, straight, dozen	....	....	2.80	3.30	3.70	3.90	4.80	5.40	5.80	6.60	8.00	9.80
Each	....	....	.24	.28	.31	.33	.40	.45	.49	.55	.67	.82
No. 10, straight, dozen	....	....	3.20	3.60	4.80	5.60	6.40	8.00	9.60	12.00	14.40	16.80
Each	....	....	.27	.30	.40	.47	.54	.67	.80	1.00	1.20	1.40
No. 11, straight, dozen	$3.20	3.60	3.60	4.80	5.60	6.40	8.00	9.60	12.00	14.40	16.80	20.00
Each	.27	.30	.30	.40	.47	.54	.67	.80	1.00	1.20	1.40	1.67
No. 12 to 18, long bend, dozen	....	....	3.40	3.80	5.20	6.00	7.20	8.00	9.60	11.20		
Each	....	....	.29	.32	.44	.50	.60	.67	.80	.94		
No. 19 and 20, long bend, dozen	3.40	4.20	4.20	5.20	6.00	7.20	8.00	9.60	11.20	13.60		
Each	.29	.35	.35	.44	.50	.60	.67	.80	.94	1.14		
No. 21 to 23, short bend, dozen	....	....	....	3.00	4.20	5.20	6.00	7.20	8.00	9.60	12.00	14.40
Each	....	....	....	.25	.35	.44	.50	.60	.67	.80	1.00	1.20
No. 24 to 30, short bend, dozen	....	....	3.40	3.80	5.20	6.00	7.20	8.00	9.60	11.20		
Each	....	....	.29	.32	.44	.50	.60	.67	.80	.94		
No. 31 and 32, short bend, dozen	3.40	4.20	4.20	5.20	6.00	7.20	8.00	9.60	11.20	13.60		
Each	.29	.35	.35	.44	.50	.60	.67	.80	.94	1.14		
No. 39, straight, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						
No. 40, long bend, dozen	4.60	5.10	5.60	6.90	8.60	10.60	12.70	14.40				
Each	.39	.43	.47	.58	.72	.89	1.06	1.20				
No. 41, straight, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						
No. 42, long bend, dozen	4.60	5.10	5.60	6.90	8.60	10.60	12.70	14.40				
Each	.39	.43	.47	.58	.72	.89	1.06	1.20				
No. 43 and 44, short bend, dozen	4.60	5.15	5.60	6.90	8.60	10.60						
Each	.39	.43	.47	.58	.72	.89						
No. 45, straight, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						
No. 46, long bend, dozen	4.20	4.70	5.20	6.50	8.20	10.20						
Each	.35	.40	.44	.55	.69	.85						

(*For Handling and Sharpening Tools see page 561.) See pages 562 and 563 for full size illustrations of shapes

Wood-Carving Tools

London

Genuine S. J. Addis

Ladies or Fish Tail

The name "Fish Tail" is derived from the spread of the point, which somewhat resembles a fish tail, they are slightly lighter than the regular and are used principally for chip carving. All tangs are shouldered to prevent creeping and splitting the handle. The sweeps are the same as corresponding numbers of regular tools and are illustrated full size on two succeeding pages. The same prices apply as shown on page 560.



No. 1



No. 11



No. 39

No. 1 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch
No. 3 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
No. 4 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
No. 5 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
No. 6 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, and $\frac{1}{2}$ inch.
No. 7 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, and $\frac{3}{8}$ inch.
No. 8 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, and $\frac{3}{8}$ inch.
No. 9 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$ and $\frac{3}{8}$ inch.
No. 10 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ and $\frac{1}{8}$ inch.
No. 11 $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ and $\frac{1}{8}$ inch.
No. 39 $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{3}{16}$ inch.
No. 41 $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{3}{16}$ inch.
No. 45 $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{3}{16}$ inch.

Handling and Sharpening Carving Tools

Handling

(Prices include Handles)

With round maple handle, dozen ..... $ .50
Each ..... .05

With octagon maple handle, dozen ..... $ .85
Each ..... .09

Sharpening

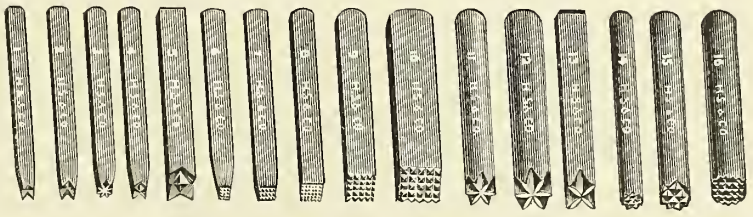
By sharpening, we mean that the tools are ground sharp, but not honed, our experience has been that wood carvers prefer to do their own honing (which consists of putting on the inside bevel,) as they differ in opinion as to the exact "edge" and bevel required.

All flat tools and gouges or parting tools up to and including $\frac{3}{4}$ inch in width.
Dozen ..... $ .60
Each ..... .06

Gouges or parting tools over $\frac{3}{4}$ inch in width.
Dozen $1.20
Each ..... .12

Carvers Markers

H. S. & Co.



These markers are made of a special high-grade tool steel, gun finished, carefully hardened and tempered. The designs are those most suitable for background work in wood carving.

Any number, dozen $3.40

Book

"Wood Carving, with Suggestions in Chip Carving"

By Thos. C. Simmonds

Contains many illustrations and full descriptions of the woods, tools, etc., used in wood and chip carving, with an entire chapter on the sharpening and management of tools.

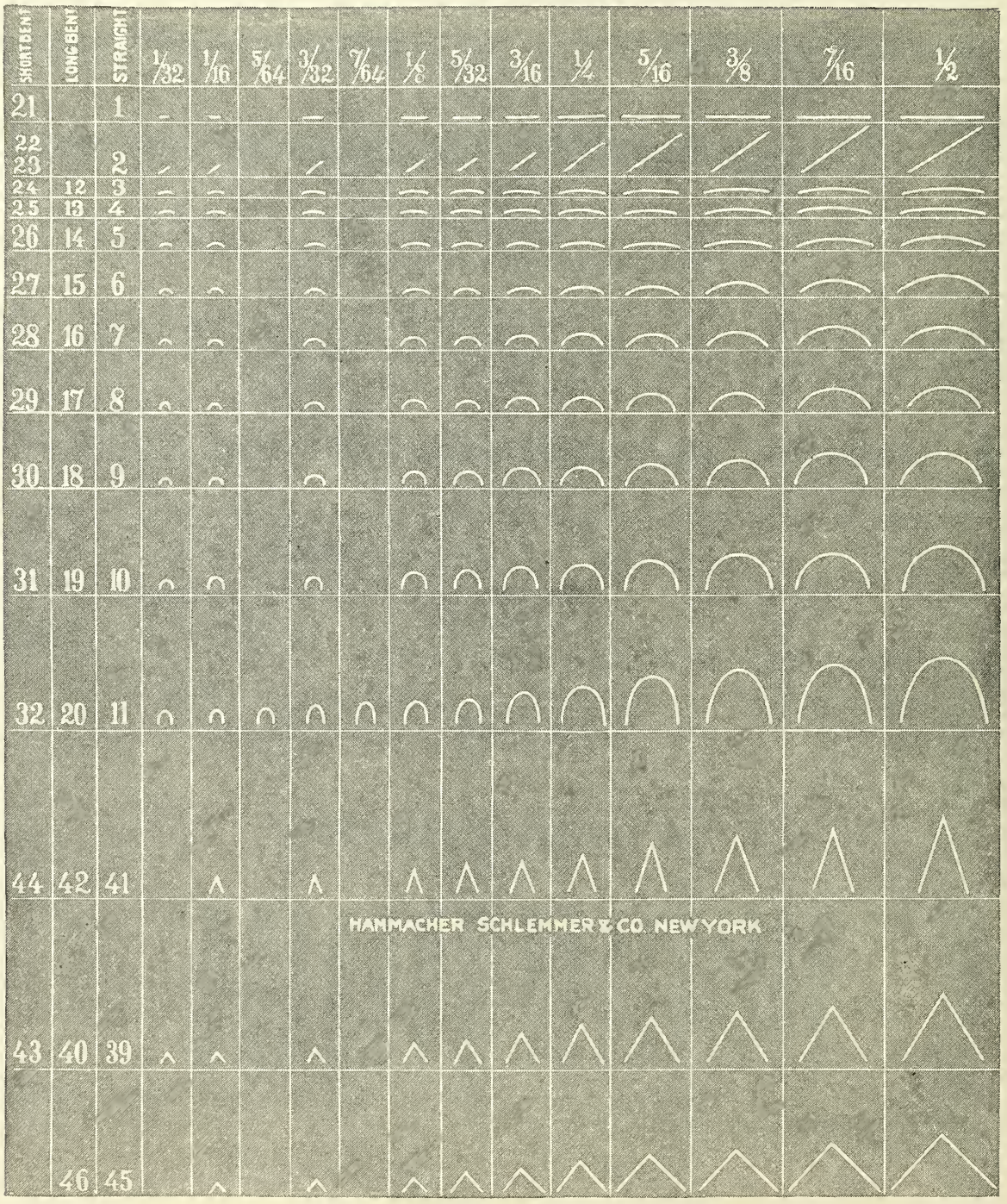
91 pages, 5½x7½ inches, postpaid, each ..... $ .50

Wood-Carving Tools

London

Genuine S. J. Addis

Illustrating full size shapes of sizes $\frac{1}{32}$ to $\frac{1}{2}$ inch, inclusive





Straight



Long Bend



Short Bend

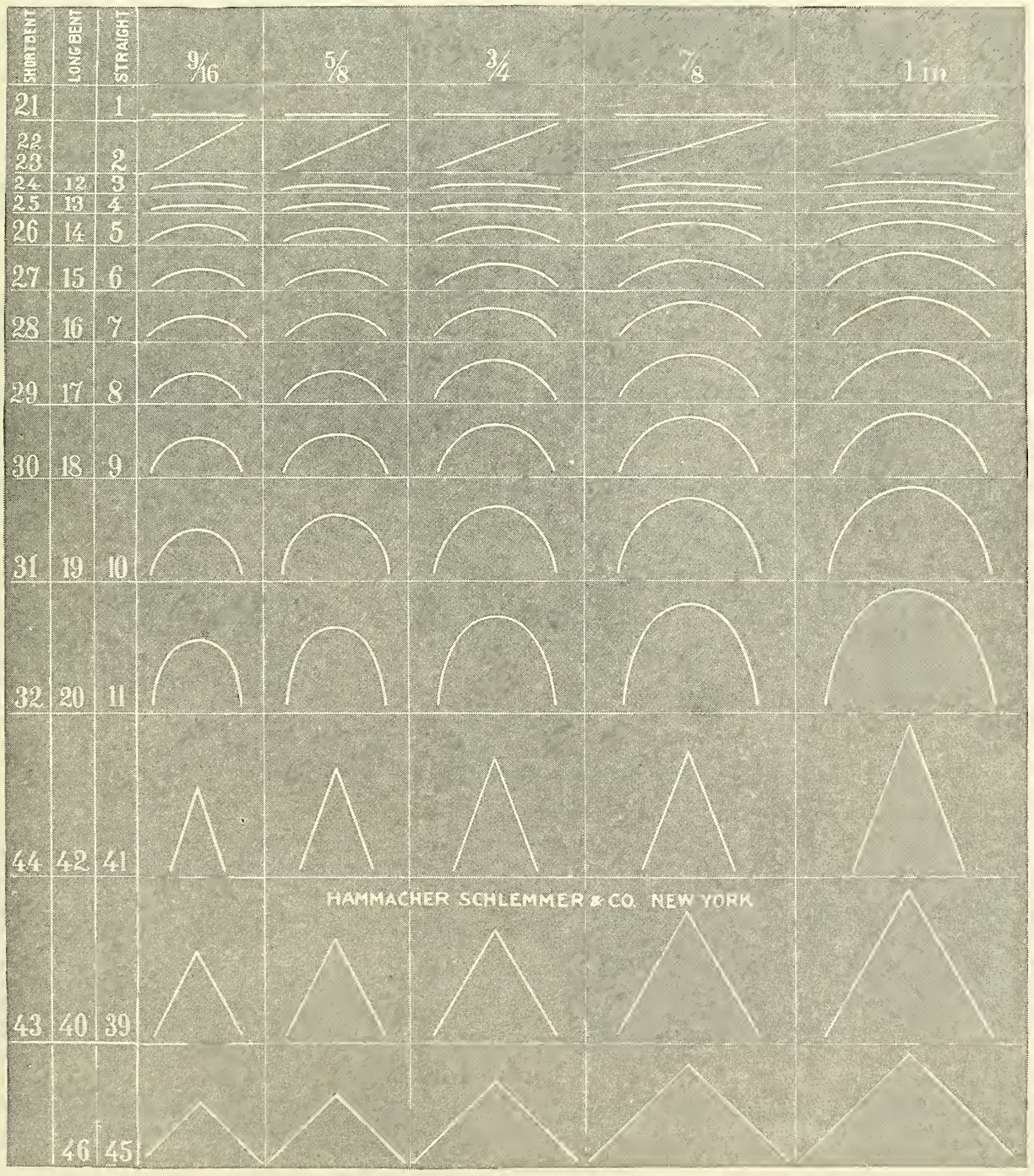
See page 560 for listing

Wood-Carving Tools

London

Genuine S. J. Addis

Illustrating full size shapes of sizes $\frac{9}{16}$ to 1 inch, inclusive





Straight

Long Bend

Short Bend

See page 560 for listing

Gravers

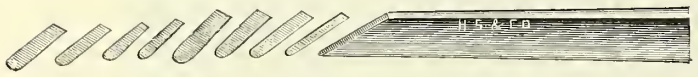
Genuine Stubs



Sizes, No. 3, 2, 1 — No. 130. Knife



Sizes, No. 6, 5, 4 Onglette | 3, 2, 1, oval — No. 130A



Sizes, No. 9, 8, 7, 6 Narrow Back | 5, 4, 3, 2, 1, Wide Back — No. 130B. Round Edge



Sizes, No. 9, 8, 7, 6 Narrow Back | 5, 4, 3, 2, 1, Wide Back — No. 130C. Flat Back



Sizes, No. 3, 2, 1 — No. 130D. Round Edge, Pointed Back



Sizes, No. 3, 2, 1 — No. 130E Round



No. 130F. Chisel



Sizes, No. 3, 2, 1. — No. 130G. Half-Round, Flat Back

Sizes, No. 1, 2, 3, 4, 5, 6



No. 196. Square.

Sizes, No. 1, 2, 3, 4, 5, 6



No. 198. Lozenge

Sizes, No. 1, 2, 3, 4, 5, 6



Tint Tools for Wood

Size Number	1	2	3	4	5	6	7	8	9
No. 130, dozen	$1.50	1.60	1.75						
No. 130A dozen	1.50	1.60	1.75	1.50	1.60	1.75			
No. 130B, dozen	1.50	1.50	1.60	1.75	1.90	1.50	1.60	1.75	1.90
No. 130C, dozen	1.50	1.50	1.60	1.75	1.90	1.50	1.60	1.75	1.90
No. 130D, dozen	1.50	1.75	1.90						
No. 130E, dozen	1.50	1.75	1.90						
No. 130G, dozen	1.50	1.75	1.90						

Size Number	1	2	3	4	5	6
No. 196, dozen	$1.25	1.25	1.35	1.50	1.75	1.90
No. 198, dozen	1.25	1.35	1.50	1.75	1.90	2.00
Tint tools for wood, dozen	1.60	1.60	1.75	1.90	2.00	2.15
Size, inch	1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8
No. 130F, dozen	$1.50	1.50	1.50	1.60	1.60	1.75	1.75	1.90

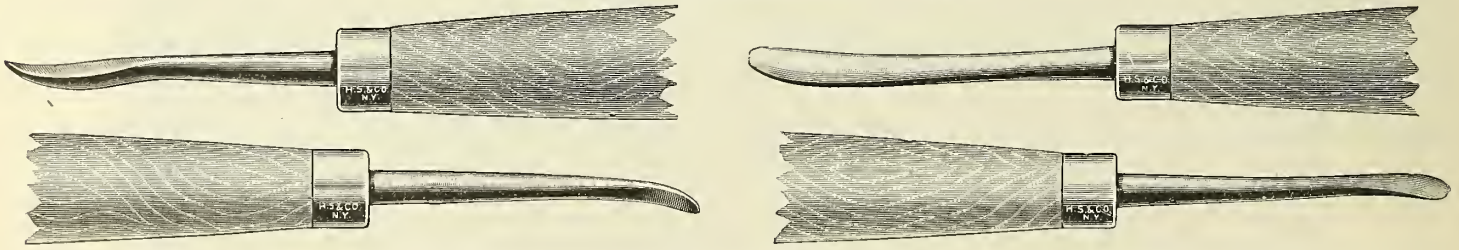
For Graver Handles, see page 547

Leather Working Tools

H. S. & Co.

Made from the highest grade tool steel after the most approved designs. We recommend them to the critical artisan who is seeking the best tools. A very simple outfit is required for a start in leather working, and we suggest the following: A small drawing board or thick piece of unpolished glass, a knife for cutting and paring the leather-tracing, undercutting and modeling tools, hammer and back ground stamps.

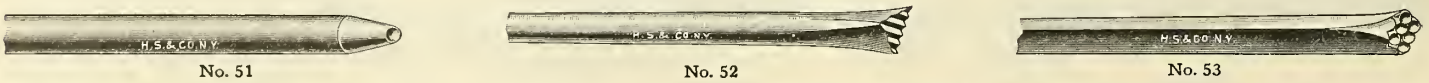
Tracing, Undercutting and Modeling



These cuts show each tool cut in two pieces. Both tools are double end and measure 9 inches in length, from point to point.

No. 101 Each ..... $ .60 No. 102 Each ..... $ .60

Back Ground Stamps



No. 51 No. 52 No. 53

These tools are 4¼ inches overall. The full size represent only the staple tools. Operators usually make special tools, shaped to their particular needs, from pieces of steel, such as an old round file.

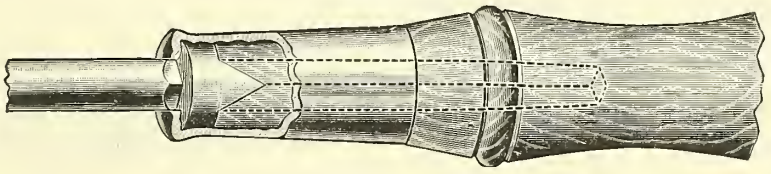
Nos. 51, 52 or 53 Each ..... $ .40

Screwdrivers

H. S. & Co.

New Century

The H. S. & Co., "New Century" Screwdriver is fully warranted. The blade is high-grade tool steel, carefully tempered, and the handle is polished hardwood especially shaped to give a firm, easy grip. Each tool is thoroughly tested before it leaves the factory.



This cut shows how the toothed bolster joins and locks the blade to the handle.

This construction prevents the handle from loosening, turning or splitting and gives maximum strength combined with lightness.

Regular



No. 100 Rosewood Finish Handles

Length of blade, inches	2	2½	3	4	5	6	7	8	10	12
Dozen	$3.00	3.00	3.50	4.25	5.00	6.00	7.00	8.00	10.00	12.00

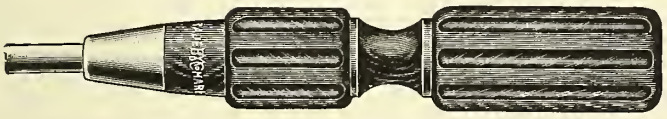
Slim Blade



No. 120 Rosewood Finish Handles

Length of blades, inches	2½	3½	4½	5½	6½	8½	10½	12½
Dozen	$3.00	3.50	4.50	5.50	6.50	8.00	9.50	11.00

Double Grip



No. 112 Rosewood Finish Handles with Deep Grooves

Length of blades, inches	15	18	24	30
Dozen	$16.00	18.00	24.00	30.00

Piano



With Octagon Rosewood Handles, for Light Work

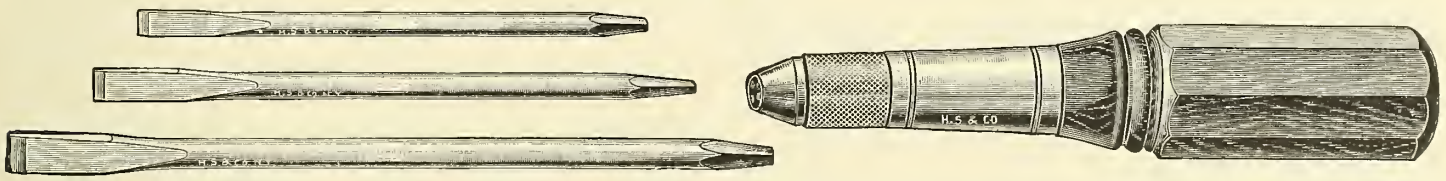
Regular No. 77

Length of Blade Inches	Width of Blade Inch	Dozen	Length of Blade Inches	Width of Blade Inch	Dozen
2	7/32	$4.10	8	5/16	$8.40
3	7/32	4.30	9	5/16	9.00
4	9/32	5.40	10	5/16	9.90
5	9/32	6.30	11	11/32	11.30
6	9/32	7.40	12	11/32	12.30
7	5/16	7.80			

Slim Blade No. 77A

Length of Blade Inches	Width of Blade Inch	Dozen	Length of Blade Inches	Width of Blade Inch	Dozen
2	11/64	$4.10	8	13/64	$8.40
3	11/64	4.30	9	13/64	9.00
4	11/64	5.40	10	13/64	9.90
5	11/64	6.30	11	1/4	11.30
6	3/16	7.40	12	1/4	12.30
7	3/16	7.80			

Set



The handle is rosewood and has an adjustable chuck of improved design, holding rigidly and firmly the 3 blades furnished, which are 4, 6 and 8 inches long. Also holds drills and other round shank tools from 1/8 to 9/32 inch. No. 1, each $1.60

Clock

Round Rosewood Handle



No. 1 2-inch blade, dozen $4.00
No. 1 3-inch blade, dozen 4.80



No. 2 2½-inch blade, narrow point, dozen $5.40

Pocket

Octagon Rosewood Handles



Length of blades, inches	1	2	3
No. 10 Dozen	$3.00	3.00	3.00

Screwdrivers

Yankee

These are strong, durable, well-balanced tools, of high quality material and workmanship, each one being thoroughly tested and guaranteed in every particular as to quality.
The fastening of blade and handle is such that they cannot be loosened in proper use, or even with usual abuse.
The blades and ferrules are finely polished and the handle of hard wood is finished in dull dead black, making a handsome appearance as well as being durable



No. 90 Regular

Length of blades, inches.	1½	2	3	4	5	6	7	8	9	10	12	15	18	24	30
Diam. of blades, inches..	7/32	7/32	7/32	1/4	5/16	5/16	3/8	3/8	3/8	7/16	7/16	7/16	1/2	1/2	1/2
Dozen	$2.65	2.65	3.10	3.60	4.25	5.10	6.00	6.95	7.75	8.65	10.15	14.00	15.35	20.65	26.00

18, 24 and 30 inch have double grip handle.



No. 95 Slim Blade

Length of blades, inches	2½	3½	4½	5½	6½	7½	8½	9½	10½	12½	15½
Diameter of blades, inches	3/16	3/16	3/16	3/16	3/16	7/32	7/32	7/32	7/32	7/32	7/32
Dozen	$2.65	3.10	3.50	4.00	4.55	5.35	5.90	6.40	6.95	8.00	9.60

Hurwood

The blade, shank and head of Hurwood Screwdrivers are one-piece of special steel. Two projecting wings under the head together with rivet which passes through ferrule, handle and shank, securely fastens blade in handle, preventing its turning. These Drivers are made in two forms: One, in which the metal blade runs clear through the handle, and the other, designed for electricians, possessing equal strength but having the metal head countersunk in the handle and insulated with non-conducting plug. All blades are finely tempered, the handles are fluted and stained black and drivers are well-finished throughout.



Construction of Nos. 20 and 50



Construction of No. 55



No. 20, from 2½ to 15 inches
Nos. 50 and 55 all sizes, latter with insulated end



No. 20. 18, 24 and 30 inch



Nos. 51½, 52½ and 53½



No. 54

No. 20 Regular
(Blade runs through handle)

Length of Blade Inches	Diameter of Blade Inch	Tip of Blade Inch	Dozen
2½	7/32	5/32	$2.40
3	7/32	3/16	3.00
4	1/4	7/32	3.60
5	5/16	7/32	4.20
6	5/16	1/4	4.80
7	11/32	9/32	5.40
8	3/8	5/16	6.00
9	3/8	11/32	6.60
10	3/8	3/8	7.20
12	3/8	3/8	8.40
15	7/16	7/16	10.20
18	1/2	15/32	12.00
24	1/2	1/2	15.60
30	1/2	9/16	19.20

Machinists
(Blade runs through handle)
Made with Hexagon shank for use with a wrench

Number	Length of Blade Inches	Diameter of Blade Inch	Tip of Blade Inch	Dozen
51½	1½	3/8	9/32	$7.20
52½	2⅝	7/16	15/32	8.40
53½	3¼	½	½	10.20
54	10	½	½	18.00

Nos. 50 and 55 Slim Blade
(Blade runs through handle.) No. 55 has insulated handle for electrical work

Designed for light and delicate work. The blades are 5/32 inch in diameter with ⅛ inch tip. The handles are short and of small diameter, to fit the palm of the hand permitting the workman to use his thumb and forefinger near the blade when turning screws requiring delicate adjustment. They are, however, very strong and durable, being made with the two projecting wings and rivet as described above.

Length of blade, inches	1½	2½	3	4	5	6	7	8	9	10	12
Dozen	$2.40	2.40	3.00	3.60	4.20	4.80	5.40	6.00	6.60	7.20	8.40

Screwdrivers

Genuine Champion

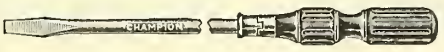
The Blade is forged from the toughest steel, tempered with great care and shrunk into a solid malleable bolster which rests in heavy ferrule, while tang (which forms a part of the bolster) enters and passes nearly through the handle. Every Blade is tested to split a screw-head.

Sizes refer to length of blades



Regular (2½ to 12 inches)

Inches	2½	3	4	5	6
Dozen	$3.00	3.50	4.25	5.00	6.00
Inches	7	8	9	10	12
Dozen	7.00	8.00	9.00	10.00	12.00



Double Grip (15 to 30 inches)

Inches	15	18	24	30
Dozen	$16.00	18.00	24.00	30.00



Slim (3½ to 6½ inches)

Inches	3½	4½	5½	6½
Dozen	$3.50	4.50	5.50	6.50

Valley

The Blade is forged from best tool steel and is prevented from turning in handle by a rivet passing through ferrule, handle and blade.



Length of blade, inches	3	4	5	6	7	8
Dozen	$1.55	1.80	2.10	2.40	2.90	3.20



Valley "Pet"

Blade is ⅛ inch in diameter. For very light, fine work.

Length of blade, 1¼ inches, dozen	$2.50
Length of blade, 3 inches, dozen	2.50

Perfect Handle

The entire metal part is solid steel drop-forging. The head is shaped into a hammer, which may be used to start screws into wood, or the driver may be used with a hammer to loosen rusty screws. Each point is tested in a special machine built for that purpose. Each wooden handle is riveted on, locked in under pressure, and carefully waterproofed. Every Perfect Handle Tool is guaranteed in every way by the maker.

No. 609

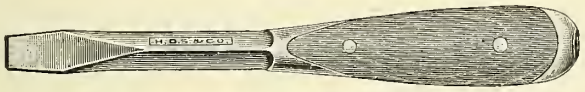
Length of blade, inches	2	3	4	5	6	7	8	10	12
Diameter of blade, inches	¼	¼	¼	¼	5/16	5/16	5/16	⅜	⅜
Dozen	$4.25	4.25	4.25	5.00	6.00	7.00	8.00	10.00	12.00



No. 609 Before wooden handles are attached showing one-piece steel drop-forging



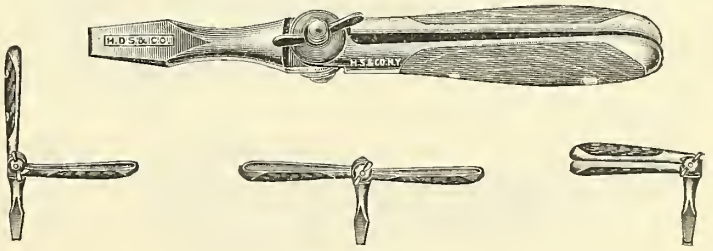
No. 609 Complete



No. 610 Machinists

Fit a wrench to the square shank to tighten or loosen cap screws, set screws, etc. Use all the power that seems necessary, as the makers unqualified guarantee is back of the tool.

Length over all, inches	9½	10½
Length of blade, inches	4½	5
Size of square, inch	7/16	9/16
Width of point, inch	½	¾
Thickness of point, inch	5/64	5/64
Dozen	$12.00	13.00



No. 611 Triple Lever

This triple lever Perfect Handle Screwdriver may be used in any of the positions shown above, as well as in the regular screwdriver position. Turning the wing nut releases or rigidly sets the handle in any desired position; affords a powerful leverage.

Blade 3¼ inches long, 9¼ inches over all, point ½ inch wide, 5/64 inch wide, dozen $18.00

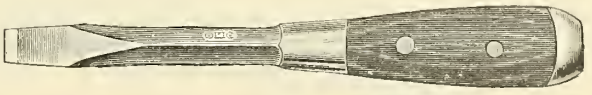
Peerless



No. 200

These Drivers are not one solid forging. The Blade is hand forged (the best method to secure tensile strength in steel) from high-grade tool steel and the steel handle is rigidly attached to the Blade. The wood sides are cocobolo.

Length of blade, inches	2	3	4	5	6	7	8	10	12
Dozen	$4.25	4.25	4.25	5.00	6.00	7.00	8.00	10.00	12.00



No. 400 Machinists

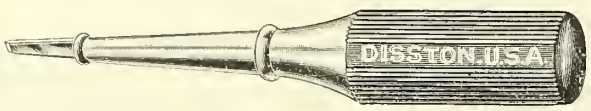
With square shank to enable user to apply a wrench. This Driver is drop-forged in one solid piece.

Length, 9 inches overall, length of Blade, 4¼ inches, dozen .. $13.50

Screwdrivers

Electricians

Disston

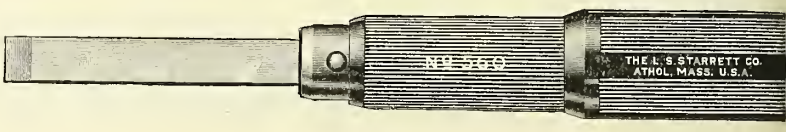


No. 50 Insulated

A crucible steel blade, carefully hardened and tempered, embedded in a hard-rubber handle and so fastened that it will not work loose. The hard-rubber handle acts as an insulator and is a texture which eliminates brittleness. It is strong, tough and durable, pressed to form. The grip is milled and the extended rings prevent the hand from slipping or touching the blade.

6 inches long over all, dozen $16.00

Starrett Pocket Magazine



No. 560

Has 4 blades, $\frac{3}{32}$, $\frac{5}{32}$, $\frac{1}{4}$ and $\frac{3}{8}$ inch in width. When not in use the blades are held in the hollow handle by spring pressure, which prevents loss. The smaller blades may be used to make holes in wood for screws, as well as to drive them home. The entire handle is covered with hard rubber for insulation from electrical currents and is ribbed to insure a firm grip when using.

Complete, each $1.50
Extra blades, each ..... .10

Pocket

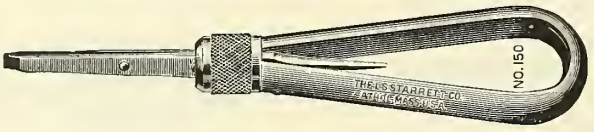
Yankee Magazine



No. 60 Is 3 inches long and weighs 2 ounces. Shape is convenient to carry in the pocket. Provided with 4 blades of different widths and thicknesses. Made of steel, nickel-plated and highly polished.

Dozen $10.00

Starrett With Brad Awl and Wrench



Open

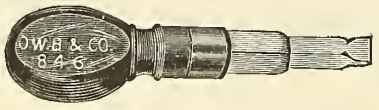


No. 150 Closed

A compact combination of three tools, consisting of neat finely finished steel handle with knurled nut, which firmly holds a screwdriver and brad awl, made in one piece. The shape of the handle enables it to be used as an emergency wrench.

Weight, 2 ounces, each ..... $ .40

Bullock Locksmiths and Gunsmiths

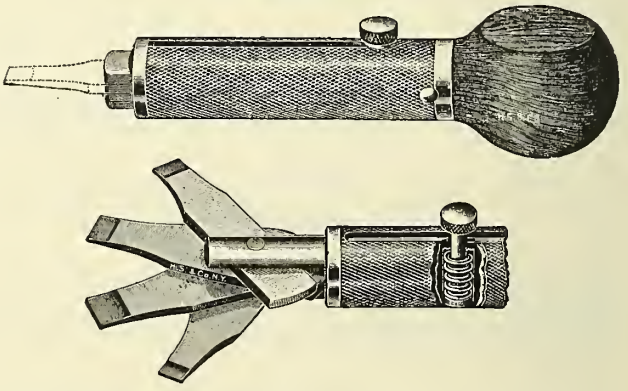


No 846 Half Size

Square steel blade, short, stout point. Blades pinned in handles. Very handy for lock and gunsmiths.

Rosewood handle, plain, dozen $6.00

Billings Magazine

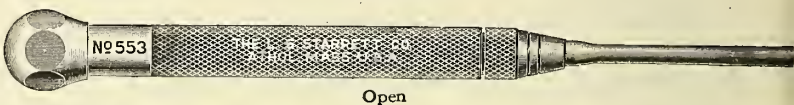


No. 1

With rosewood handle. Highly finished and full nickeled. Four sizes of drivers, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{5}{16}$ inch are contained within the handle, and are pivoted to the slide, and so cannot be removed or lost. By raising the locking bolt and pressing the slide forward to end of slot the blades will swing out. Select size wanted, draw slide back into handle and driver is ready for use. Total length, when closed, is $3\frac{7}{8}$ inches, weight, $3\frac{1}{2}$ ounces.

Dozen $12.00
Extra Blades, set ..... .50

Starrett



Open



No. 553 Closed

This tool is made from steel tubing, knurled and nickel-plated. The butt of the blade fits a solid lock in the tube, preventing it from turning, and is held from coming out by a slight turn of the chuck.

To carry in pocket, reverse the blade, inserting it in the handle, giving a slight turn of the chuck to keep it there. It takes no more room in the pocket than a penknife.

The screwdriver blades are properly tempered.

No. 553A Handle $\frac{1}{4}$ inch diameter, blade $1\frac{7}{8}$ inches long, weight $\frac{1}{2}$ ounce, each ..... $ .25
No. 553B Handle $\frac{3}{8}$ inch diameter, blade 3 inches long, weight $1\frac{1}{2}$ ounces, each ..... .35
Extra blades, each ..... .10

Screwdrivers

Pocket

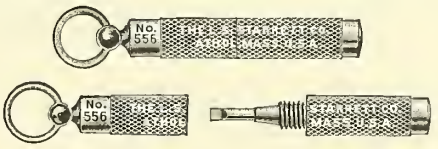
Starrett
Jewelers



Nicely and substantially made from steel tubing, knurled and nickel-plated. Five constitute a set, with blades varying from .040-inch to 100 in size. The blades are held from turning in the handle by a solid lock, and from coming out by a slight turn of chuck. The top is finished with a swivel knob, concaved to fit the finger and hexagonal in shape to prevent rolling off the bench. To quickly indicate the size the chuck end is marked with various grooves, four grooves indicating the finest size A, three grooves the next larger B, two grooves C, one groove D, the largest size, E, being plain.

		Each
No. 555A	Handle ¼-inch, diameter of blade, .040-inch	$ .35
No. 555B	Handle ¼-inch, diameter of blade, .055 inch	.35
No. 555C	Handle ¼-inch, diameter of blade, .070 inch	.35
No. 555D	Handle ¼-inch, diameter of blade, .080 inch	.35
No. 555E	Handle ¼-inch, diameter of blade, .100 inch	.35
Set of 5		$1.60
Extra Blades, each		.10

Starrett
Eye Glass

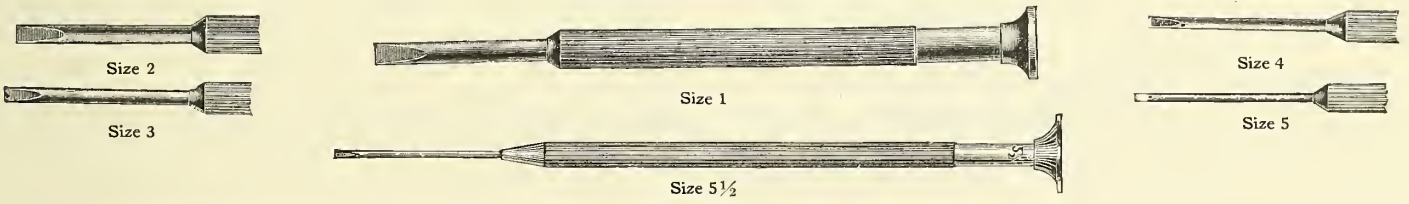


Made in two pieces and screwed together, telescoping the driver blade when not in use. It is nickel-plated, neat and safe to carry in the pocket on key-ring or to attach to a watch chain.

The engraving shows the actual size of the screwdriver.

No. 556 Each ..... $ .15

Watch



No. 610 First quality, full size cuts. Nickel-plated, with tempered steel blades. Made in 6 sizes as illustrated, dozen $1.50

Double End
B. M. Co.





Two different angles

No. 14	5 inches overall, dozen	$2.80
No. 14	6 inches overall, dozen	3.60
No. 14	8 inches overall, dozen	4.40

No. 15	5 inches overall, dozen	$2.80
No. 15	6 inches overall, dozen	3.60
No. 15	8 inches overall, dozen	4.40

Ratchet
H. S. & Co.



Immense leverage. Rapid. Right or left-hand. Can be used in close quarters.

No. 72B 9 inches overall, dozen $19.20

Lane



Nickel-plated. Right or left-hand. Method of setting ratchet is very simple. Two blades, ½ and ⅜ inch.

No. 1 7 inches overall, dozen $36.00

Screwdrivers

Yankee

Ratchet

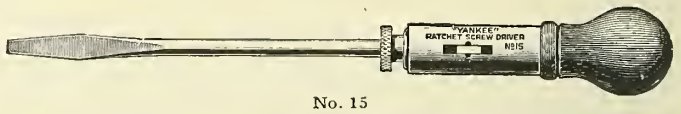
The friction in this ratchet mechanism is so slight as hardly to be felt, the backward movement is as easy as in a good "stem winder" and just as noiseless. The screw stays where it is put when driving in and is not screwed out with backward turn of handle. The construction of ratchet and pawls is such that neither can bend, break, wear or get out of order, and permits a very compact arrangement, making the driver convenient in size and shape, light in weight and making possible the manufacture of smaller sizes. The blades are best imported cast steel, properly tempered, ground and polished, and every one is thoroughly tested before leaving factory. Other metal parts are nickel-plated and buffed. Handles are hardwood, smoothly and handsomely polished.



No. 10

The adjustment is made by a shifter moved in the direction of the length of blade and held in position by spring and notches in case.

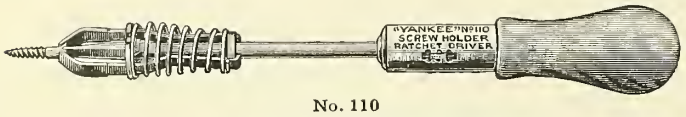
Length of blade, inches	2	3	4	5
Dozen	$5.60	7.00	7.75	8.40
Length of blade, inches	6	8	10	12
Dozen	9.85	11.35	13.35	14.65



No. 15

Similar to No. 10, but all sizes have $\frac{3}{16}$ inch diameter blade and differ only in length. On the blade is a knurled washer, so blade can be turned with finger and thumb while hand presses on handle to hold screw in place. Largely used by electrical workers.

Length of blade, inches	2	3	4	5
Dozen	$6.30	6.80	7.35	7.90



No. 110

Same as No. 10, with screw-holder attachment, for holding screw in position while driving in difficult places. This attachment consists of two jaws, fastened to a head at one end, a ring at other end to limit spread of jaws and a spring to operate them.

Length of blade, inches	3	4	5	6	8
Dozen	$10.25	10.95	11.60	13.00	14.50



No. 115

Same as No. 15, with screw-holder attachment, as in No. 110.

Length of blade, inches	3	4	5
Dozen	$9.60	10.15	10.70

Spiral Ratchet

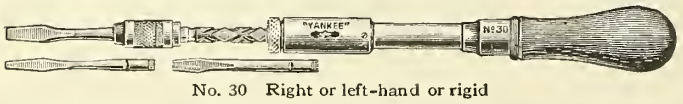
Rods are of steel, the spiral grooves milled and made smooth by specially designed machinery. The nuts are specially hard brass and made to accurately fit spiral grooves in spindle. Neither the pawls nor ratchets can bend, break or get out of order, the friction in the ratchet mechanism is so slight as hardly to be felt, and has an easy, noiseless movement. All drivers are furnished with three bits of varying widths and thickness, made from best imported cast steel, properly tempered, ground and polished. Every bit is thoroughly tested before leaving factory. Other metal parts are nickel-plated and buffed. Handles are made of hardwood, smoothly and handsomely finished.



No. 20 Right-hand only and rigid

Made for work where driving of screws is the main requirement. Occasional withdrawal of screws may be made by making the blade rigid. Three bits of different widths are furnished with each tool.

Number	20–1	20–2	20–3
Length, closed, inches	10	12	13
Length, open, inches	14	17	19
Each	$1.80	2.00	2.30



No. 30 Right or left-hand or rigid

The spindle has two spirals, one right and one left with corresponding nuts. To drive screws the shifter is moved to end of slot toward bit; to draw screws, it is moved to end of slot toward handle. Screws can be ratcheted in or out by turning the handle as in a ratchet screwdriver. It can also be made rigid with spindle fully extended and shifter midway between ends of slot. In this position it becomes especially effective as a long screwdriver to reach out-of-the-way places.

Is 13½ inches long, when closed. Has 5½-inch stroke.

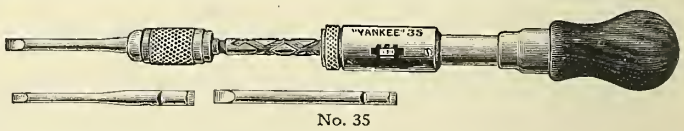
Each $2.30



No. 130 Quick return

Same as No. 30, with spring in handle, causing it to automatically come back for the next push. Can be worked with one hand and in inaccessible places.

Each $3.00



No. 35

Similar to No. 30, but lighter for small screws and to carry in pocket. Measures 7 inches long without bit, weighs less than 7 ounces.

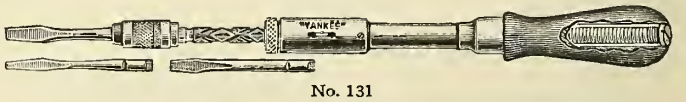
Each $2.00



No. 31

Same as No. 30, but heavier and stronger throughout, for large screws. 17½ inches long, including bit, when closed, has 8½-inch stroke.

Each $3.50



No. 131

Same as No 31. With spring in handle, causing it to automatically resume proper position for the next turn. Can be worked with one hand and in inaccessible places.

Each $3.90

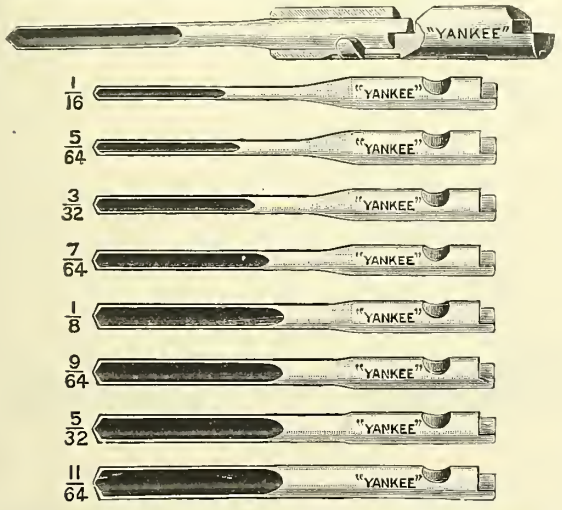
For extra heavy screw driving, use Yankee Push Brace, No. 75, with Brace Screwdriver Bits, see index

Attachments for Spiral Ratchet Screwdrivers

Yankee

In ordering attachments, care should be taken to specify size and style of ratchet driver they are to fit. Those for No. 30 and 130 have shanks $\frac{3}{16}$ inch diameter and fit No. 20, size 2. Those for No. 31 and 131 have shanks $\frac{5}{16}$ inch diameter and fit No. 20, size 3. Those for No. 35 have shanks $\frac{7}{32}$ inch diameter and fit No. 20, size 1. The shanks are same diameter as regular bit where it fits in chuck and spiral driver.

Chuck With Drill Point



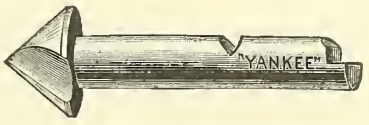
The outside of Chuck corresponds to bit of driver in size, the inside to shank of drill points used in "Yankee" automatic drills. The drill point is first put in Chuck as in illustration, and the two together put in chuck of spiral driver the same as ordinary bit. The spiral driver is set for right-hand and drill revolved by pushing down on handle or by ratchet movement, same as driving in screws. The sets are packed in round wooden boxes.

For Nos. 30, 130, 31, 131 and 20, sizes 2 and 3, eight drill points $\frac{1}{16}$ to $\frac{11}{64}$-inch, inclusive, as shown in illustration, are furnished with Chuck, set ..... $ .90

For Nos. 35 and 20, size 1, only three drill points, $\frac{1}{16}$ to $\frac{3}{32}$-inch are furnished with Chuck.

Set ..... $ .50

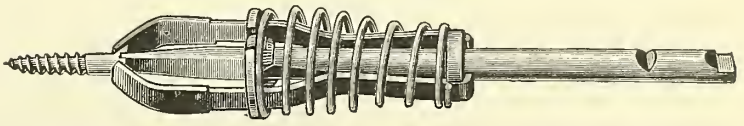
Countersink



Made of superior steel and can be used in either hard or soft woods. Furnished for Nos. 30-130, 31-131, 35 and 20, sizes 1, 2 and 3.

Each ..... $ .20

Bit with Screw Holder

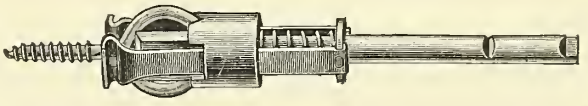


A longer Bit than regular, with holder to hold screw while driving in places difficult to reach, or where only one hand can be used. When screw is driven in place, the jaws open as the head of screw sinks into wood.

Made for Nos. 30-130, 31-131, 35 and 20, sizes 1, 2 and 3.

No. 20x1 and 35, each ..... $ .45
No. 20x2, 20x3, 30, 130, 31 and 131, each ..... .50

Bit with Screw Eye Holder



A Bit with fork and spring holders to hold screw eyes or screw hooks to put in place and drive them in, particularly in out-of-the-way places or where only one hand is available. Can also be used for taking out screw eyes, the holder keeping them from falling down.

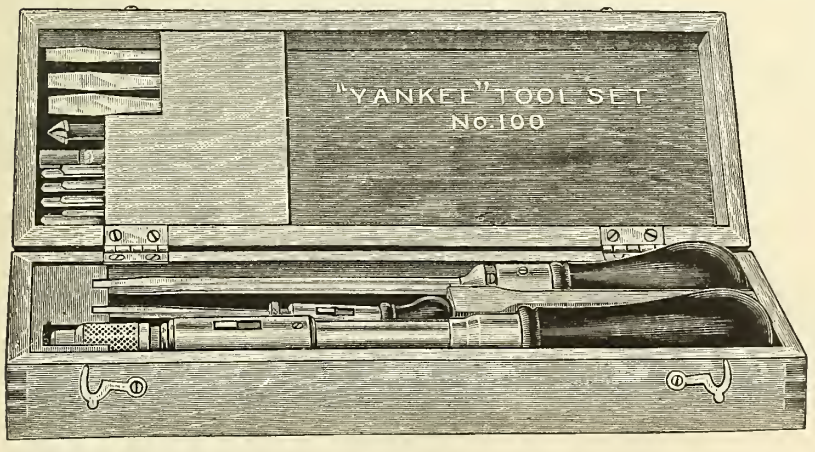
Made for No. 30, 130 and 20, size 2, to hold No. 8 and smaller screw eyes, and for No. 35 and 20, size 1, to hold No. 12 and smaller screw eyes.

Not made for No. 31, 131 or 20, size 3.

Nos. 20x1 and 35, each ..... $ .45
Nos. 20x2, 30 and 130, each ..... .50

Ratchet Screwdriver Tool Set

Yankee No. 100



Put up in substantial and well-finished boxes for use by mechanics who desire to keep tools in fine order, and by gentlemen or amateur mechanics who especially appreciate tools put up in handsome sets, we offer the set as illustrated. The box, which is very substantially made of oak, handsomely finished, contains one each of the following "Yankee" tools:

No. 30 Spiral Ratchet Screwdriver.

Chuck, with drill points, eight sizes, $\frac{1}{16}$, $\frac{5}{64}$, $\frac{3}{32}$, $\frac{7}{64}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$ inch, to use for drilling holes with the No. 30 Spiral Ratchet Screwdriver.

Countersink to use in same tool.

No. 11 Ratchet Screwdriver, with blade 6 inches long.

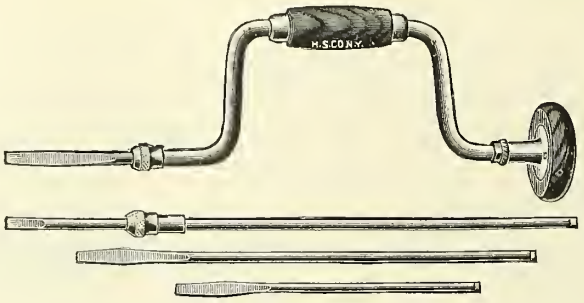
No. 15 Ratchet Screwdriver, with finger turn on blade, with blade 3 inches long.

These are the styles and sizes of "Yankee" tools most in demand, and the combination in a set covers all the usual requirements in tools for driving and drawing out screws. The tools are easily removed from box, and when it is closed are held firmly in place.

The box measures 12½x4¾x2¾ inches.

Set $6.00

Brace Screwdriver Set



No. 230

6-inch sweep. Cocobolo Head. Cocobolo Handle. Combinations 4, 8, 12, 16, 20 or 24 inches

Complete, as shown $1.75

For quick extra heavy screw driving use Yankee Push Brace, No. 75, with Brace Screwdriver Bits, see Index

Screwdriver Bits



Round Blade

Forged from crucible steel, oil tempered and polished

Order by face

H. S. & Co. No. 10

Width of face, inches	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Length of blade (under shoulder), 4 inches, dozen	$2.00	2.00	2.00	2.20	2.40	3.60	4.00
Length of blade (under shoulder), 9 inches, dozen	3.00	3.00	3.00	3.30	3.60	4.80	6.00

Stanley No. 26

Width of tip, inch	1/4	5/16	3/8	1/2	5/8	3/4
Length of Bits overall, inches	4 1/2	4 3/4	5	5	5	5
Dozen	$1.40	1.40	1.40	1.40	1.40	1.40

Double



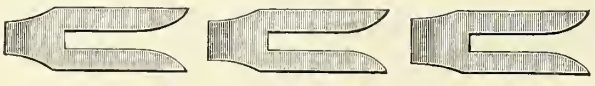
Smith No. 618

Drop-forged. Nicely Finished. Accurately tempered. Fully guaranteed

No. 1 Small end, 1/4 inch wide, for Nos. 6 to 8 screws. Large end, 5/16 inch wide, for Nos. 8 to 12 screws. Dozen $2.00

No. 2 Small end, 5/16 inch wide, for Nos. 8 to 12 screws. Large end, 3/8 inch wide, for Nos. 12 to 16 screws. Dozen $2.00

Combination Set





Yankee No. 66

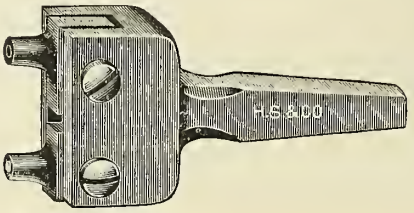
Consists of holder with four heavy blades for use in Bit Brace. Length, 4 7/8 inches

Dozen $12.00

Billiard



2/3 Size Cut



No. 25 2/3 Size Cut

Plain. Fitting standard sizes of billiard screws, dozen ..... $5.20 Adjustable to any screw, dozen $24.00

Cold Chisels

H. S. & Co.

Made from Best Tool Steel for This Purpose. Each Tool Carefully Shaped, Perfectly Straight and Well Finished. Order by Diameter of Stock.

Regular



No. 1

Diameter, inch	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Length, inches	4	4	4 1/2	5	5 1/2	5 3/4	6 1/2	7 1/2	8	8
Cutting edge, inches	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8
Dozen	$1.20	1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Long

Diameter, inch	1/2	5/8	3/4	7/8	1
12 inches long, dozen	$2.80	4.40	6.00	8.20	10.50
15 inches long, dozen	3.30	5.30	7.10	9.80	12.50
18 inches long, dozen	3.80	6.00	8.20	11.30	14.50
24 inches long, dozen	4.80	7.80	10.50	14.40	18.50

Half-Round Nose



No. 2

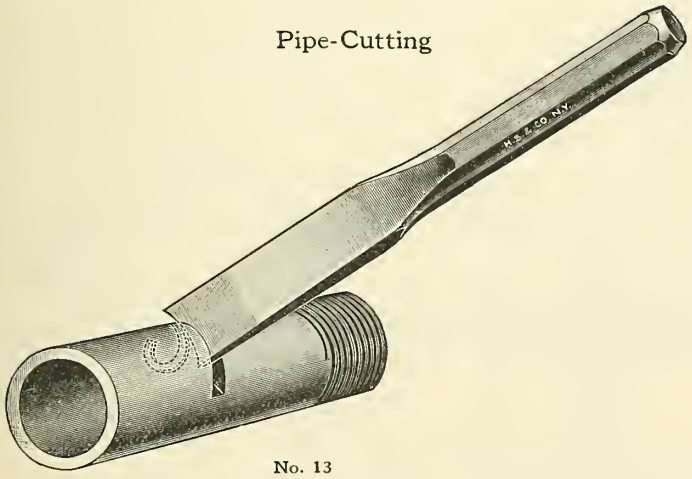
Diameter, inch	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Length, inches	4	4	4 1/2	5	5 1/2	5 3/4	6 1/4	7	8	8
Cutting edge, inches	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8
Dozen	$1.20	1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Oil Groove



Diameter of stock, inch	1/4	5/16	3/8
Length, inches	4 1/4	4 3/4	5 1/4
Diameter of point, inch	1/8	5/32	3/16
Dozen	$2.00	2.10	2.30

Pipe-Cutting



No. 13

Makes a clean cut in all kinds of pipe and tubing. Leaves no burrs to ream off. Cuts cast-iron pipe quite successfully as there are no thin edges to turn over.

7 3/4 inches long, 5/8 inch diameter, 7/8-inch face, dozen $5.50

Cape



No. 6

Diameter, inch	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Length, inches	4	4 1/2	5	5 3/4	6	7	7 1/2	8	8
Cutting edge, inch	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Round Nose



No. 15

Diameter, inch	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Length, inches	4	4 1/2	5	5 1/2	5 3/4	6 1/4	7	8	8
Dozen	$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Half-Round Nose Cape



No. 17

Diameter, inch	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Length, inches	4	4 1/2	5	5 3/4	6	7	7 1/2	8	8
Cutting edge, inch	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	5/8
Dozen	$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

Diamond Nose



Diameter, inch	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Length, inches	4	4 1/2	5	5 1/2	5 3/4	6 1/4	7	8	8
Dozen	$1.20	1.24	1.40	1.60	1.80	2.80	4.00	6.00	7.50

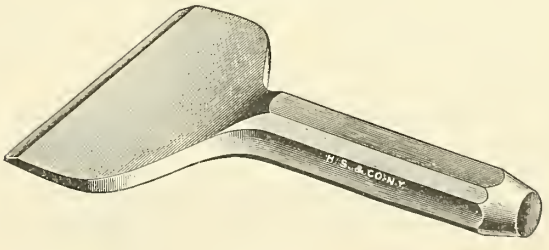
Plugging



No. 36

Length, inches	10	10	10
Diameter, inch	1/2	5/8	3/4
Cutting edge, inch	3/16	1/4	5/16
Dozen	$4.40	5.20	7.00

Brick



No. 40

Cutting edge, inches	3	3 1/2	4	4 1/2
Dozen	$8.00	8.50	9.00	9.50

The shape and pitch of these chisels have made them the standard.

Atha



Railroad Track. No. 1170

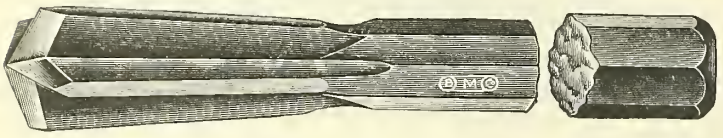
Weight, pounds	4	4 1/2	5	5 1/2	6
Length, inches	7 3/4	8	8 5/8	8 3/4	8 1/2
Width of bit, inches	1 3/16	1 3/16	1 1/4	1 1/4	1 1/4
Each	$1.20	1.35	1.50	1.65	1.80

Star Drills

H. S. & Co. No. 30

High-grade Crucible Tool Steel, octagon bar. Will not batter much at the hammer end. Sharp milled edge keeps cuttings loose. Groove for cuttings is smooth, because it is milled instead of forged. Is 100% longer than usual. Will not clog, and prevents drill from sticking in drill hole.
Extremely heavy rib, finished smooth. Long, gradual flare, going back to end of groove, and at no point less in diameter than the bar itself.
Long bevel, milled smooth and sharp. Every stroke goes deeper. Widest part at extreme points, giving large clearance over bar.
Furnished with four or five points, pointed or flat faces, four points with pointed face will be supplied unless otherwise specified.

With Four-Points



Pointed Face

With Five-Points



Flat Face

Diameter, inch	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8
Length, 8-inch, dozen	$8.25	8.25	8.25	8.70	9.65	11.65	13.70	15.30
Length, 12-inch, dozen	8.50	8.50	8.50	9.00	10.00	12.00	14.00	16.00
Length, 18-inch, dozen	11.00	11.00	11.00	11.50	12.50	15.00	17.50	20.00
Length, 24-inch, dozen	13.50	13.50	13.50	14.00	15.00	17.50	20.00	22.50

Diameter, inches	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2	2 1/4	2 1/2
Length, 8-inch, dozen	$17.00								
Length, 12-inch, dozen	18.00	24.00	30.00	40.00	50.00	75.00	105.00	135.00	165.00
Length, 18-inch, dozen	22.50	28.00	35.00	45.00	56.00	81.00	112.00	145.00	175.00
Length, 24-inch, dozen	25.00	32.00	40.00	50.00	62.00	87.00	120.00	165.00	195.00

Star Drill Points and Holder

H. S. & Co.



With Four Points, Pointed Face. Will Drill 2 1/2 to 3 1/2 Inches in Depth

Diameter drill, inch	1/4	9/32	19/64	5/16	3/8	13/32	27/64	7/16	1/2	5/8	3/4
Dozen	$8.50	8.50	8.50	8.50	8.50	9.00	9.00	9.00	10.00	12.00	14.00

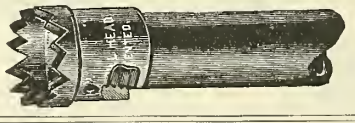
Holder Fitting all Drills $24.00

Set just fits the hip pocket; consists of one drill point, each 1/4, 5/16, 3/8, 7/16 and 1/2 inch and holder $5.75

Drill Heads

H. S. & Co.

(Use common iron pipe for handle)



These Drills never break nor crumble the brick; they drill a hole clean and smooth and do not bind. Note in the column under "Diameter of Hole" several sizes are bracketed; any size within a given bracket will fit one size of gas pipe.

Drill Head Number	Size Pipe for Handle Inches	Diameter of Hole Inches	Dozen
7a	1	1 3/4	$10.50
8	1	2	12.00
9	1	2 1/4	18.00
9a	1	2 1/2	22.00
10	1	2 3/4	27.00
10a	1	3	31.00
11	1 1/4	3 1/4	36.00
11a	1 1/4	3 1/2	40.00
11b	1 1/4	3 3/4	44.00
12	1 1/4	4	48.00

Drill Head Number	Size Pipe for Handle Inch	Diameter of Hole Inches	Drills for Expansion Shield for following Bolts. Inch	Dozen
2	1/8	9/16	3/8	$3.00
3	1/4	11/16	1/2	3.00
4	3/8	7/8	5/8	3.00
5	1/2	1	3/4	3.00
5a	1/2	1 1/8	1	3.60
6	3/4	1 1/4	....	4.20
6a	3/4	1 3/8	....	7.50
7	3/4	1 1/2	....	9.00

Brick Drills

H. S. & Co.



No. 20. 10 inches long

Face, inch	1/4	5/16	3/8	7/16	1/2
Dozen	$3.80	3.80	4.00	4.00	4.50

Stone Drills

H. S. & Co.



No. 40

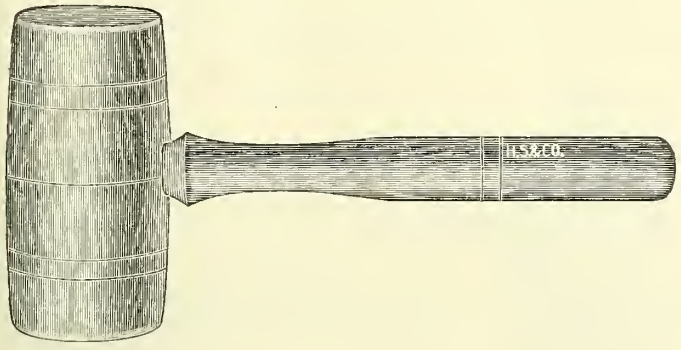
Face, inches	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4
12 inches long, dozen	$4.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	12.00
18 inches long, dozen	6.00	6.00	7.00	8.00	9.50	10.50	11.50	13.00	15.00
24 inches long, dozen	8.00	8.00	9.00	10.00	12.00	13.00	14.00	16.00	18.00

SEE DISCOUNT SHEET

Mallets

H. S. & Co.

Round



The handle goes entirely through the head of the mallet and is securely wedged.

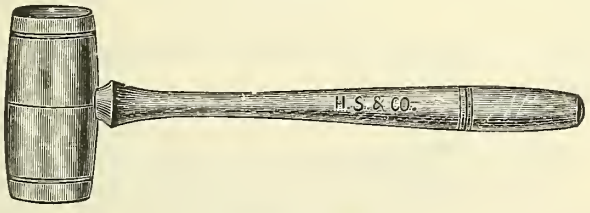
Second-Growth Hickory

Number	2–0	0	1	2	3	4	5
Diameter of face, inches	4½	4	3½	3	2½	2¼	2
Dozen	$5.25	4.50	3.75	3.40	3.00	2.65	2.25

Lignum-Vitae

Number	2–0	0	1	2	3	4	5
Diameter of face, inches	4½	4	3½	3	2½	2¼	2
Dozen	$7.50	6.75	6.00	5.25	3.75	3.40	3.00

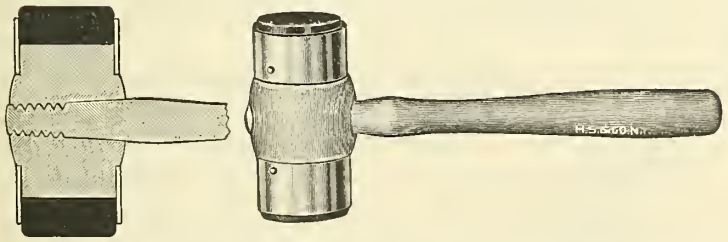
Jewelers



Lignum-Vitae

Number	6	7	8
Diameter of face, inches	1¾	1½	1¼
Dozen	$2.80	2.45	2.75

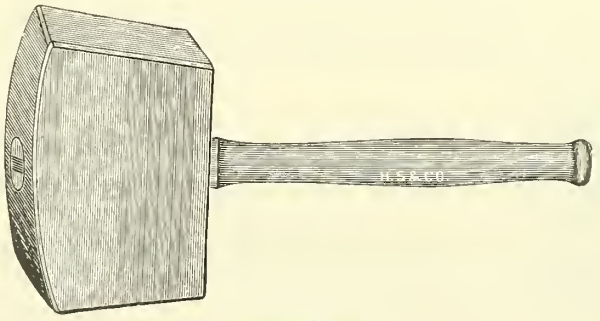
Round with Fibre-Head



The heads of these mallets are vulcanized fibre, very hard and dense, extremely tough, and elastic enough to form a cushion, relieving the arm from the jar occasioned by the force of the blow. The body and handle are thoroughly kiln-dried. Handle screws in. The bands are of malleable iron, riveted to the body and tapering on the inside to hold the fibre heads securely in place.

Number	2	2½
Diameter of face, inches	2	2½
Dozen	$6.50	7.50

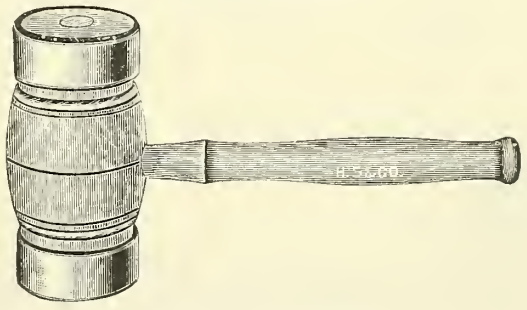
Square



Lignum-Vitae

Number	0	1	2	3
Size of head, inches	4x7	3½x6	3x6	2¾x5½
Dozen	$7.00	6.30	5.95	5.60

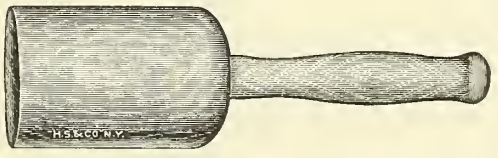
Round with Ring



Second-Growth Hickory

No. 48. Malleable iron rings, 3¼-inch face, dozen $6.00

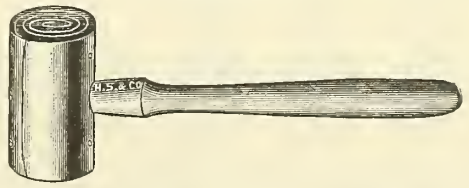
Carvers



These Mallets are made of carefully selected, thoroughly seasoned lumber. The handle is exactly centered, giving an evenly balanced mallet.

Number	1	2	3
Diameter of face, inches	2½	3	3½
Dogwood, dozen	....	5.25	6.00
Lignum-vitæ, dozen	$4.50	5.25	6.00

Raw-Hide



These are light mallets, made entirely of hide, excepting handle.

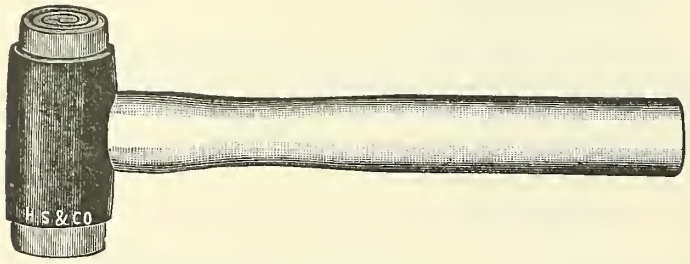
Number	0	1	2	3	4	5	6
Diameter of face, inches	1	1¼	1½	1¾	2	2¾	2¾
Length of face, inches	2⅜	3⅛	3¼	3⅜	3½	4¼	4⅝
Weight, ounces	2	4	6	8	10	22	24
Dozen	$3.96	5.04	6.00	6.96	8.88	19.56	22.20

For Raw-hide and Fibre-Faced Hammers, see next page

Hammers

Raw-Hide Faced

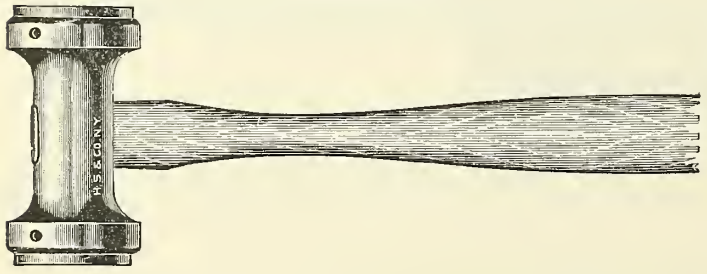
When a hammer is used on machinery or metal products, it is often necessary to protect the finished surfaces from injury. Soft metal hammers are effective while in shape, but soon become jammed out of true. The use of a separate piece of wood or soft metal is disadvantageous because it necessitates the use of both the operators hands. Hard Fibre and Rawhide Hammers are undoubtedly the best for continuous service, and when equipped with serviceable and removable faces they are practically indestructible.



Raw-hide faced Hammers are invaluable where it is desired to strike a hard blow without marring or bruising. The heads, when worn out, can be easily removed and new ones substituted.

Number	0	1	2	3	4	5
Weight, pounds	½	1⅛	1⅝	2¼	4	5¾
Diameter of face, inches	⅞	1¼	1½	1¾	2	2¾
With iron stock, dozen	$9.84	11.52	14.64	17.52	25.32	36.36
Extra faces, dozen pairs	3.00	3.24	3.96	5.04	6.96	9.96

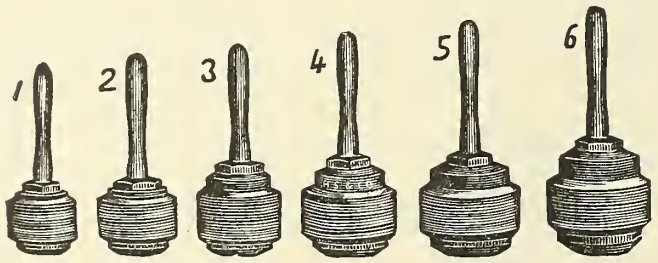
Fibre-Faced



The hard-fibre faces are removable and, on account of the texture, combine elasticity and toughness. Head of 5 ounces is of steel; of the 10, 16 and 24-ounce, of malleable iron. Spanner wrench furnished with each hammer to remove rings and faces.

Weight, ounces	5	10	16	24
Diameter of face, inches	¾	1	1¼	1¾
Per dozen	$6.00	6.00	9.00	12.00
Extra faces, per dozen pairs	.50	.50	.75	1.00

Raw-Hide Mallets or Mauls

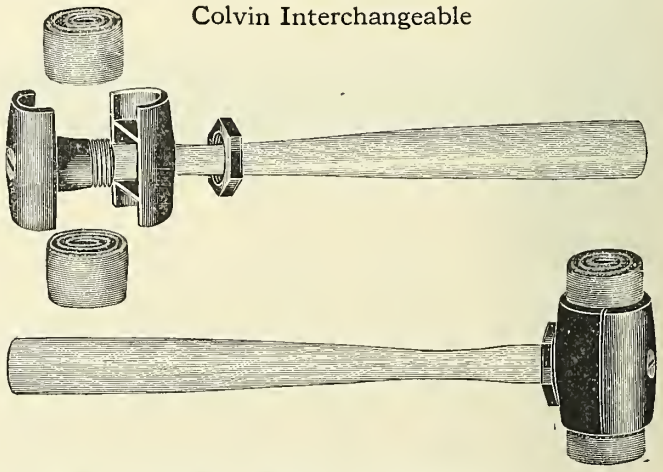


Filled with the best of lime-cured rawhide, in strongest shape possible to design. Second-growth hickory handles.

Number	1	2	3	4	5	6
Weight, pounds	3	4½	6¼	8	10	12
Approximate diameter, inches	3⅜	3⅝	3⅞	4⅝	4¾	4⅞
Each	$1.50	1.75	2.00	2.25	2.50	2.75

Furnished with leather-covered steel handles, if desired, at special prices

Colvin Interchangeable



The heads or faces can be changed by unscrewing the nut.

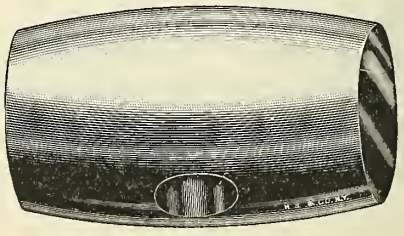
New heads can be fastened firmly without special fitting or driving by placing them between open sections and tightening nut.

Wooden, copper, lead or hard-rubber heads can be used in both ends or a different head in each end.

For engineers, machinists, electrical workers, metal workers, and all trades that use hand punches, dies, etc.

Number	1	3	4
Diameter of head, inches	1¼	1¾	2
Weight of hammer	1 lb., 2 oz.	1 lb., 11 oz.	3 lbs.
Each	$1.00	1.50	2.00

Copper



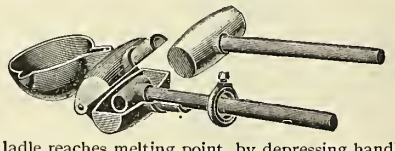
Best quality copper, smooth finish. Will not mar the work in finishing.

Weight, pounds	1½	2	2½
Each	$1.00	1.25	1.50

Prices do not include handles

Moulds and Ladles

For Casting Soft Metal Hammers and Vise Jaws



When metal in ladle reaches melting point, by depressing handle, it will flow into mould and surround end of handle.

Handle consists of a piece of pipe, forged so as to form a T-shaped end.

Ladle can be used for other purposes such as babbitting bearings, etc.

There is no liability of the head being jarred off, and when hammered out of shape can be remelted in same ladle and run into duplicate handle.

Mould and Ladle Complete with One Lead Hammer			Mould and Ladle			Lead Hammer		
Number	Pounds	Complete	Number	Pounds	Complete	Number	Pounds	Complete
101	1	$1.25	107	1	$ .85	113	1	$ .40
102	2	1.35	108	2	.85	114	2	.50
103	3	1.50	109	3	.90	115	3	.60
104	4	1.65	110	4	.95	116	4	.70
105	5	1.80	111	5	1.00	117	5	.80
106	6	2.00	112	6	1.10	118	6	.90

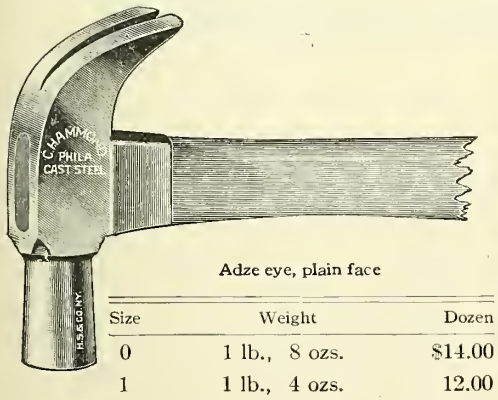
No. 119	Handles for Nos. 101–102, dozen	$1.80
No. 120	Handles for Nos. 103–104–105–106, dozen	2.00
No. 121	Vise-jaw Moulds, complete, with one set jaws	1.50

For Fibre-head and Rawhide Mallets, see preceding page

Nail Hammers

Hammond

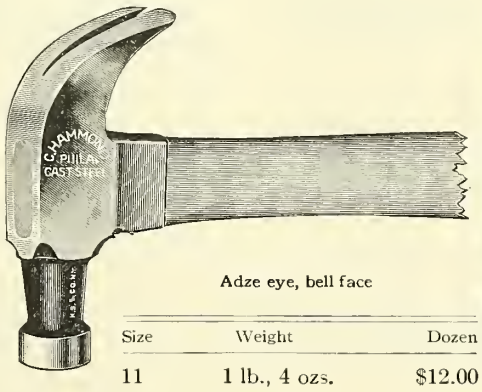
We copy direct from C. Hammond & Son's own statement of their product:
"The C. Hammond brand of Hammers are forged from the best refined crucible cast steel made to our analysis. Each hammer is tempered individually by experienced hands, hardened to the proper degree for purpose for which tool is intended. The face and claw or the face and pein or face and ball depending on the pattern of hammer, are tempered separately and independent of the other end of the tool. Every article we manufacture is examined singly and separately by an experienced inspector after being finished, and thrown out if the slightest defect is found.
A better tool than the 'C. Hammond' brand Hammer cannot be produced. Our slogan: 'We could not make a better tool if paid double what we now ask,' is absolutely true."



Adze eye, plain face

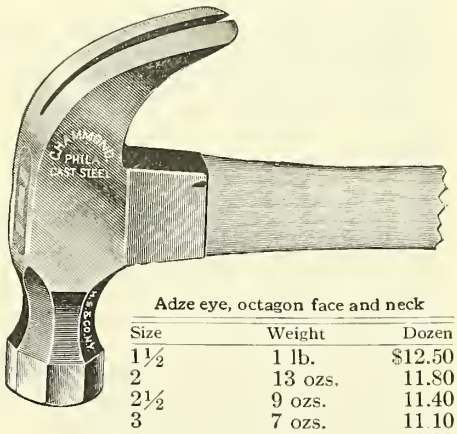
Size	Weight	Dozen
0	1 lb., 8 ozs.	$14.00
1	1 lb., 4 ozs.	12.00
1½	1 lb.	11.30
2	13 ozs.	10.60
2½	9 oz .	10.20
3	7 ozs.	9.80
4	5 ozs.	9.60
5	3 ozs.	9.60

Adze eye, checkered face, size 1, weight 1 lb., 4 ozs., dozen..$13.20



Adze eye, bell face

Size	Weight	Dozen
11	1 lb., 4 ozs.	$12.00
11½	1 lb.	11.30
12	13 ozs.	10.60
12½	9 ozs.	10.20
13	7 ozs.	9.80
14	5 ozs.	9.60
15	3 ozs.	9.60

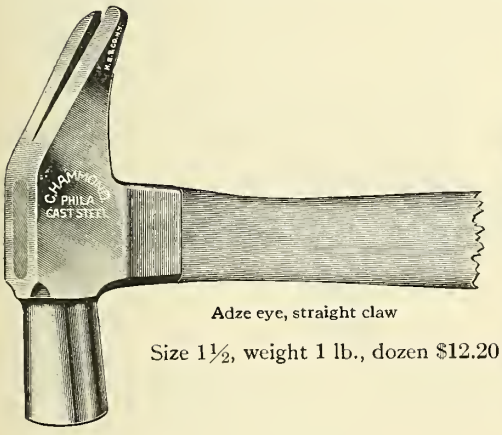


Adze eye, octagon face and neck

Size	Weight	Dozen
1½	1 lb.	$12.50
2	13 ozs.	11.80
2½	9 ozs.	11.40
3	7 ozs.	11.10
4	5 ozs.	10.80
5	3 ozs.	10.80

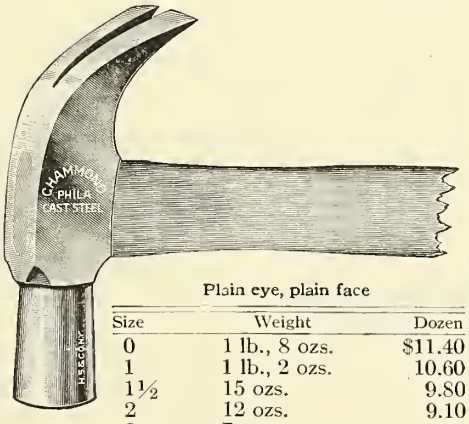
Nickel-plated ebonized handle

Size	Weight	Dozen
1½	1 lb.	$16.70
2	13 ozs.	16.00
2½	9 ozs.	15.60
3	7 ozs.	15.20
4	5 ozs.	14.95
5	3 ozs.	14.95



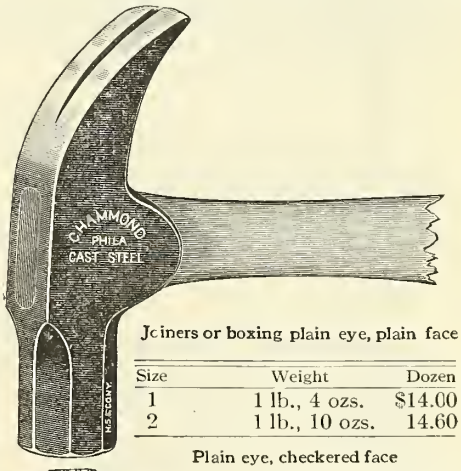
Adze eye, straight claw

Size 1½, weight 1 lb., dozen $12.20



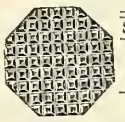
Plain eye, plain face

Size	Weight	Dozen
0	1 lb., 8 ozs.	$11.40
1	1 lb., 2 ozs.	10.60
1½	15 ozs.	9.80
2	12 ozs.	9.10
3	7 ozs.	8.50



Joiners or boxing plain eye, plain face

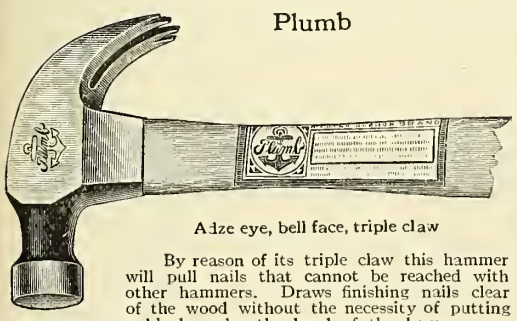
Size	Weight	Dozen
1	1 lb., 4 ozs.	$14.00
2	1 lb., 10 ozs.	14.60



Plain eye, checkered face

Size	Weight	Dozen
1	1 lb., 4 ozs.	$15.00
2	1 lb., 10 ozs.	15.80

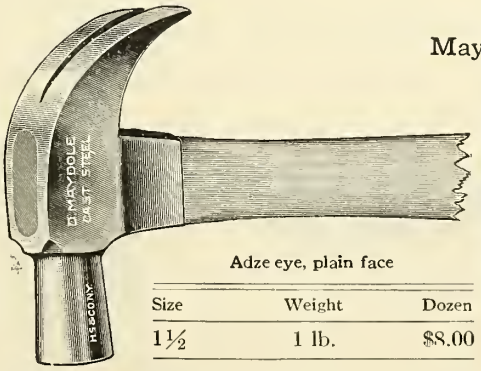
Plumb



Adze eye, bell face, triple claw

By reason of its triple claw this hammer will pull nails that cannot be reached with other hammers. Draws finishing nails clear of the wood without the necessity of putting a block under the head of the hammer.

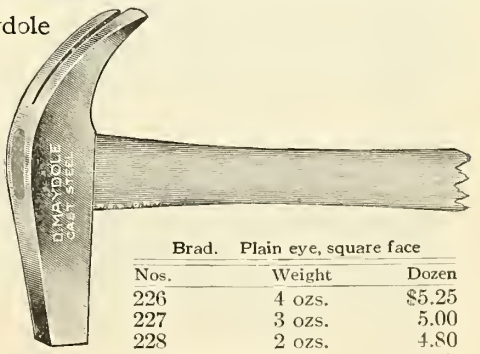
Size 1½, weight 1 lb., dozen $10.00



Adze eye, plain face

Size	Weight	Dozen
1½	1 lb.	$8.00

Maydole



Brad. Plain eye, square face

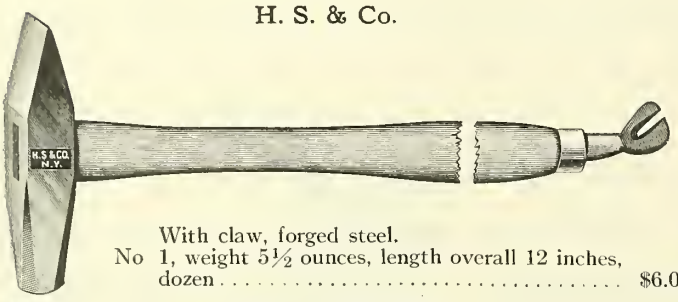
Nos.	Weight	Dozen
226	4 ozs.	$5.25
227	3 ozs.	5.00
228	2 ozs.	4.80

All with white hickory handles, weights given do not include handles

Hammers

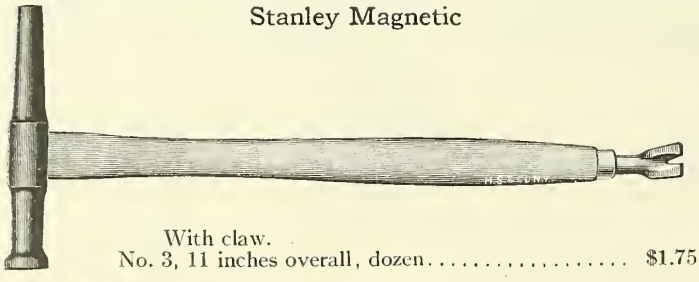
Tack

H. S. & Co.



With claw, forged steel.
No 1, weight 5½ ounces, length overall 12 inches, dozen $6.00

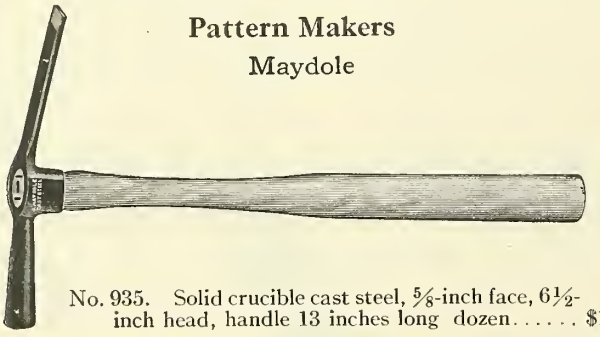
Stanley Magnetic



With claw.
No. 3, 11 inches overall, dozen $1.75

Pattern Makers

Maydole

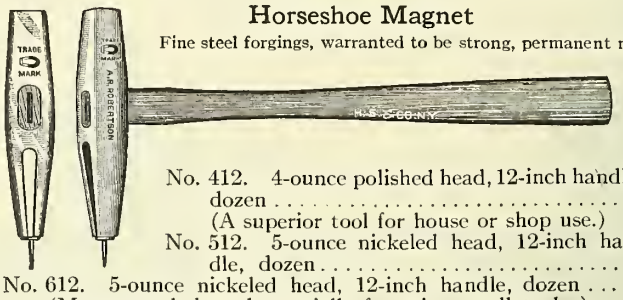


No. 935. Solid crucible cast steel, ⅝-inch face, 6½-inch head, handle 13 inches long dozen $11.50

Robertson

Horseshoe Magnet

Fine steel forgings, warranted to be strong, permanent magnets

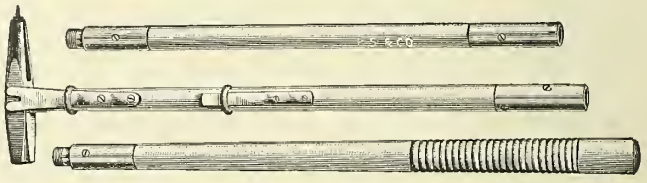


No. 412. 4-ounce polished head, 12-inch handle, dozen $6.00
(A superior tool for house or shop use.)
No. 512. 5-ounce nickeled head, 12-inch handle, dozen 12.00
No. 612. 5-ounce nickeled head, 12-inch handle, dozen 12.00
(Magnet end shaped especially for using small tacks.)
No. 812. 8-ounce nickeled head, 12-inch handle, dozen 15.00
(For tacking canvas on walls and ceilings.)

Robertson Bill Posters

Horseshoe Magnet

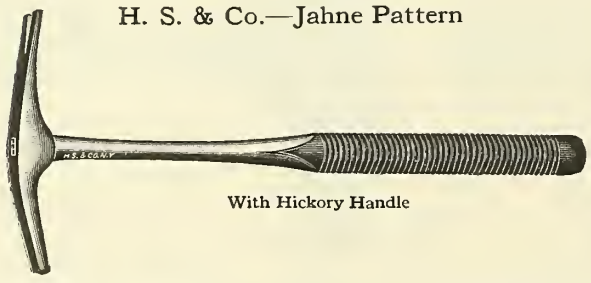
Fine steel forgings, warranted to be strong, permanent magnets



Number	524	502	503	824	802	803
Weight, ounces	5	5	5	8	8	8
Handle Type	Plain	2-section Jointed	3-section Jointed	Plain	2-section Jointed	3-section Jointed
Handle Length, inches	24	36	45	24	36	45
Each	$1.45	1.75	2.25	1.70	2.00	2.50

Upholsterers

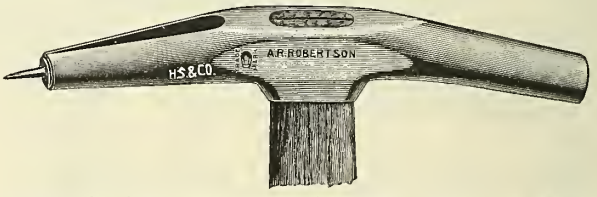
H. S. & Co.—Jahne Pattern



With Hickory Handle

Fine quality tool steel; 3/16, ¼, 5/16, ⅜, 7/16, ½, 9/16 and ⅝-inch face.
Dozen $24.00

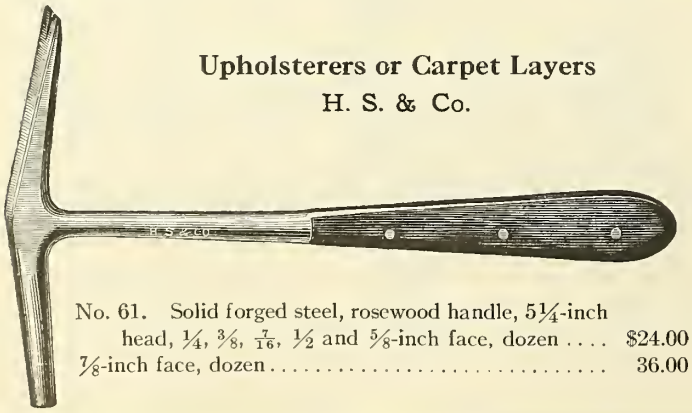
Robertson Horseshoe Magnet



Fine steel forgings, warranted to be strong, permanent magnets
No. 712. 7-ounce head, nickel-plated, 12-inch handle, dozen ... $30.00

Upholsterers or Carpet Layers

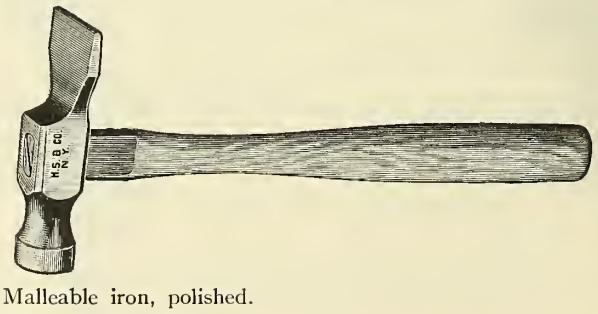
H. S. & Co.



No. 61. Solid forged steel, rosewood handle, 5¼-inch head, ¼, ⅜, 7/16, ½ and ⅝-inch face, dozen $24.00
⅞-inch face, dozen 36.00

Veneer

For Attaching Veneer



Malleable iron, polished.
Weight, 11 ounces, dozen $6.00

Sledges and Heavy Hammers

(Not Handled)

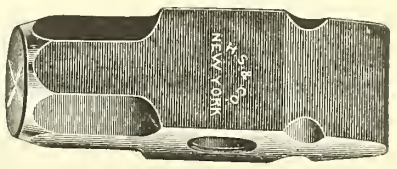
Atha

Approximate dimensions are given for the most popular sizes, which are also a guide for dimensions of the other weights. All tools, unless otherwise noted, have a black japan finish with polished faces. All weights are approximate only.

Blacksmiths Sledges

No. 840 Regular Pattern Straight Pein

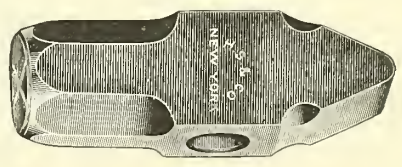
Weight, pounds	5	6	8	10	12	14	16	20
Length, inches	....	6½	7	....	....	8⅛		
Diameter face, inches	....	2	2¼	....	....	2¾		
Pein, inches	....	2	2¼	....	....	2¾		
Each	$ .95	1.10	1.30	1.60	1.95	2.30	2.60	3.25



No. 840

No. 830 Regular Pattern Cross Pein

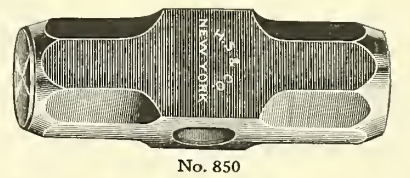
Weight, pounds	3	4	5	6	7	8	9	10	12	14	16	18	20
Length, inches	....	....	....	6½	....	7	....	....	....	8⅛			
Diameter face, inches	....	....	....	2	....	2½	....	....	....	2¾			
Pein, inches	....	....	....	2	....	2¼	....	....	....	2¾			
Each	$ .75	.85	.95	1.10	1.15	1.30	1.45	1.60	1.95	2.30	2.60	2.90	3.25



No. 830

No. 850 Regular Pattern Double Face

Weight, pounds	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24
Length, inches	....	....	....	....	6¼	....	6¾	....	....	....	7⅞	....	....		
Diameter face, inches	....	....	....	....	2	....	2¼	....	....	....	2⅝				
Each	$ .60	.75	.85	.95	1.10	1.15	1.30	1.45	1.60	1.95	2.30	2.60	2.90	3.25	3.90

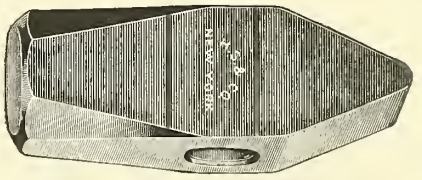


No. 850

Blacksmiths Hand Hammers

No. 861 New England Pattern Cross Pein

Weight, pounds	1½	2	2½	3	3½	4	4½
Length, inches	4⅛	....	4⅝	....	....	5¼	
Diameter face, inches	1⅜	....	1⅝	....	....	1¾	
Pein, inches	1⅜	....	1⅝	....	....	1¾	
Each	$ .60	.60	.70	.75	.80	.85	.90



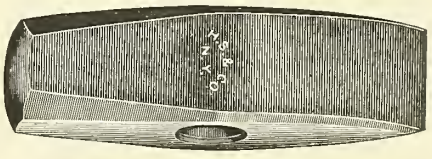
No. 861

Stone Sledges

A very convenient sledge for general and farm use as well as for breaking stone in quarries

No. 740 Oval Face

Weight, pounds	5	6	7	8	9	10	12	14	15	16	18	20	22	24
Each	$ .95	1.10	1.15	1.30	1.45	1.60	1.95	2.30	2.45	2.60	2.90	3.25	3.55	3.90

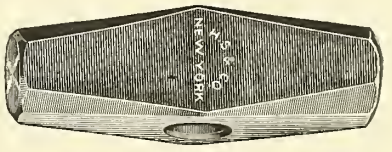


No. 740

No. 730 Flat Face

No. 730 is the same as No. 740, except with polished flat face

Weight, pounds	6	8	10	12	14	16	18	20	22	24
Length, inches	6½	7⅛	....	....	....	8⅝				
Diameter face, inches	2	2⅛	....	....	....	2⅞				
Width of bit, inches	2	2⅛	....	....	....	2⅞				
Each	$1.10	1.30	1.60	1.95	2.30	2.60	2.90	3.25	3.55	3.90

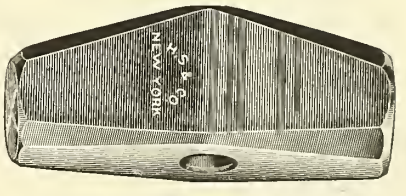


No. 750

Striking and Drilling Hammers

No. 750 Long Pattern

Weight, pounds	2	2½	3	3½	4	4½	5	6	7	8
Length, inches	....	....	....	....	6⅛	....	....	....	....	7⅜
Diameter face, inches	....	....	....	....	1½	....	....	....	....	1⅞
Each	$ .60	.70	.75	.80	.85	.90	.95	1.10	1.15	1.30
Weight, pounds	9	10	12	14	16	18	20	22	24	
Length, inches	....	....	....	....	8½					
Diameter face, inches	....	....	....	....	2⅜					
Each	$1.45	1.60	1.95	2.30	2.60	2.90	3.25	3.55	3.90	

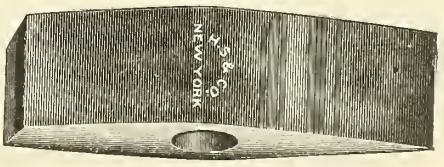


No. 780

Hand Drilling or Stone Cutters Hammers

No. 780 New England Pattern

Weight, pounds	1	1½	2	2½	3	3½	4	4½	5
Length, inches	....	3½	....	....	4⅜	....	4⅞		
Diameter face, inches	....	1 1/16	....	....	1⅜	....	1 1/16		
Each	$ .65	.65	.65	.85	.90	1.05	1.20	1.30	1.35



No. 710

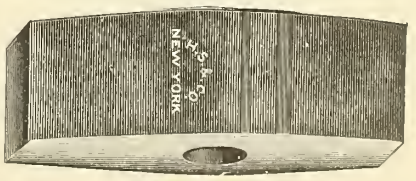
Spauling or Stone Hammers

No. 710 Single Face

Weight, pounds	3	4	5	6	7	8	9	10	12	14	16	18	20	22	24
Length, inches	....	....	....	....	....	8	....	....	....	....	9⅞				
Face, inches	....	....	....	....	....	2⅛x1½	....	....	....	....	2¾x1⅜				
Width of bit, inches	....	....	....	....	....	2⅛	....	....	....	....	2¼				
Each	$ .90	1.20	1.25	1.45	1.70	1.90	2.15	2.40	2.90	3.35	3.85	4.30	4.80	5.30	5.75

No. 720 Double Face

Weight, pounds	4	5	6	7	8	9	10	12	14	16	18	20
Length, inches	....	....	....	....	8	....	....	....	....	9½		
Face, inches	....	....	....	....	2⅛x1¼	....	....	....	....	2¾x1¾	....	....
Each	$1.20	1.30	1.45	1.70	1.90	2.15	2.40	2.90	3.35	3.85	4.30	4.80



No. 720

SEE DISCOUNT SHEET

Hammers and Mauls

(Not Handled)

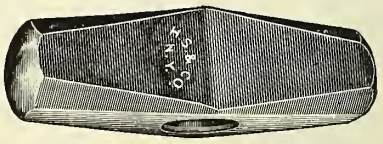
Atha

Cast Steel, Fully Warranted

Napping Hammers No. 890

Used for breaking stone in road work

Weight, pounds	1	1¼	1½	2	2½	3	3½	4	4½	5	5½	6	8	10	12
Length, inches	5	....	....	....	....	....	....	6½	....	....	....	....	7⅝		
Diameter face, inches	¾	....	....	....	....	....	....	1¼	....	....	....	....	1⅞		
Each	$ .60	.60	.60	.60	.75	.75	.85	.90	.95	1.00	1.10	1.15	1.45	1.80	2.15

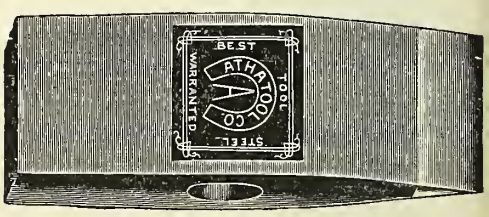


No. 890

Masons Hammers No. 670

These hammers have an axe finish and are in general use by stone masons

Weight, pounds	2	2½	3	3½	4	4½	5	6	7	8	10	12	14
Length, inches	....	....	6	....	....	....	....	7¼					
Face, inches	....	....	2¼x⅞	....	....	....	....	2⅝x$\frac{13}{16}$					
Width of bit, inches	....	....	2¼	....	....	....	....	2⅝					
Each	$ .70	.90	1.00	1.15	1.30	1.50	1.50	1.80	2.10	2.40	3.00	3.60	4.20



No. 670

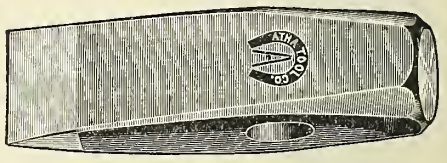
Railroad Track Mauls No. 920

Weight, pounds	5	6	7	8	9	10	12
Length, inches	....	9½	....	10½	....	11¼	
Diameter small face, inches	....	1	....	1⅛	....	1¼	
Diameter large face, inches	....	1½	....	1½	....	1¾	
Each	$ .90	1.10	1.25	1.45	1.60	1.80	2.15


No. 920

Woodchoppers Mauls No. 940

Weight, pounds	5	6	7	8	9	10
Length, inches	....	7¾	....	8½	....	9
Diameter head, inches	....	2	....	2⅛	....	2⅜
Length of bit, inches	....	2	....	2⅛	....	2½
Each	$1.10	1.30	1.55	1.75	1.95	2.15



No. 940

Ship or Top Mauls No. 930

Weight, pounds	4	4½	5	5½	6	6½	7	8
Length, inches	8¼	....	8¾	....	9			
Diameter small face, inches	⅜	....	$\frac{7}{16}$	....	½			
Diameter large face, inches	1¾	....	1⅞	....	2⅛			
Each	$1.00	1.15	1.25	1.40	1.55	1.65	1.75	2.00



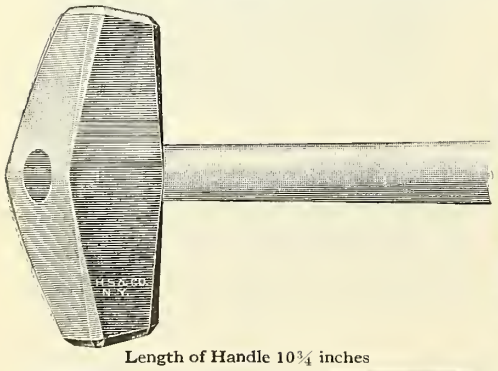
No. 930

Handled Hammers

Cast Steel, Fully Warranted

Hand Drilling or Stone Cutting

Atha

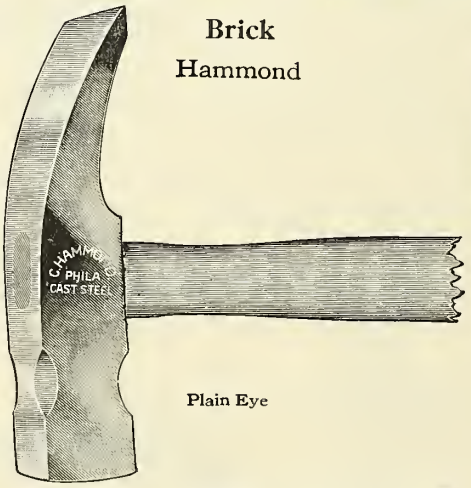


Length of Handle 10¾ inches

Size	Weight	Dozen
000	2 lbs., 8 ozs.	$21.75
00	3 lbs.	24.00
0	3 lbs., 8 ozs.	26.25
1	4 lbs.	28.50
2	4 lbs., 8 ozs.	30.75
3	5 lbs.	33.00

Brick

Hammond

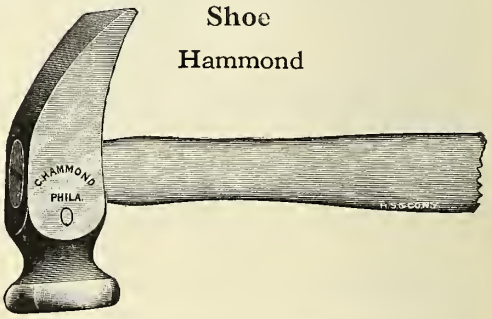


Plain Eye

No.	Weight	Dozen
360	1 lb., 8 ozs.	$14.80
361	2 lbs.	16.20
362	2 lbs., 8 ozs.	19.00

Shoe

Hammond



Size	Weight	Dozen
000	7 ozs.	$6.90
00	9 ozs.	6.90
0	11 ozs.	6.90
1	13 ozs.	7.70
2	15 ozs.	8.40
4	1 lb., 3 ozs.	9.80
6	1 lb., 8 ozs.	11.10

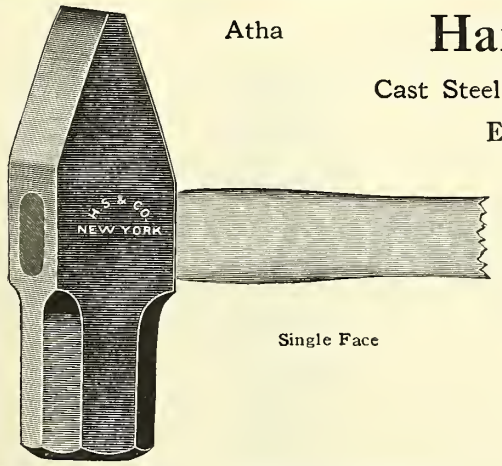
For general information, see page 577

Hammers

Cast Steel, Fully Warranted

Engineers

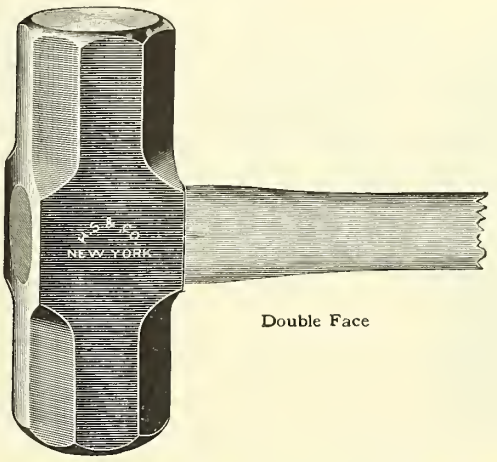
Atha



Single Face

Size	Weight	Length Overall, Inches	Dozen
0	1 lb. 2 ozs.	14	$12.00
1	1 lb. 10 ozs.	15	13.00
2	2 lbs.	16	14.00
3	2 lbs. 8 ozs.	16	15.00
4	3 lbs.	16	16.00
5	3 lbs. 8 ozs.	16	17.00
6	4 lbs. 8 ozs.	16	19.00

Atha



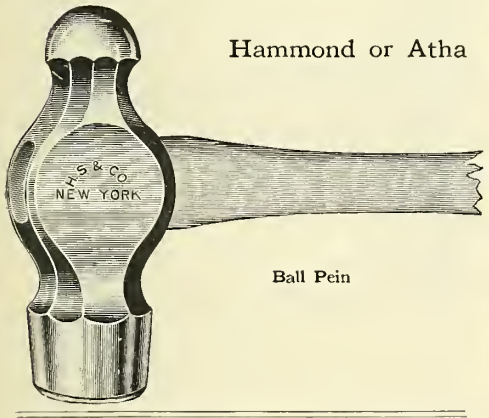
Double Face

Size	Weight	Length Overall, Inches	Dozen
1	1 lb. 8 ozs.	15	$14.50
2	2 lbs. 6 ozs.	16	16.50
3	3 lbs.	16	18.00
4	3 lbs. 10 ozs.	16	19.50

Machinists

Cast Steel, Fully Warranted

Hammond or Atha

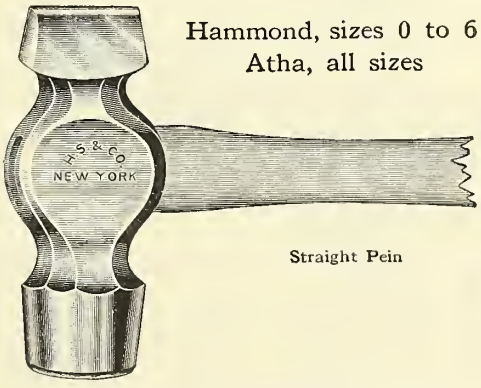


Ball Pein

Size	Weight	Dozen Atha	Dozen Hammond
0000	6 ozs.	$12.00	$12.60
000	8 ozs.	12.00	12.60
00	12 ozs.	12.00	12.60
0	1 lb.	12.50	13.30
1	1 lb. 4 ozs.	13.50	14.00
2	1 lb. 8 ozs.	14.50	14.70
3	1 lb. 12 ozs.	15.50	16.10
4	2 lbs.	16.50	17.50
5	2 lb. 4 ozs.	17.50	19.60
6	2 lb. 8 ozs.	19.00	21.70

Hand-forged finish furnished if desired.

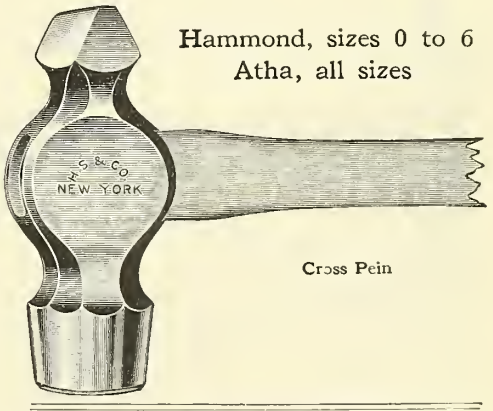
Hammond, sizes 0 to 6
Atha, all sizes



Straight Pein

Size	Weight	Dozen Atha	Dozen Hammond
0000	6 ozs.	$12.00	
000	8 ozs.	12.00	
00	12 ozs.	12.00	
0	1 lb.	12.50	$13.30
1	1 lb. 4 ozs.	13.50	14.00
2	1 lb. 8 ozs.	14.50	14.70
3	1 lb. 12 ozs.	15.50	16.10
4	2 lbs.	16.50	17.50
5	2 lbs. 4 ozs.	17.50	19.60
6	2 lbs. 8 ozs.	19.00	21.70

Hammond, sizes 0 to 6
Atha, all sizes



Cross Pein

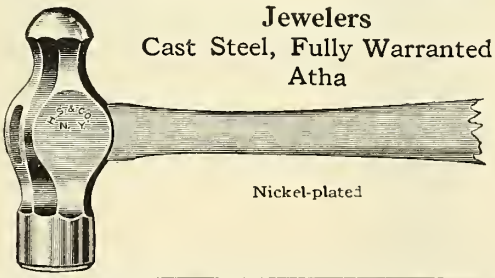
Size	Weight	Dozen Atha	Dozen Hammond
0000	6 ozs.	$12.00	
000	8 ozs.	12.00	
00	12 ozs.	12.00	
0	1 lb.	12.50	$13.30
1	1 lb. 4 ozs.	13.50	14.00
2	1 lb. 8 ozs.	14.50	14.70
3	1 lb. 12 ozs.	15.50	16.10
4	2 lbs.	16.50	17.50
5	2 lb. 4 ozs.	17.50	19.60
6	2 lb. 8 ozs.	19.00	21.70

For general information on Hammond Hammers, see page 577

Jewelers

Cast Steel, Fully Warranted

Atha

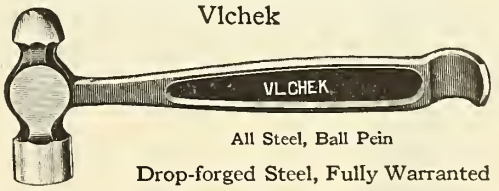


Nickel-plated

Size	Weight	Length Overall, Inches	Dozen
8–0	1¼ ounces	9	$13.00
7–0	2 ounces	10	13.00
6–0	3½ ounces	11	13.00

Automobile and Motor Cycle

Vlchek



All Steel, Ball Pein

Drop-forged Steel, Fully Warranted

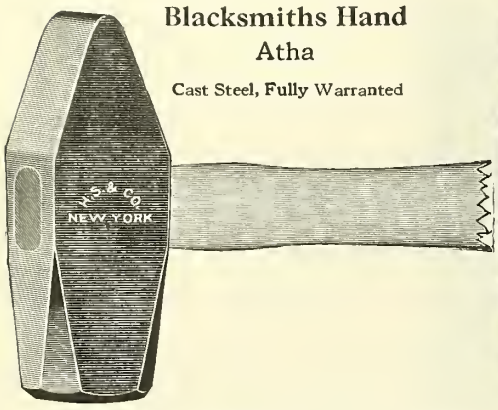
Drop-forged from one piece of steel. Particularly adapted for automobile or motorcycle use or in tool kits. Has tire remover on handle end.

For Automobiles
Weight 10 ounces, length overall 10½ inches.
Dozen $14.50

For Motorcycles
Weight 4 ounces, length overall 7½ inches.
Dozen $12.00

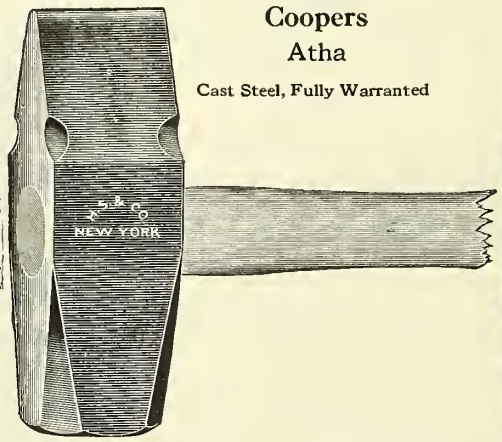
Hammers

Blacksmiths Hand
Atha
Cast Steel, Fully Warranted



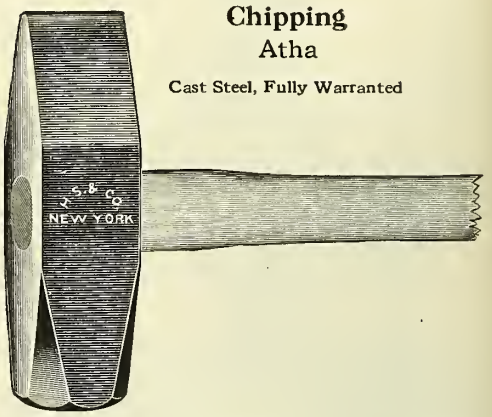
Size	Weight	Dozen
0	1 lb. 10 oz.	$13.00
1	2 lb.	14.00
2	2 lb. 10 oz.	15.00
3	3 lb.	16.00
4	3 lb. 8 oz.	17.00
5	4 lb. 8 oz.	19.00

Coopers
Atha
Cast Steel, Fully Warranted



Size	Weight	Dozen
2½	2 lb. 8 oz.	$17.00
3	3 lb.	18.00
4	4 lb.	20.00
4½	4 lb. 8 oz.	21.00

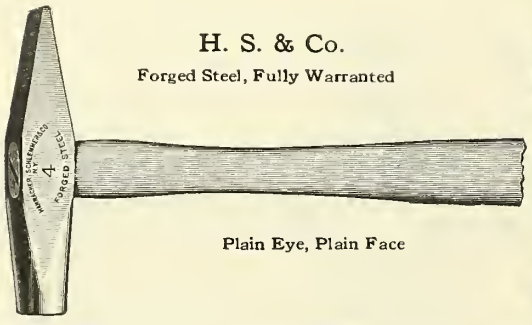
Chipping
Atha
Cast Steel, Fully Warranted



Size	Weight	Dozen
0	1 lb. 4 oz.	$13.00
1	1 lb. 8 oz.	13.50
2	2 lb.	14.50
3	2 lb. 8 oz.	15.50
4	2 lb. 14 oz.	16.50

Riveting

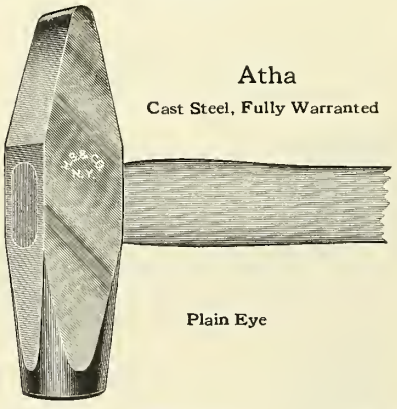
H. S. & Co.
Forged Steel, Fully Warranted



Plain Eye, Plain Face

Size	Weight	Dozen
3–0	1½ oz.	$4.00
2–0	2 oz.	4.00
0	3 oz.	4.00
1	4 oz.	4.00
2	6 oz.	5.00
3	8 oz.	6.00
4	12 oz.	7.00
5	1 lb.	8.00
6	1 lb. 4 oz.	9.00

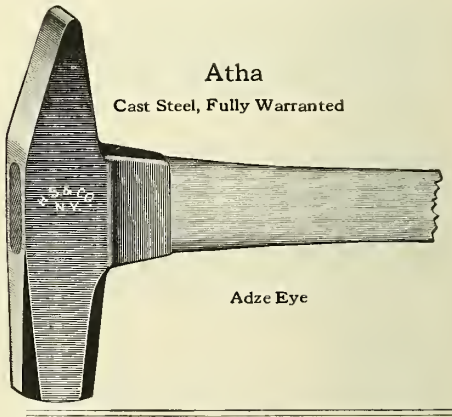
Atha
Cast Steel, Fully Warranted



Plain Eye

Size	Weight	Dozen
0	4 oz.	$5.50
1	7 oz.	5.75
2	9 oz.	6.00
3	12 oz.	6.25
4	15 oz.	6.50
5	1 lb. 2 oz.	7.00
6	1 lb. 6 oz.	7.50
7	1 lb. 10 oz.	8.00

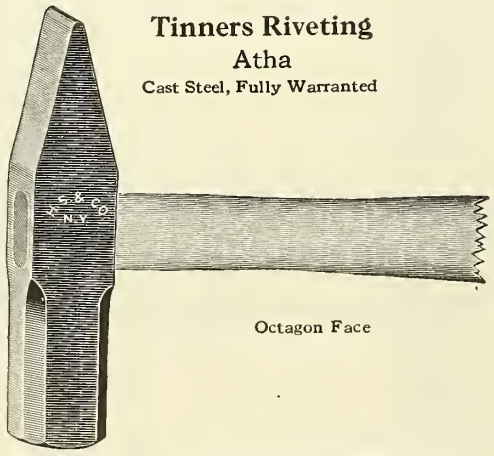
Atha
Cast Steel, Fully Warranted



Adze Eye

Size	Weight	Dozen
0	5 oz.	$7.00
1	9 oz.	7.50
2	11 oz.	8.00
3	15 oz.	8.50
4	1 lb. 2 oz.	9.00

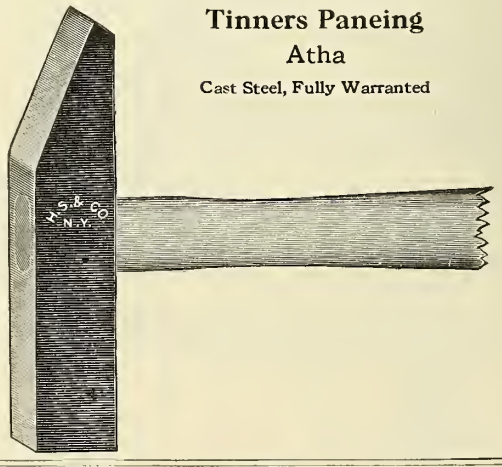
Tinners Riveting
Atha
Cast Steel, Fully Warranted



Octagon Face

Size	Weight	Dozen
1	8 oz.	$6.00
2	12 oz.	6.25
3	1 lb.	6.75
4	1 lb. 4 oz.	7.25
5	1 lb. 8 oz.	7.75

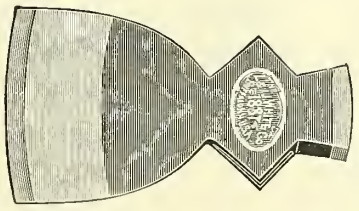
Tinners Paneing
Atha
Cast Steel, Fully Warranted



Size	Weight	Dozen
0	5 oz.	$5.75
1	8 oz.	6.00
2	12 oz.	6.25
3	1 lb.	6.75
4	1 lb. 4 oz.	7.25

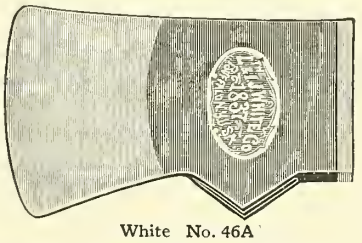
Axes Without Handles

Ship
White



Number	1	2	3	4	5
Cut, inches	6	6¼	6½	6¾	7
Weight, pounds	4¾	5	5	5¼	5½
Dozen					$36.00

Dock
American A. & T. Co. or White



White No. 46A

Polished steel, capped, weight 5 pounds, dozen $30.00

American A. & T. Co.

Polished, capped with crucible steel.

Weight, pounds	4	4½	5
Dozen	$19.00	19.50	20.00

Wood Axes. Handled



Kelly Perfect

Yankee Pattern. Phantom Bevel

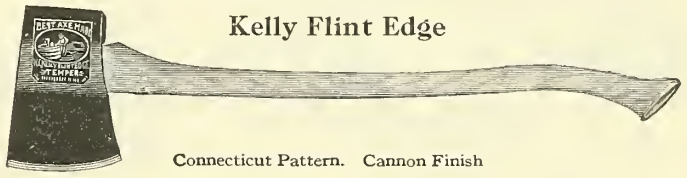
Yankee Pattern, Phantom Bevel. Full polished, the blade is made entirely of steel, shaped and formed so as to cut with least labor.

Weight, pounds	3	3½	4	4½	5	5½	6
Length of handle, before driven, inches	32	32	34	34	36	36	36
Dozen	$16.50	16.50	17.00	17.50	18.00	18.50	19.00

Collins

Collins Axes have inserted hand-forged crucible steel bitts. Handles are best grade of hickory, 36 inches long

Weight, pounds	4	5
Dozen	$17.00	18.00



Kelly Flint Edge

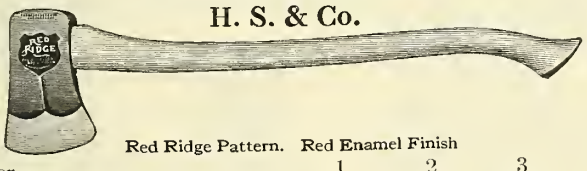
Connecticut Pattern. Cannon Finish

Hand tempered in natural gas by a special process. Made of doubly refined steel, with crucible bitt. With No. 1 elastic hickory handles.

Weight, pounds	3	4	5
Length of handle, before driven, inches	32	34	36
Dozen	$14.50	15.00	16.00

Boys Axes

H. S. & Co.

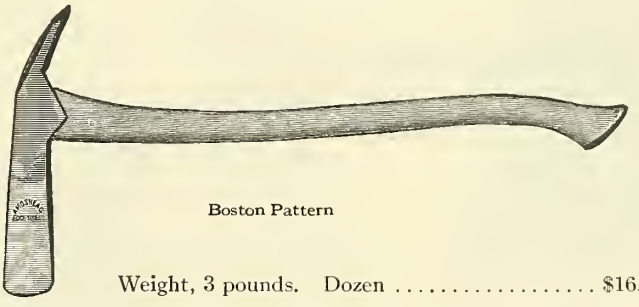


Red Ridge Pattern. Red Enamel Finish

Number	1	2	3	4
Weight, pounds	2	2¼	2¾	3
Length of handle, inches	26	28	30	32
Dozen	$11.75	12.00	12.70	14.00

Ice Axe

H. S. & Co.

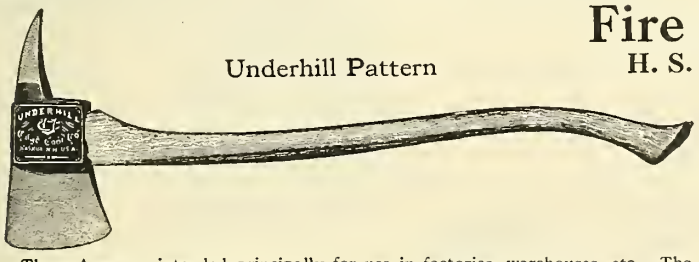


Boston Pattern

Weight, 3 pounds. Dozen $16.00

Fire Axes

H. S. & Co.



Underhill Pattern

These Axes are intended principally for use in factories, warehouses, etc. The head is steel, partly painted red, and the handle is also painted red. Weight, 4½ pounds. No. 1 quality, 36-inch hickory handle, without brackets.

Dozen $33.00

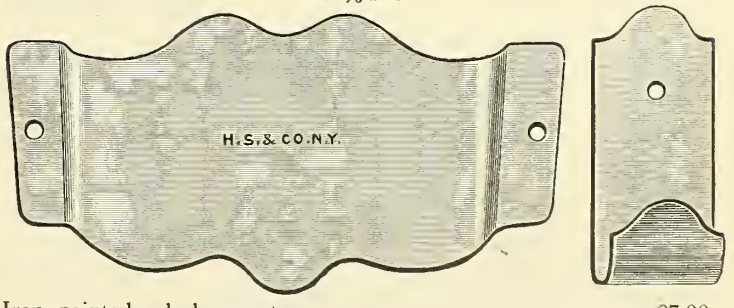
Collins Genuine

These Axes are recommended for use in hotels, public buildings, etc., where a high-grade tool is required and appearance is essential. Polished steel. Weight, 5½ pounds. 36-inch handle, without brackets.

Dozen $39.00

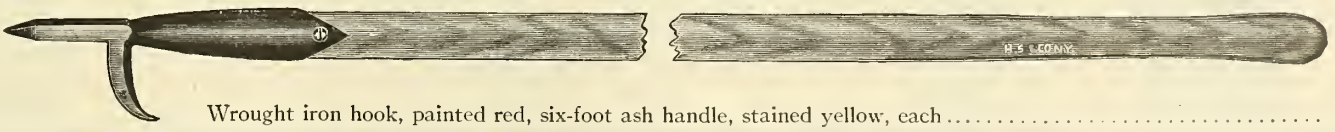
Brackets For Fire Axes

Cut ⅓ Size



Iron, painted red, dozen sets $7.00
Brass, polished, dozen sets 18.00

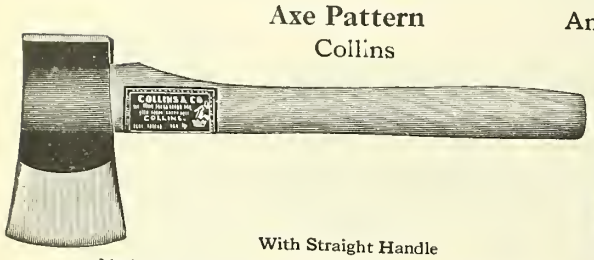
Fire Hook



Wrought iron hook, painted red, six-foot ash handle, stained yellow, each $2.00

Hatchets

Axe Pattern
Collins



With Straight Handle

Made of soft iron, with soft steel head and inserted crucible cast steel cutting edge.

Number	1	2	3
Cuts, inches	3½	3¾	3⅞
Weight, with handle, lbs.	2	2½	3
Dozen	$11.40	12.00	13.20

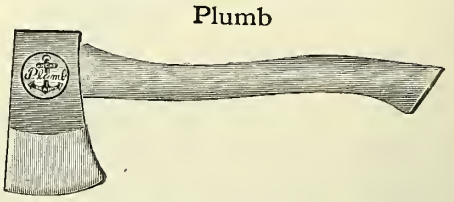
Hunters Pattern
American A. & T. Co. Ridge Brand
Red Enamel Finish



The cutting edge is finest crucible tool steel

Number	0	1	2	3
Weight, pounds	1¼	1½	1¾	2
Dozen	$10.50	10.95	11.25	11.85

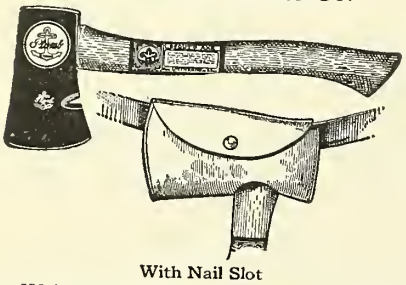
Sportsmans Pattern
Plumb



Superior cast steel, warranted, with axe-shaped handle

Size	3–0	2–0	0
Weight	12 oz.	1 lb.	1 lb., 4 oz.
Dozen	$8.50	8.65	8.90
Size	1	2	3
Weight	1 lb. 8 oz.	1 lb. 12 oz.	2 lbs.
Dozen	$9.25	9.50	10.90

Boy Scout—H. S. & Co.



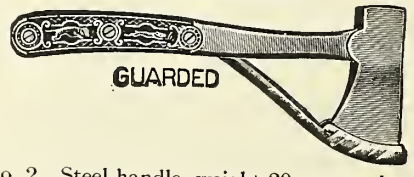
With Nail Slot

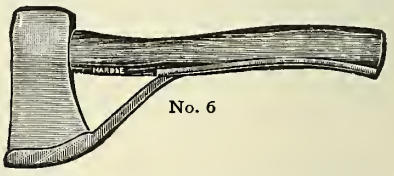
Weight, with handle, 1 pound 5 ounces.
With sheath, dozen $17.00
Without sheath, dozen 12.50

Safety Pocket
Marble



No. 2 Drop-Forged Steel



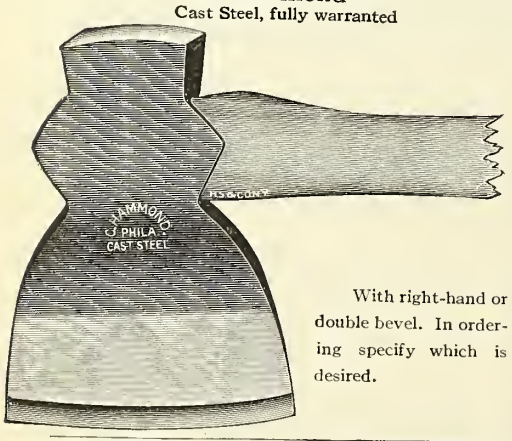


No. 6

Blades are tool steel, correctly tempered and sharpened. Nickel-plated guard and receiver. Nos. 2 and 3 have rubber side plates.

No. 2	Steel handle, weight 20 ounces, length 11 inches, blades 2⅜ x 4 inches, each	$2.50
No. 3	Steel handle, 27 ounces, length 12 inches, blades 2½ x 4⅜ inches, each	3.00
No. 6	Hickory handle, 22 ounces, length 12 inches, blades 2¾ x 4¾ inches, each	1.50

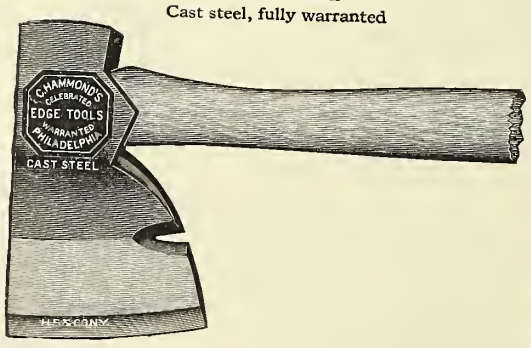
Broad
Hammond
Cast Steel, fully warranted



With right-hand or double bevel. In ordering specify which is desired.

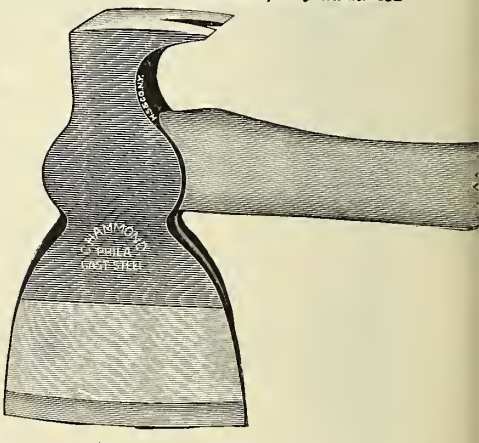
Number	Cuts Inches	Weight	Dozen
1	4	1 lb., 6 ozs.	$15.60
2	4½	1 lb., 10 ozs.	16.80
3	5	2 lbs., 4 ozs.	18.00
4	5½	2 lbs., 10 ozs.	19.70
5	6	3 lbs.	21.80
6	6½	3 lbs. 12 ozs.	24.00
7	7	4 lbs. 4 ozs.	26.40
8	7½	5 lbs.	28.80

Flooring
Hammond
Cast steel, fully warranted

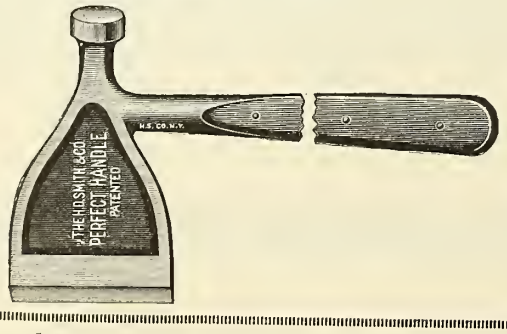


Size	1	2	3
Cuts, inches	3¾	4	4½
Weight	1 lb. 6 ozs.	1 lb. 10 ozs.	2 lbs. 4 oz.
Dozen	$15.60	16.80	18.00

Claw
Hammond
Cast steel, fully warranted



Size	1	2	3
Cuts, inches	3½	3¾	4
Weight	1 lb. 4 ozs.	1 lb. 8 ozs.	1 lb. 12 ozs.
Dozen	$12.00	12.70	14.00



Shingling
Perfect Handle

A solid one-piece drop-forged hatchet and handle, with wooden sides on handle. Guaranteed in every particular.

Size	2
Cuts, inches	3½
Weight	1 lb. 12 ozs.
Dozen	$18.00

SEE DISCOUNT SHEET

Hatchets

Hammond

The "C. Hammond" Brand Hatchets, bronze finish, are forged, having Swedish iron body with best tool steel on head and inserted for cutting edge. No other known metal is so tough and yet so pliable as Swedish iron. These qualities give the required strength to the hatchet as a whole and especially over the eye where the greatest strength is required.

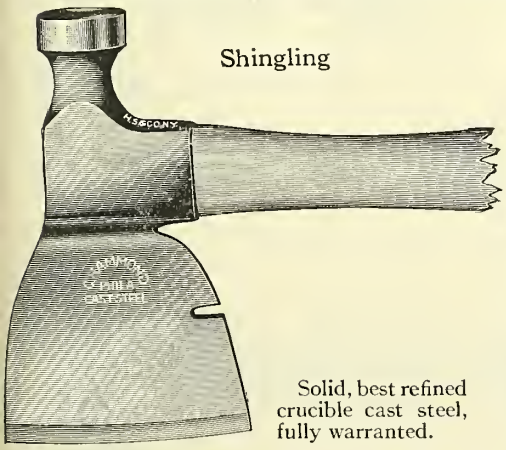
The fancy light pattern, thin blade hatchets are forged from the best refined crucible steel.

Each hatchet is tempered individually by experienced mechanics and hardened to the proper degree for the purpose for which the tool is intended. The bit and face are tempered separately and independent of each other.

Every article is examined singly and separately by experienced inspectors after being finished and thrown out if the slightest defect is found.

A better hatchet than the "C. Hammond" brand cannot be produced. Our slogan, "We could not make a better tool if paid double what we now ask," is absolutely true.

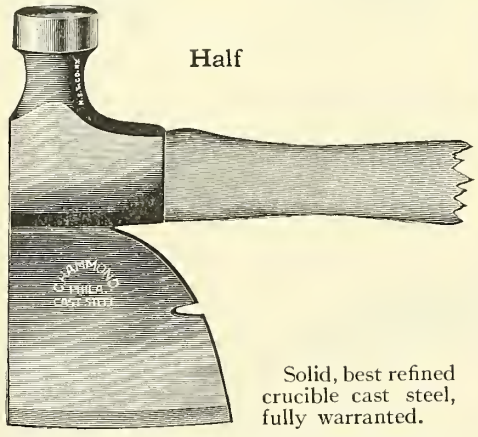
Shingling



Solid, best refined crucible cast steel, fully warranted.

Size	Cuts Inches	Weight	Dozen
1	3¼	1 lb.	$17.40
2	3½	1 lb. 4 oz.	18.00

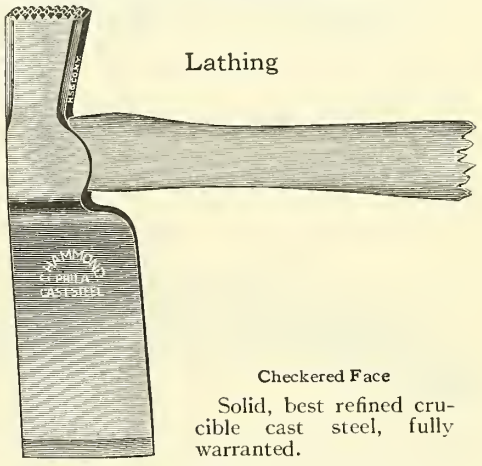
Half



Solid, best refined crucible cast steel, fully warranted.

Size	Cuts Inches	Weight	Dozen
1	3	1 lb.	$17.40
2	3¼	1 lb. 4 oz.	18.00

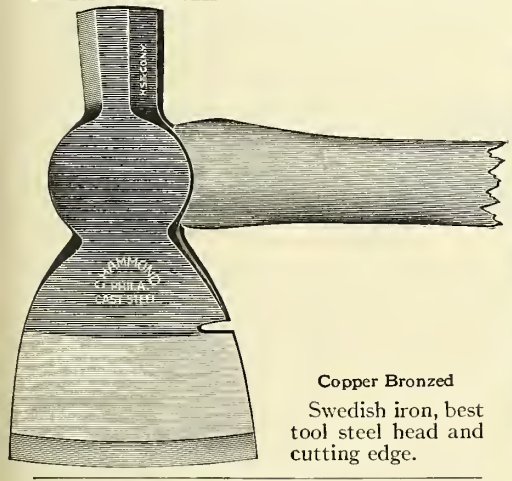
Lathing



Checkered Face

Solid, best refined crucible cast steel, fully warranted.

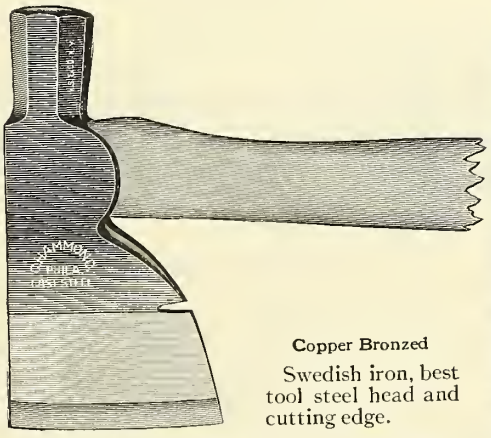
No. 95. Weight 14 ounces, cuts 2⅛ inches, dozen $16.90



Copper Bronzed

Swedish iron, best tool steel head and cutting edge.

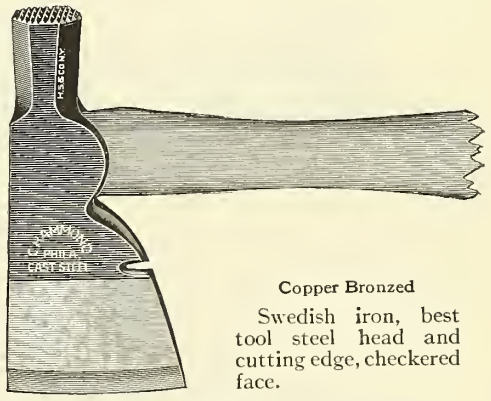
Size	Cuts Inches	Weight	Dozen
0	3¼	1 lb.	$9.85
1	3½	1 lb. 4 oz.	10.60
2	3¾	1 lb. 8 oz.	11.30
3	4	1 lb. 12 oz.	12.00
4	4¼	2 lb.	13.30



Copper Bronzed

Swedish iron, best tool steel head and cutting edge.

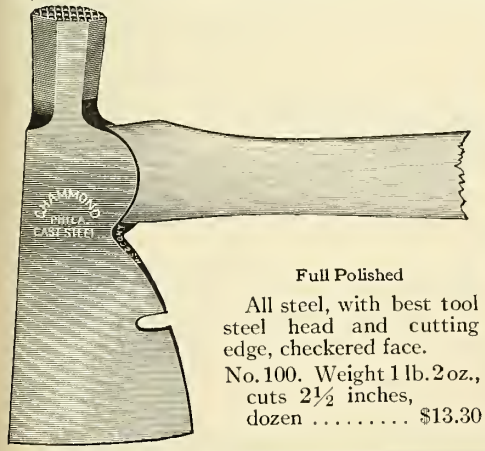
Size	Cuts Inches	Weight	Dozen
1	3¼	1 lb. 4 oz.	$11.30
2	3½	1 lb. 8 oz.	12.00
3	3¾	1 lb. 12 oz.	12.70



Copper Bronzed

Swedish iron, best tool steel head and cutting edge, checkered face.

Size	Cuts Inches	Weight	Dozen
1	2½	12 oz.	$10.60
2	2¾	1 lb.	11.30
3	3	1 lb. 4 oz.	12.00



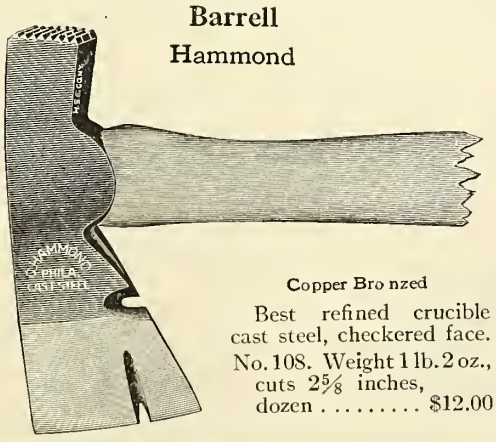
Full Polished

All steel, with best tool steel head and cutting edge, checkered face.

No. 100. Weight 1 lb. 2 oz., cuts 2½ inches, dozen $13.30

Barrell

Hammond



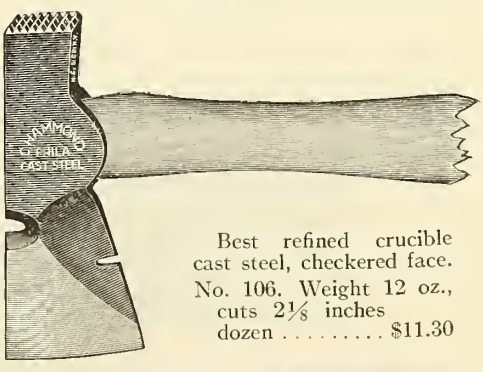
Copper Bro nzed

Best refined crucible cast steel, checkered face.

No. 108. Weight 1 lb. 2 oz., cuts 2⅝ inches, dozen $12.00

Produce Pattern

Hammond



Best refined crucible cast steel, checkered face.

No. 106. Weight 12 oz., cuts 2⅛ inches dozen $11.30

Picks

H. S. & Co.

Railroad or Clay



Solid Cast Steel, Oil Finished

Weight, pounds	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10
Per dozen	$13.00	14.00	15.00	16.00	18.00	20.00

Straight weights, pounds	4	5	6	7	8	9	10
Per dozen	$13.00	13.50	14.50	15.50	17.00	19.00	21.00

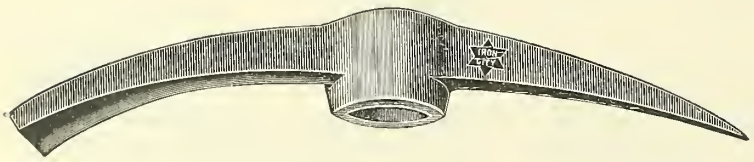
Adze Eye Contractors



One-pound tool steel each end, long, slim pencil points. Other styles of points if desired.

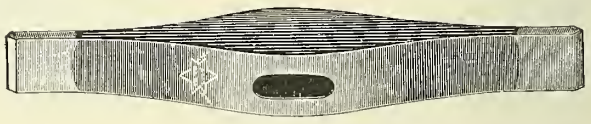
Weight, pounds	7	7½	8	8½	9	9½	10
Per dozen	$18.50	19.00	19.50	20.50	21.50	22.50	23.50

Tamping



Weight 6 to 7 pounds, dozen	$18.00
Weight 7 to 8 pounds, dozen	19.00
Weight 8 to 9 pounds, dozen	20.00

Mill

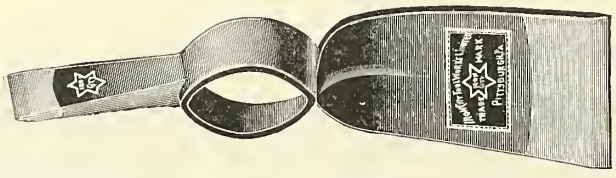


Weight 2 to 3 pounds, dozen $22.00

Mattocks

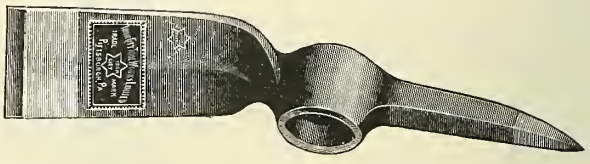
H. S. & Co.

Adze Eye

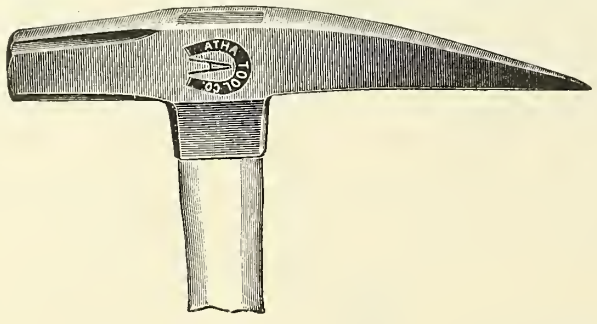


Number		Dozen
2	Long Cutter, 6 pounds (regular)	$17.00
3	Short Cutter 5½ pounds (regular)	16.50
2	Long Cutter, 5 pounds or lighter	16.00
3	Short Cutter, 5 pounds or lighter	16.00

Adze Eye Pick



No. 6. Weight 6 pounds, dozen $17.00



Prospecting Picks

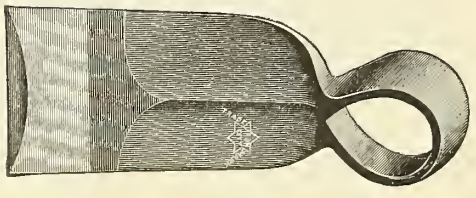
Atha

Head is 13 inches over all. Hickory handle

Size	1	2
Weight, pounds	1	1½
Dozen	$15.00	16.00

Grub Hoe

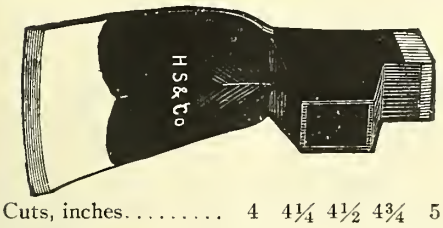
H. S. & Co.



Number	Weight, Pounds	Dozen
0	3	$12.50
1	3½	13.00
2	4	13.50
3	4½	14.00

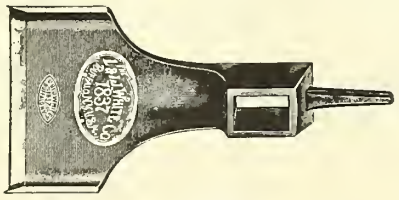
Adzes

House Carpenter



Cuts, inches	4	4¼	4½	4¾	5
Weight, pounds	3½	3½	3¾	3¾	4
Dozen	$24.00				

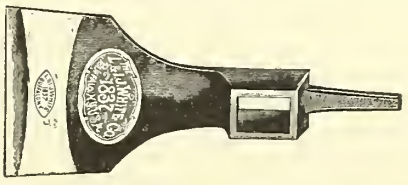
White



Lipped

Cuts, inches	4¼	4½
Dozen	$33.00	36.00

Ship Carpenter



Plain

Cuts, inches	4¼	4½
Dozen	$30.00	33.00

Coopers



Checkered Face

Nos. 0, 1 and 1½ are used on tight barrels. Nos. 2, 2½ and 3 are used on flour or (slack) barrels

Selected Applewood Handles, Bolted

Number	0	1	1½	2	2½	3
Dozen	$36.00	33.00	31.50	30.00	30.00	30.00
Cuts, inches	3½	3¼	3	2¾	2¾	2½
Weight, pounds	4½	4	3½	3	2¼	2½

Coopers Drivers

Atha

Regular Pattern



Size	1	2	3
Length, inches	4¼	4½	5
Weight, pounds	1	1 5/16	2
Dozen	$12.75	13.50	18.00

Nantucket Pattern

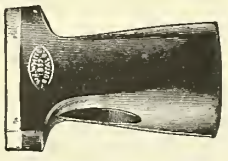


6 inches long, 1¾ inch edge, weight, 1¾ pounds.

Dozen $13.50

White

Short and Oval



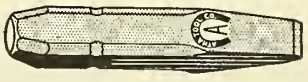
Highly Tempered

Dozen (not handled), 2 to 2½ inches.. $10.00
Dozen (not handled), over 2½ to 3 inches 11.25
For hickory handles add $2.00 to dozen list.

Wedges

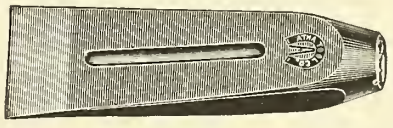
Atha

Rock



Weight, pounds	4	5	6
Length, inches	8½	8¾	9
Diameter head, inches	1⅜	1⅜	1½
Width of Bit, inches	1¼	1⅜	1⅜
Each	$1.20	1.50	1.80

Woodchoppers Truckee Pattern



Straight Bit

Weight Pounds	Length Inches	Diameter Head Inches	Width of Bit Inches	Each
3	....	....	....	$ .50
3½	....	....	....	.60
4	9¾	1¼	1⅝	.65
4½	....	....	....	.75
5	....	....	....	.85
5½	....	....	....	.95
6	11⅛	1½	1⅞	1.00
7	....	....	....	1.15
8	11¾	1⅝	2¼	1.30
9	....	....	....	1.50
10	....	....	....	1.65

Where sizes are given they are approximate only for other weights, sizes are in proportion.

Pinch Bars

H. S. & Co.



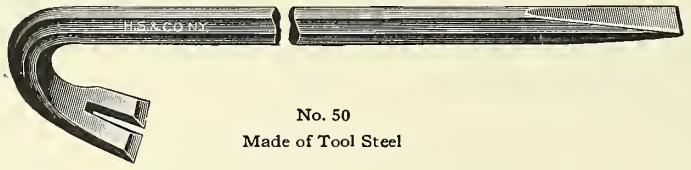
No. 30
Made of Tool Steel

Diameter, inches	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Length, inches	24	30	36
Dozen	$9.50	15.00	21.20

Can furnish pointed on handle end at same price

Ripping Bar with Bent Claw

H. S. & Co.



No. 50
Made of Tool Steel

30 inches long, $\frac{3}{4}$-inch in diameter, dozen $15.00

Crow Bars

H. S. & Co.

Pinch Point



No. 1161
Solid Forged Steel, fully Warranted

Wedge Point



No. 1160
Solid Forged Steel, fully Warranted

Weight, pounds	4	6	8	10	12	14	16	18	20	22	24	25
Size in square inches	$\frac{3}{4}$	$\frac{7}{8}$	1	1	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{1}{2}$
Length, feet	$2\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4	$4\frac{1}{2}$	$4\frac{5}{6}$	$4\frac{11}{12}$	5	$5\frac{1}{3}$	$5\frac{7}{12}$	$5\frac{3}{4}$	$5\frac{3}{4}$
Each	$1.05	1.05	1.05	1.15	1.20	1.25	1.45	1.60	1.80	2.00	2.15	2.25

Lining Bars

H. S. & Co.

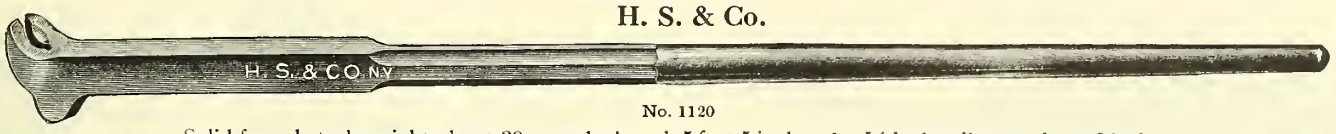


No. 1150
Solid Forged Steel, fully Warranted

Weight, pounds	16	18	20	22	24	25
Length, inches	59	60	64	67	69	69
Square of stock, inches	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{1}{2}$
Each	$1.70	1.90	2.10	2.30	2.50	2.65

Railroad Claw Bars

H. S. & Co.

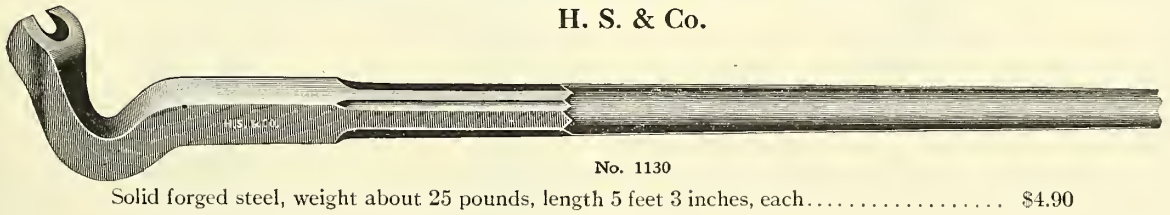


No. 1120

Solid forged steel, weight about 30 pounds, length 5 feet 5 inches, for ⅝-inch spikes, each.. $4.50

Goose Neck Claw Bars

H. S. & Co.



No. 1130

Solid forged steel, weight about 25 pounds, length 5 feet 3 inches, each..... $4.90

Telegraph Digging Bars

H. S. & Co.



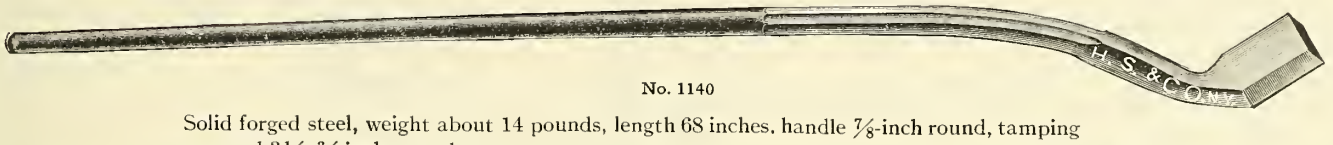
No. 1160-C

Solid forged steel, 1⅛-inch size.

Length, feet.....	6	8	9
Weight, pounds.....	20½	27½	31
Each.....	$3.10	4.15	4.65

Tamping Bars

H. S. & Co.

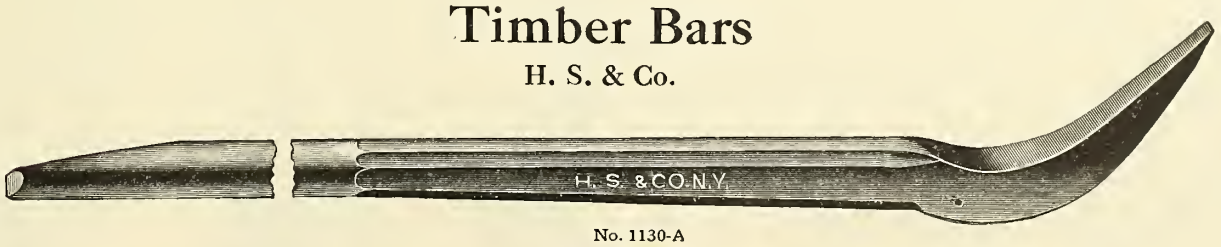


No. 1140

Solid forged steel, weight about 14 pounds, length 68 inches, handle ⅞-inch round, tamping end 3½x¾ inches, each..... $1.80

Timber Bars

H. S. & Co.



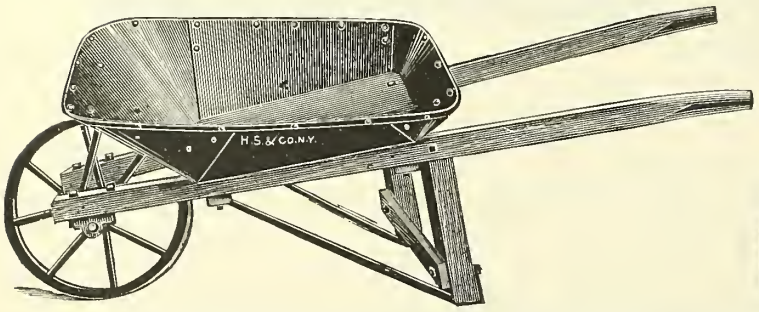
No. 1130-A

Solid forged steel.

Weight, pounds.....	12	14	16	18
Length, inches.....	50	1 3/16	56	56
Size of octagon, inches.....	1⅛	1 13/16	1¼	1⅜
Each.....	$2.70	3.15	3.35	3.80

Wheelbarrows

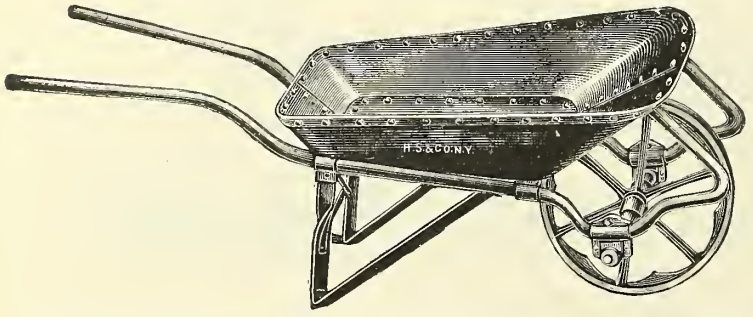
Sand or Mortar
Perfect



Steel Tray Wood Frame Barrows are especially adapted to wheeling mortar and sand. While these are not quite as strong as steel barrows, they will serve the same purpose, and cost less. The Trays and Wheels are well braced and balanced perfectly. These barrows knock down completely for shipment and storage, and can be set up quickly and easily. Parts being interchangeable, can be easily replaced.

No. 4 Capacity 3 cubic feet, each $7.25
No. 5 Capacity 4 cubic feet, each 8.50

Steel Foundry



The Trays of these Barrows have heavier bottoms than sides. All wheels are 16-inches in diameter. Numbers ending with "A" have trays of Nos. 12 and 10 steel; numbers ending with "AA" have trays of Nos. 12 and 8 steel.

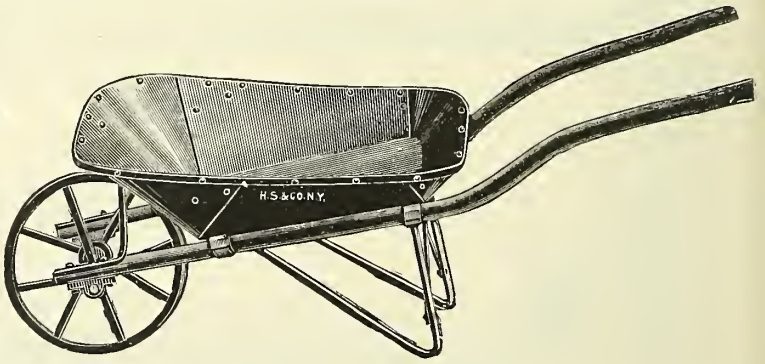
Number	Width Inches	Length Inches	Capacity Cubic Feet	Each
4A	29	32	3	$14.00
4AA	29	32	3	15.00
5A	31½	36	4	15.00
5AA	31½	36	4	16.00
6A	32	38	4½	16.50
6AA	32	38	4½	17.50
7A	36	39	5½	20.00
7AA	36	39	5½	21.00
8A	40	40	7½	22.00
8AA	40	40	7½	23.00

Coal

Made in same style as above foundry type, with 16-inch wheels and heavier bottoms than sides. Trays are made of Nos. 16 and 12 steel.

Number	Width Inches	Length Inches	Capacity Pounds	Each
4	29	32	150	$12.25
5	31½	36	200	14.25
6	32	38	225	15.00
7	36	39	300	18.00
8	40	45	450	20.00

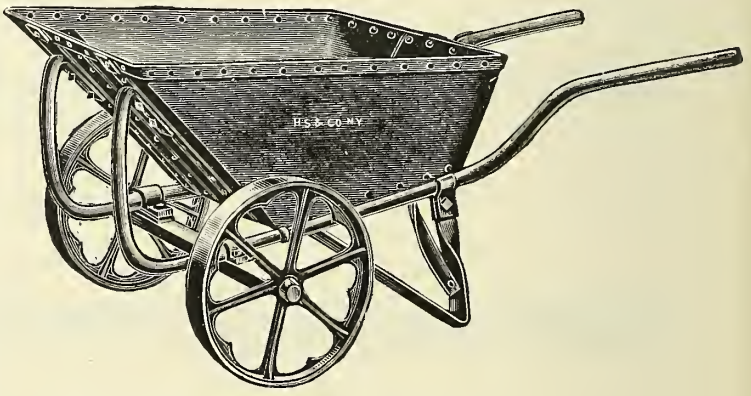
Steel Dirt
Ideal



The Tray, of the most approved shape, is made of the best grade of steel, and has a strong iron band riveted around to stiffen it. Special attention has been paid to the bracing with a view to increased strength. The wheels are made of malleable iron, which are light and neat in form, but with an exact distribution of metal that secures strength and durability. The tubular iron handles are attached to tray by the use of malleable iron clips.

No. 4 Greatest width of tray, 29 inches; greatest length, 32 inches; capacity, 3 cubic feet; 15-inch wheel; tray of No. 16 steel, each $10.00

Steel Coal Barrows
With Two Wheels



Nos. 9½ to 13½ have trays of Nos. 14 and 10 steel.
Nos. 9½A to 13½A have trays of Nos. 12 and 10 steel.
Nos. 9½AA to 13½AA have trays of Nos. 12 and 8 steel.

Number	Width Inches	Length Inches	Capacity Pounds	Each
9½	32	34	260	$28.00
10½	33	36	340	30.00
11½	35	38	400	32.00
12½	36	40	480	34.00
13½	38	42	600	38.00
9½A	32	34	260	29.50
10½A	33	36	340	31.50
11½A	35	38	400	33.50
12½A	36	40	480	35.75
13½A	38	42	600	40.00
9½AA	32	34	260	30.50
10½AA	33	36	340	32.75
11½AA	35	38	400	34.50
12½AA	36	40	480	36.75
13½AA	38	42	600	42.00

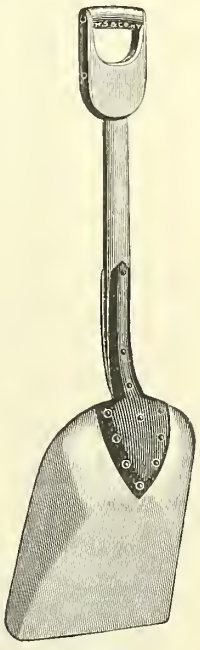
Steel Shovels and Scoops



Plain Back Square Point Shovel D-Handle



Plain Back Round Point Shovel D-Handle



Polished Scoop D-Handle

Square Point Shovels—D-Handles

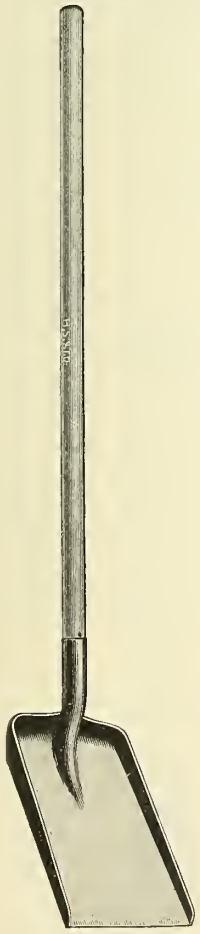
Number	2	3	4
H. S. and Co. plain back, polished, dozen	$9.00	9.50	10.00
Baxter Back Strap, Socket Strap, polished, dozen	$12.10	12.60	13.10

Round Point Shovels—D-Handles

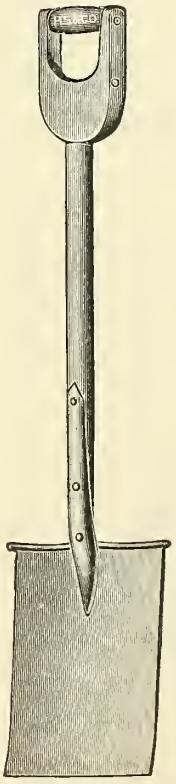
Number	2	3	4
H. S. and Co. plain back, polished, dozen	$9.00	9.50	10.00

Scoops—D-Handles

Number	2	3	4	5	6	7	8	9
Baxter back strap, socket strap, polished, dozen	$12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50
Sanderson, best steel polished, dozen	$14.00	14.50	14.75	15.25	16.00	16.25	16.50	17.00



Square Point Shovel Long Handle



Spade D-Handle



Furnace Scoop D-Handle

Square Point Shovels—Long Handles

Number	2	3	4
H. S. and Co. plain back, polished, dozen	$9.00	9.50	10.00

Round Point Shovels—Long Handles

Number	2	3	4
H. S. and Co. plain back, polished, dozen	$9.00	9.50	10.00

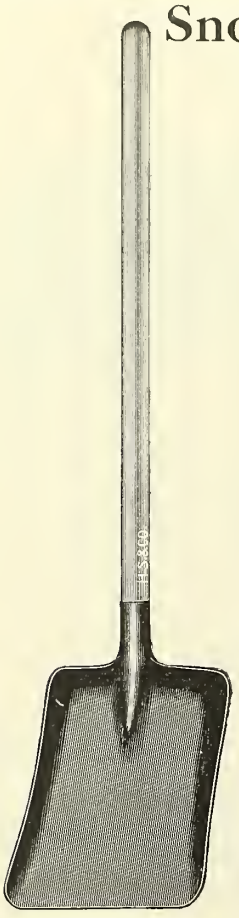
Spades—D-Handles

Number	2
H. S. and Co. plain back, polished, dozen	$8.50
Baxter plain back, polished, dozen	13.10

Furnace Scoops—D-Handles

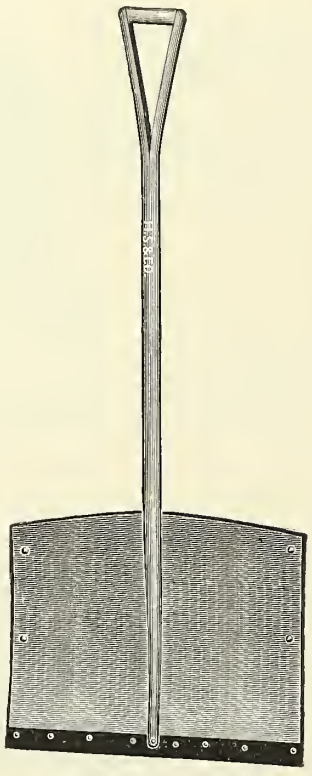
Rowland, black, dozen	$8.00
Sanderson, No. 7, Long Bill, black, dozen	16.25

Snow Shovels



Long Handle, Steel

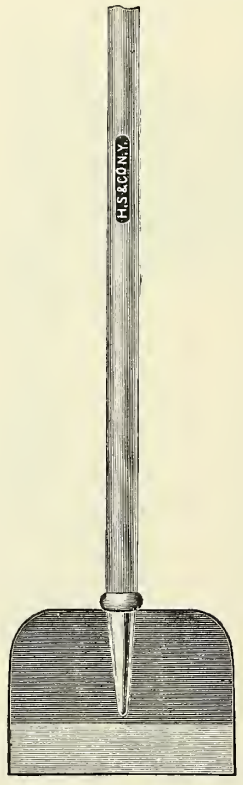
"Best" Dozen $8.00



"D" Handle, Wood

No. 96 Dozen $7.50

Sidewalk Ice Choppers



Extra heavy, 7½-inch blade, 6 inches deep, 4½-foot handle; malleable iron caps.

No. SC x 7½ Dozen ... $9.00

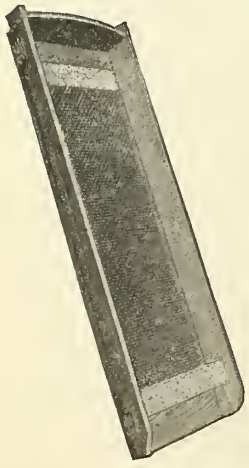


Extra heavy, steel laid blade, capable of removing any thickness of ice.

No. 79A Width of blade 5¾ inches, dozen..... $15.00

No. 79Y Width of blade 4¼ inches, dozen..... $10.00

Sand, Ash and Cinder Screens



Wood frames made of seasoned chestnut, ⅞ inch thick.

Weight: Small, 27 pounds; large, 32 pounds.

The bottoms in these screens are of a medium grade square mesh wire cloth, furnished in two grades, Plain Steel Wire, or Galvanized After Weaving.

No. 0, $\frac{7}{16}$-inch space, used for cleaning coarse gravel.

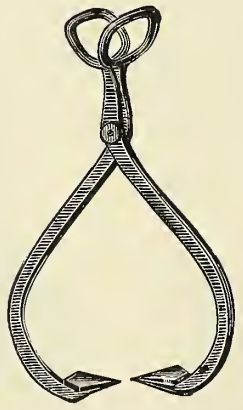
No. 1, ⅜-inch space, used for cleaning gravel and sand.

No. 2, ¼-inch space, used for cleaning coarse sand.

No. 3, $\frac{3}{16}$-inch space, used for cleaning medium sand.

Outside Dimensions of Frame, Inches	Screen Surface Inches	Each
Small 22 x 60	20 x 42	$5.00
Large 26 x 66	24 x 48	6.50

Ice Tongs



With duck bill points.

No. 1 Dozen..... $15.00

Ice Chisel



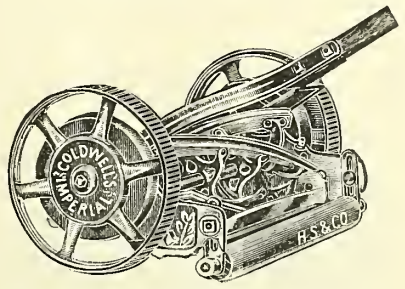
Steel blade and handle, 4½ inches wide, 48 inches overall.

No. 159 Dozen..... $16.00

SEE DISCOUNT SHEET

Lawn Mowers

Coldwell Imperial



The bearings are split, adjustable hangers of phosphor bronze. The driving wheels are 10¼ inches in diameter. The revolving cutter gears are fine cut and keyed to the revolving cutter shaft, and do not revolve when the mower is being drawn backward, thus greatly saving the wear of the gears. Both wheels are provided with triple-pawl ratchets which, being made of malleable iron, are practically indestructible. The bottom knife bar is bolted fast to the side frames, thus insuring a four-sided rigid frame to build the mower up on and the knives are adjusted by means of split hangers, which raise or lower the revolving cutter, so constructed that all wear can be taken up in the bearings. These features together with the 6-inch diameters of revolving cutters make them particularly light running and fine cutting lawn mowers.

The mowers are finished in white, with red and gold trimmings. The workmanship and material are the best that can be obtained. They are equipped with terrace mowing arrangement, and are guaranteed to give entire satisfaction to the purchaser.

With 4 blades

14-inch, each	$20.00	18-inch, each	$24.00
16-inch, each	22.00	20-inch, each	26.00

Add $1.00 to above for list on five-blade mower.

Coldwell Lakewood

Ball Bearing

It has high wheels (9 inches), flat steel sliding pawls in the ratchets, and large diameter revolving cutter (5 inches) furnished with four blades.

The Lakewood Lawn Mower is equipped with adjustable ball bearings, the adjustment being made with single screw. They are also provided with a locking screw which holds them securely in place.

The bottom knife is made of the best tool steel, and all other material entering into its construction is the same as that used in many high-grade mowers. These mowers are finished in aluminum, red and gilt trimmings. Guaranteed against defects in manufacture.

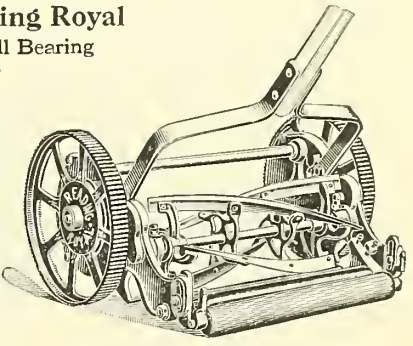
Size, inches	14	16	18
Each	$12.00	$13.00	$14.00

Coldwell Horse and Motor

Catalog and Prices on Application

Reading Royal

Ball Bearing



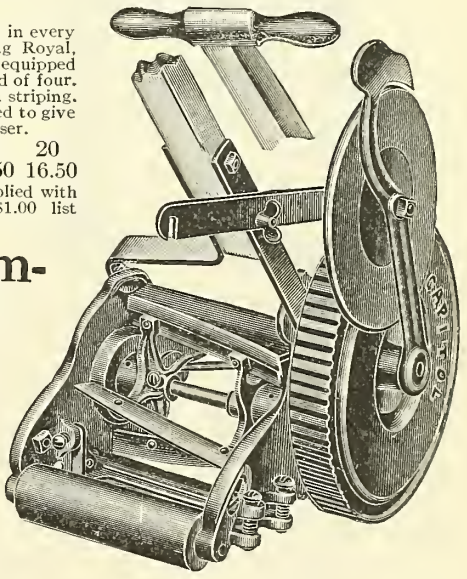
The driving wheels are 11 inches in diameter—exceptionally large—which allows speed and ease in operation. Complete ball bearing, with bicycle cones made of tool steel, carefully hardened and ground. The steel balls are $\frac{5}{16}$ inch in diameter and the ball races are 1½ inches. The machines are equipped with three pawl ratchets and a train of three gears, with a driving mechanism on each side of mower. The tie rod is attached to the upper part of the frame. The diameter of the revolving cutter reel is 6½ inches, and it is equipped with four cutting blades. The machines are decorated in gold with red striping.

These mowers are guaranteed to give complete satisfaction to the user.

Size, inches	14	16	18	20
Each	$13.00	14.00	15.00	16.00

Reading Regent

Ball Bearing



These mowers are the same in every essential detail as the Reading Royal, listed above, except they are equipped with five cutting blades instead of four. Decorated in gold with green striping.

These mowers are guaranteed to give complete satisfaction to the user.

Sizes, ins.	14	16	18	20
Each	$13.50	14.50	15.50	16.50

Above mowers will be supplied with parallel split bearings at $1.00 list cheaper.

Lawn Trimmer and Edger

Capitol

Will trim and edge a lawn with remarkable speed and perfection; the shield over the blades protects the flowers. This machine has four crucible steel blades six inches in length, hardened and tempered in oil, with split bushings and double adjustment.

Each $7.50

Water Weight Rollers

Dunham Hand

These Rollers are electric welded, making the water section one solid drum, no rivets being used. The drums cannot leak and the rolling surface is perfectly smooth, so lawn is never cut up. They are roller bearing and easy to operate. Made in two sections as shown, or in one section, if desired.

With Counter-Weights

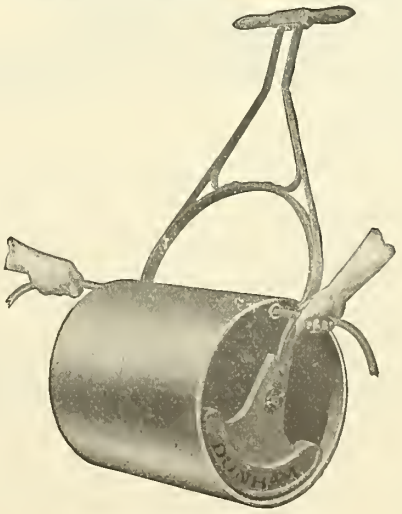
The handle weights (shown in illustration) are to counter-balance the weight of the handle and keep it in an upright position off the ground.

Number	Diameter Inches	Length Inches	Sections	Weight Empty Pounds	Filled With Water Pounds	Each
HW 2	14	20	1	120	260	$12.50
HW 4	18	24	1	135	360	14.50
HW 6	24	24	1	185	560	18.50
HW 8	24	32	1	200	710	20.50
HW 10	18	24	2	160	360	19.50
HW 12	24	32	2	230	710	25.50
HW 14	24	24	2	200	560	23.50

With Handle Lock

This attachment locks the handle to the drum when the roller is not in use so that the handle remains upright. This serves the same purpose as the counterweights on the H. W. line (above).

Number	Diameter Inches	Length Inches	Sections	Weight Empty Pounds	Filled with Water Pounds	Each
WB 3	14	20	1	65	200	$11.00
WB 5	18	24	1	80	310	13.00
WB 7	24	24	1	115	500	17.00
WB 9	24	32	1	130	650	19.00
WB 11	18	24	2	100	330	18.00
WB 13	24	32	2	160	650	24.00
WB 15	24	24	2	140	500	22.00



Style "HW"—Two Sections

Dunham Horse

Catalog and Prices on Application

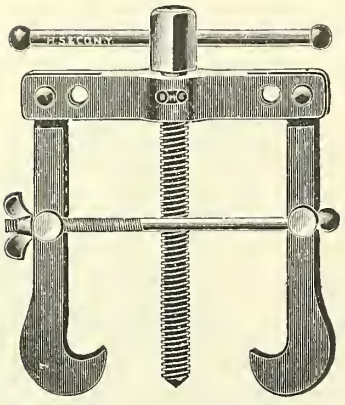
Automobile Tools

We do not make a complete listing of Automobile Tools, but Torches, Wrenches, Jacks and all other articles required for repair work will be found under their respective headings. See index.

Wheel and Gear Pullers

For removing auto wheels, fly wheels, transmission and cam-shaft gears, commutators, sprockets, collars, pulleys, couplings, etc. Their use eliminates the danger of serious damage from using a hammer and chisel.

B. M. Co.

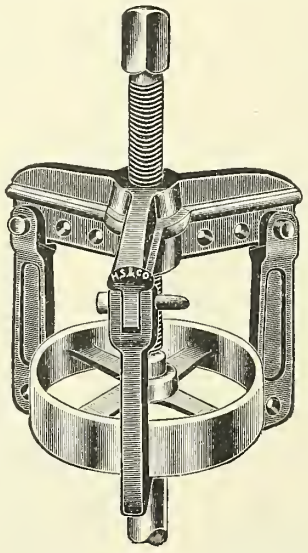


Drop-Forged from Tough Steel, Machine-Cut Steel Worm Screw

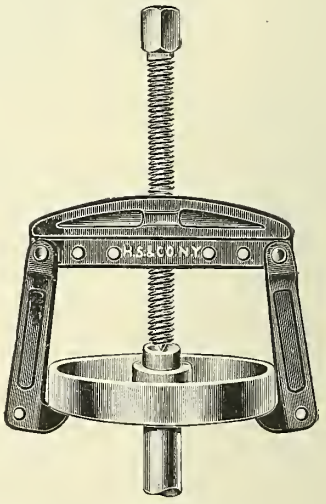
The "T" Handle will in most cases furnish sufficient leverage. If not, a wrench can be used.

Each $3.00

Crane



No. 3



No. 2

Drop-Forged from a High Carbon Steel, Case Hardened Machine Cut Worm Screws

Number Three, Large Size, will reach work thirteen inches from end of shaft and twenty inches in diameter. Shipping weight, two arm, 28 pounds, three arm, 41 pounds.

Number Three, Combination Arms, are seven inches from center to center of holes.

Two-Arm Puller, complete, with two sets Combination Arms $9.00

Three-Arm Puller, complete, with two sets Combination Arms 12.00

Number Two, Small Size, will reach work eleven inches from end of shaft and sixteen inches in diameter. Shipping weight, two arm, 17 pounds, three arm, 22 pounds.

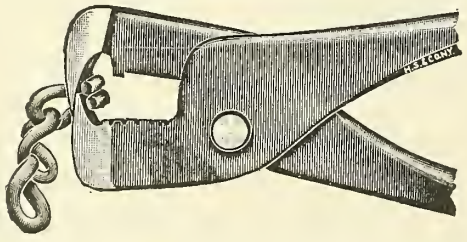
Number Two, Combination Arms, are six inches from center to center of holes.

Two-Arm Puller, complete, with two sets Combination Arms $7.20

Three-Arm Puller, complete, with two sets Combination Arms 9.60

Tire Chain Repair Tools

The Necessity



It is made from best steel drop-forgings, milled accurately, fitted and tempered to withstand the roughest use. Net weight 14 ounces.

Guarantee: We will replace, free of charge, any tool broken through fault of material or workmanship, when used for the purpose for which it is designed, of opening and closing cross chains.

Dozen $24.00

Tire Tool or Pry Bar
Perfect Handle

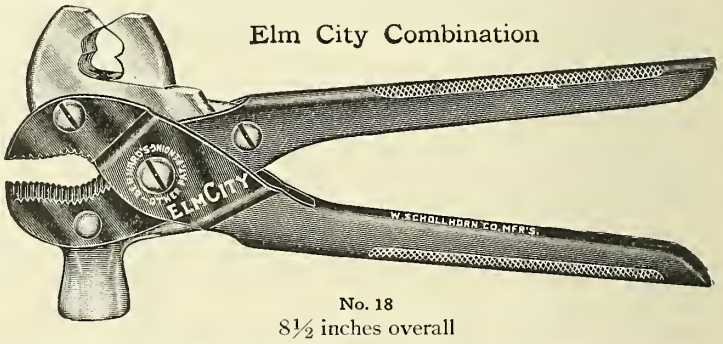


Drop-Forged. Accurately Tempered. Nicely Finished. Absolutely Guaranteed.

The handiest kind of a tool for taking off and putting on automobile tires quickly. 13½ inches long. 1-inch tapering to ⅞-inch in width. ½-inch tapering to a curved and round point tapered to $\frac{1}{16}$-inch thick.

No. 620. Dozen $12.00

Elm City Combination



No. 18

8½ inches overall

Drop-forged hammer head and jaws, fully polished. Closed stamped steel handles and frame, finished in a dead black. Interchangeable cutting jaws. A high-grade tool for replacing the cross chains on Weed chains. Has a parallel movement. Cuts side chains but not cross chains. Can be used to replace links by spreading. Weight 23 ounces per tool. Fully warranted.

Dozen $20.00

Cottor Pin Extractor
H. S. & Co.



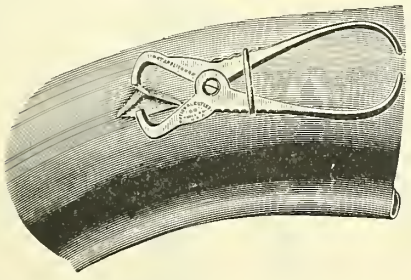
Made of tool steel.

Polished, 7-inch, dozen $3.75

For H. S. & Co. Tourist Auto-Kit Set, see page 559

Automobile Tools

Tire Repair Tool
National

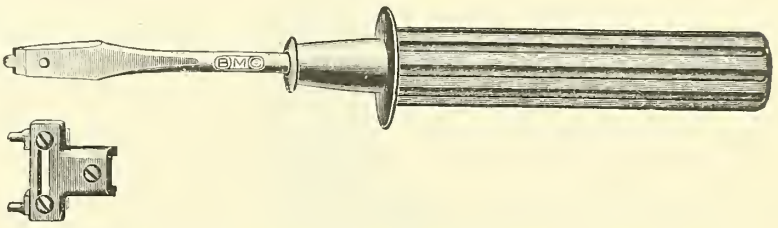


In order to make a first-class repair in tires by using putty and cement, the cut must be cleansed from sand, etc., and in order to clean the cut and insert the cement properly, a spreading prier must be used to spread the cut open and hold it open.

This Repair Tool is drop-forged from tool steel and arranged in such a manner that it can readily be inserted in a cut or blister to spread it open allowing free working at the cut in the tire.

Dozen $12.00

Valve Grinder
B. M. Co.



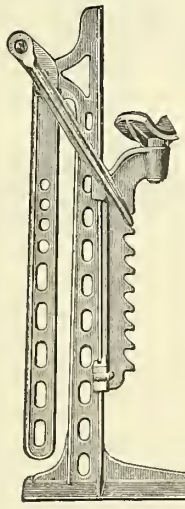
The blade is drop-forged from special screwdriver steel and is secured to the handle by a patented locking device.

The adjustable attachment is used when grinding valves that have grip holes in the head of valve stem instead of a slot, and is adjustable from ½ to 1¼ inch.

In operating, the handle is rolled back and forth between the palms, the broad steel flange affording a slight downward pressure in addition to preventing the hands from slipping.

Tool, complete, dozen $24.00
Without attachment, dozen 16.00

Tire Savers
Reliable



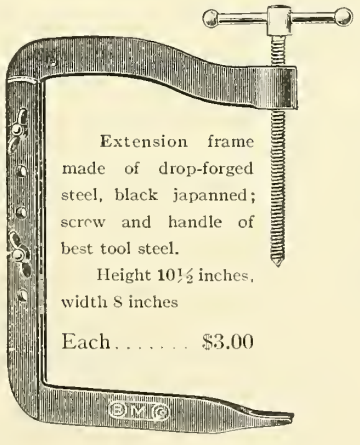
The life of tires can be prolonged one-third with a little care. Never allow the weight of the car to rest on the tires. Keep them off the oily floors, chain grips, etc. The floors of all garages have more or less oil, gasoline and water, which are natural enemies of rubber and fabric.

The above Tire Saver and Garage Jack is quickly adjusted to any height axle or hub without removing bolts or cotters. It has a swivel top and leather-faced saddle.

The lighter Tire Savers are used for cars weighing up to 3,000 pounds. The extra heavy are for cars weighing 3,000 pounds or over.

No. 1. Set of four $6.70
No. 2. Set of four (extra heavy) 8.00

Valve Lifter
B. M. Co.

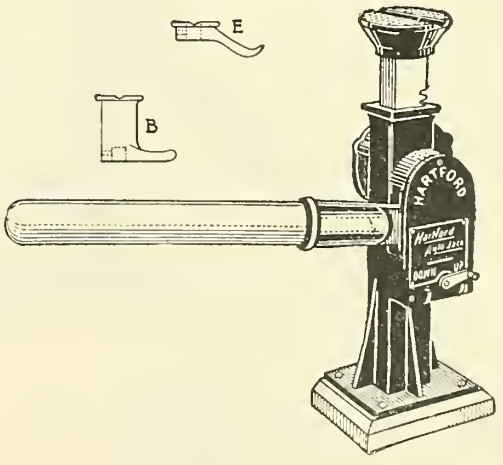


Extension frame made of drop-forged steel, black japanned; screw and handle of best tool steel.

Height 10½ inches, width 8 inches

Each $3.00

Auto-Jack
Hartford



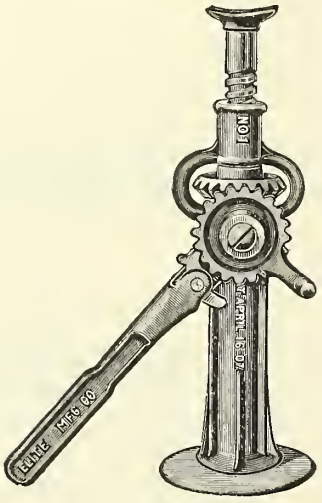
Nos. 2 and 3

The casing of this Jack is of toughest malleable iron; the lifting rack is cut from solid steel, and the gears are machine-cut, specially hardened. The actuating mechanism is made of chrome-nickel steel, hardened by a special tempering device, thus insuring maximum strength and minimum wear. Each Jack is fitted with a hardwood base, which gives perfect road stability when Jack is in use. Lift 7 inches, minimum height over-all 10½ inches. No. 2 Jack, made with lip "B"; No. 3 Jack, with lip "E."

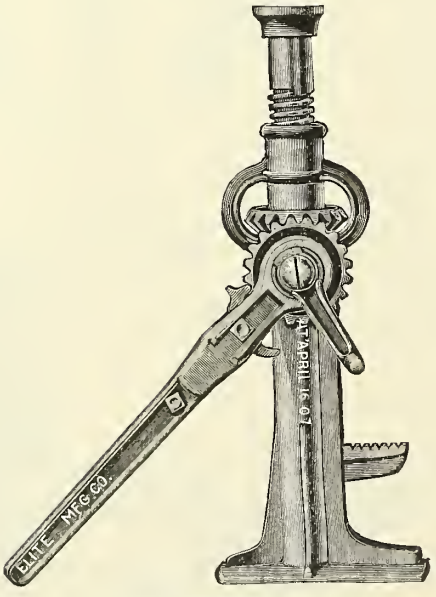
Each $6.50

Automobile Jacks

Reliable



Nos. 1 and 2 Malleable Iron



No. 4 Malleable Iron

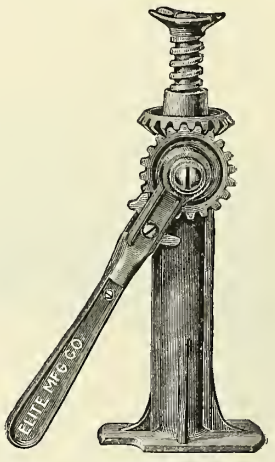
The Reliable is safe, strong, compact and durable. The lever does not interfere with springs or body.

Strength, simplicity, light weight and ease of operation all combined. It is self-contained with no loose parts to get lost, also self-locking at any point and is perfectly safe, as it will not let the load drop. For quick adjustment use crank on side gear.

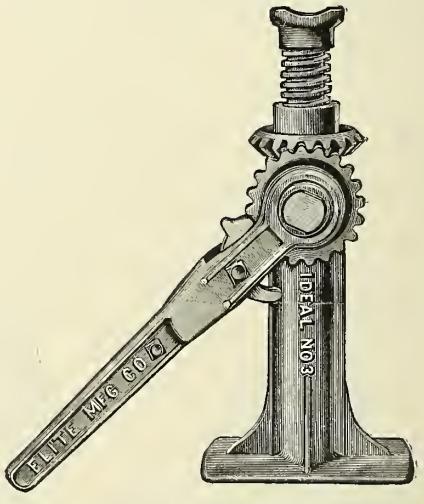
The No. 4 is of heavier construction, and designed for use with trucks, street cars, and wherever a Jack of large capacity and light weight is required.

Number	Weight Pounds	Capacity Tons	Adjustment Inches	Each
1	5	2	10½ to 18	$2.00
2	8	3	12 to 20	2.50
4	25	Top, 10 / Foot, 3	17½ to 26	10.00

Ideal



Nos. 1 and 2 Malleable Iron



No. 3 Malleable Iron

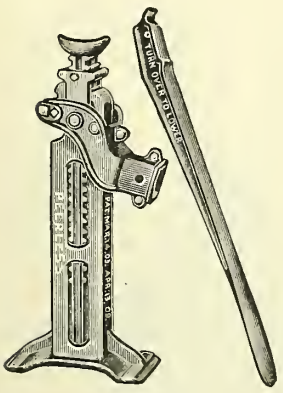
The Nos. 1 and 2 are made throughout of the best malleable iron with steel machine-cut screws. Designed and built to use for heavy automobiles under which it is difficult to operate a jack. The swivel top enables it to be placed in the most convenient position. Compact and light in weight but very powerful.

The No. 3 Jack is designed especially for heavy auto trucks, where extreme capacity, rigidity and strength are required. Constructed throughout of malleable iron with 1½-inch steel screw. Has a broad substantial base and all the desirable features of Nos. 1 and 2.

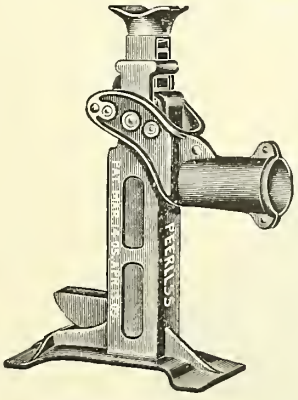
Number	Weight Pounds	Capacity Tons	Adjustment Inches	Each
1	5	2	10½ to 17	$2.00
2	6	2	12 to 21	2.25
3	17	6	13 to 20	6.00

Automobile Jacks

Peerless



No. 58



Nos. 60 and 61

These Jacks are heavily built with substantial bases arched to prevent tipping; a powerful leverage and simple lowering device, operated by turning handle. Positive action. Works in any position. Can be used for pushing as well as lifting. The handle makes an excellent tire tool.

No. 52 For cars of 2 tons. Similar in design to No. 58, with low bracket like Nos. 60 and 61. 11 inches high, 6 inch rise, weight 5 lbs., each $3.00

No. 55 For cars of 1 ton. Similar in design to No. 58, 10 inches high, 7-inch rise, weight 5 lbs., each 2.50

No. 58 For cars of 2 tons. 9¾ inches high, 6¼-inch rise, weight 7 lbs., each 3.00

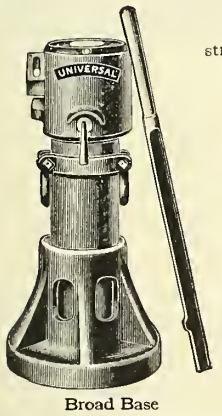
No. 60 For trucks of 5 tons. 11 inches high, 4-inch rise, weight, 8 lbs., each 6.00

No. 61 For trucks of 5 tons. 14 inches high, 7-inch rise, weight 10 lbs., each 7.00

Hydraulic Jacks

Dudgeon Universal Double Pump

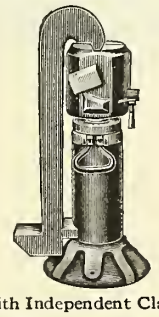
The Double-Pump feature enables operator to work rapidly, as Jack may be worked with double speed until heavy-lifting strain begins. These Jacks can be operated horizontally as well as vertically.



Broad Base

For railroad work, etc., where stability is required.

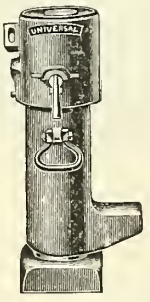
No.	Lift Tons	Run Out Inches	Height Inches	Diameter of Base Inches	Weight Pounds	Each
614	10	12	25	11	109	$ 95
615	10	18	31	11	125	110
616	15	12	25	12	135	125
617	15	18	32	12	158	150
618	20	12	26	13½	168	150
619	20	18	32	13½	227	175
620	30	9	22	14	210	170
621	30	12	27	14	271	200
622	30	18	33	14	310	235
623	40	12	27	14½	340	240
624	40	18	35	14½	392	280
625	50	12	28	15½	427	260
626	50	18	36	15½	491	310
627	60	12	30	16	508	310



With Independent Claw

For railroad work, etc., where stability and a low lift are required.

No.	Lift Tons	Run Out Inches	Height Inches	Diameter of Base Inches	Weight of jack with claw Lbs.	Weight of jack without claw Lbs.	Each
639A	10	12	26	11	155	105	$ 95
639B	10	18	32	11	195	125	110
639C	15	12	26	11	195	135	135
639D	15	18	32	11	210	155	160
639E	20	12	27	12	252	170	175
639F	20	18	33	12	295	190	200
640	30	9	22	12	270	190	190
641	30	12	27	12	330	213	220
642	30	18	33	13	385	260	260
643	40	12	27	13	380	270	260
644	40	18	33	13	465	315	300
645	50	12	28	15	530	379	300
646	50	18	33	15	580	480	350
647	60	12	28	16	625	460	350



Regular Claw

For general use and for work that will not permit the head to be placed under the load.

No.	Lift Tons	Run Out Inches	Height Inches	Weight Pounds	Each
629A	10	12	25	125	$100
629B	10	18	32	144	120
629C	15	12	26	162	150
629D	15	18	32	190	185
629E	20	12	26	203	200
629F	20	18	33	245	240
630	30	9	22	290	225
631	30	12	26	310	250
632	30	18	32	364	285
633	40	12	27	355	300
634	40	18	34	460	325
635	50	12	27	450	325

Jack Screws

The easiest acting and best constructed jack screws on the market. Barrels of cast-iron; screws of steel; threads on the screws lathe cut. Furnished with levers unless ordered without.

Number	Diameter of Screw Inches	Height of Barrel Inches	Minimum Height of Jack Inches	Net Rise Inches	Maximum Height of Jack Inches	Weight Pounds	Estimated Lifting Capacity Tons	With Lever	Without Lever
1	1¼	6	9	4	13	8½	5	$2.20	$2.00
2	1¼	7	10	6	16	9½	5	2.50	2.30
3	1½	7	10¾	5	16	16	8	2.70	2.50
4	1½	9	12¾	7	20	20½	8	3.10	2.90
5	1½	11	14¾	9	24	22½	8	3.20	3.00
6	1¾	9	12¼	6	18	22½	12	3.40	3.10
7	1¾	10½	14¼	8	22	25	12	3.60	3.30
8	1¾	12½	16	10	26	29	12	3.90	3.60
9	1¾	14½	18¼	12	30	32	12	4.30	4.00
10	2	8	12¼	5	17	27	15	4.30	3.90
11	2	10	14	7	21	31	15	4.60	4.20
12	2	12	16¼	9	25	35	15	5.30	4.90
13	2	16	20¼	13	33	41	15	6.00	5.60
14	2½	9½	15	8	23	45½	20	6.40	5.70
15	2½	11½	16¾	10	27	50	20	7.10	6.40
16	2½	15½	20¾	14	35	62	20	8.10	7.40
17	2½	19½	25	18	43	75	20	9.50	8.80



Jack Screws Number	1, 2, 3, 4, 5	6, 7, 8, 9	10, 11, 12, 13	14, 15, 16, 17
Diameter of lever, inches	⅝	¾	13/16	1
Length of lever, inches	17	18	19	24
Weight of lever, pounds	1½	2¼	2¾	5¼
Each	$ .20	.30	.40	.70

Gasoline, Benzine and Oil Cans

Gasoline, Storage or Garage

McNutt Non-Explosive

These cans remove all elements of danger, as actual contact with fire will not cause an explosion. Eclipse pattern, approved by New York City Fire Department



Plug Closure

Five-gallon, each $6.00
Ten-gallon, each 7.50



Eclipse Automatic Closure

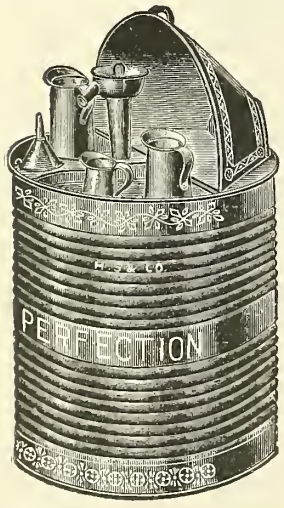
Two-gallon, each $3.50
Three-gallon, each 4.00
Five-gallon, each 6.00



Globe Automatic Closure

One-gallon, each $2.50
Two-gallon, each 3.00
Three-gallon, each 3.50
Five-gallon, each 5.00

Pump



H. S. & Co.

For Miscellaneous Oils
With Corrugated Bodies and Bottoms

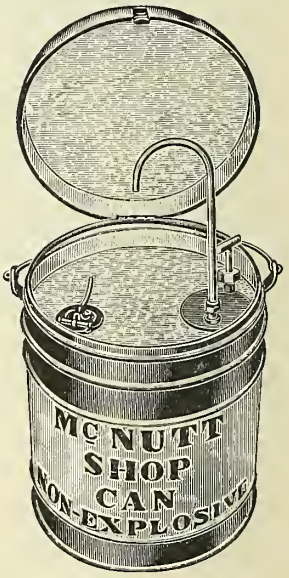
Have Steady Stream Pumps, which can be detached and used in pumping oil from barrel into the tank. Each tank furnished with a 1-pint, 1-quart and 2-quart tin measure, and a 1-quart tin funnel.

30 gallons, each $4.00
60 gallons, each 4.70
106 gallons, each 8.00

McNutt Non-Explosive

Used by printers, lithographers, in rubber factories and by manufacturers in general for filling priming cans, torches, lamps, etc.

Five-gallon, each $8.50



Cleaning or Priming

Adaptable for Starting Motors, Cleaning Machinery, etc., as well as for Printers Use

McNutt Non-Explosive



"Eclipse"

Used in the engraving and printing departments of the U. S. Government.

1-quart, steel, each $1.50

McNutt Non-Explosive



½-pint, brass, each $1.00
1-pint, brass, each 1.25
1-quart, brass, each 1.75

Success, Safety

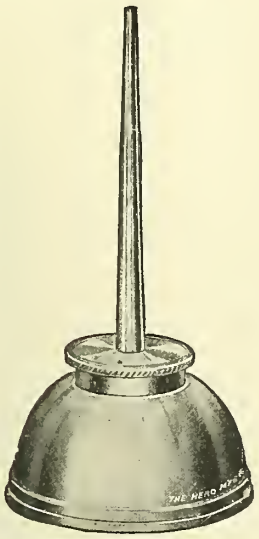


Made of heavy brass; stoppers turned from solid brass. No vapor or fluid can escape, excepting by pressure on the circular plate below the nozzle—when this pressure is released the stopper automatically and instantly closes.

1-pint, each ..... $ .70
1-quart, each ..... .85
2-quarts, each 1.50

Oilers

Drawn Steel, Copper-Plated, or Drawn Brass



With Straight Spout



Bent Spout

Illustrating 1113 to 1116 line with solid brass screw and hoop, machine cut.

Number	Dozen	Drawn steel, heavily copper-plated, tempered spring steel bottoms: Diameter of Bottom Inches	Height of Body Inches	Length of Spout Inches	Capacity Ounces	Drawn Brass: Number	Drawn Brass: Dozen
1112	$4.50	2¾	1⅝	2½	2½	120	$6.50
1113	5.50	3½	1⅞	3	4½	130	8.00
1113A	6.00	3½	1⅞	5	4½	130A	8.75
1114	6.50	3½	1⅞	9 (Bent)	4½	140	9.20
1114A	7.50	3⅞	2½	3	9	140A	10.20
1114AA	8.00	3⅞	2½	5	9	140AA	10.80
1114B	8.50	3⅞	2½	9 (Bent)	9	140B	11.20
1115	9.25	4⅜	2⅞	3	13½	150	12.00
1115A	9.75	4⅜	2⅞	5	13½	150A	13.00
1116	10.50	4⅜	2⅞	9 (Bent)	13½	160	14.00

Copper-plated steel spouts, for Nos. 1112 to 1116, $2.25 to $9.00 dozen, according to length.

Drawn brass spouts, for Nos. 120 to 160, $3.00 to $7.50 dozen, according to length.

Chace Pattern



The body and screw are substantially made of one piece of seamless metal. A turned-in flange holds the washer firmly in place. The bottom is double-seamed.

Number	0	1	2	3	4	5	6
Diameter, inches	2 3/16	2⅝	3 5/16	3¾	4⅛	4½	4¾
Capacity, in fluid ounces	1¼	2	4	6½	8¾	11	14
Zinc, with tin bottoms and spouts, dozen	$1.25	1.50	2.00	2.25	2.75	3.50	4.50
Brass throughout, dozen	2.25	2.50	3.50	4.00	4.75	6.00	7.50

Extra Spouts

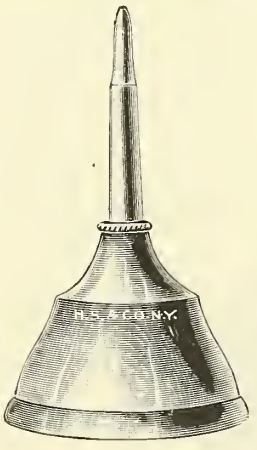
Tin for Zinc Oilers

	Gross
No. 0	$3.50
No. 1	4.00
No. 2	4.50
No. 3	4.75
No. 4	5.00
No. 5	5.50
No. 6	6.00

Brass, for Brass Oilers

	Gross
No. 0	$4.00
No. 1	4.50
No. 2	5.50
No. 3	6.25
No. 4	7.25
No. 5	8.25
No. 6	9.25

Hammer Malleable Iron



No. 2

Brass bottom, with steel spring inside

Number	2	3	4
Base, inches	3¼	3¾	4
Capacity, gills	1½	2	3
Dozen	$4.00	4.40	4.80

Properties of a Perfect Lubricant

Lubricating material should be rigidly examined for the following six properties, and every engineer desirous of securing the best results should satisfy himself on each point before approving any oil:

(1) Sufficient body, thickness, or viscosity to keep the metal parts from actually coming into contact with each other under the maximum pressure which may be applied to them.

(2) Fluidity to just the extent which will not interfere with requirement No. 1 and still permit a free movement of the parts.

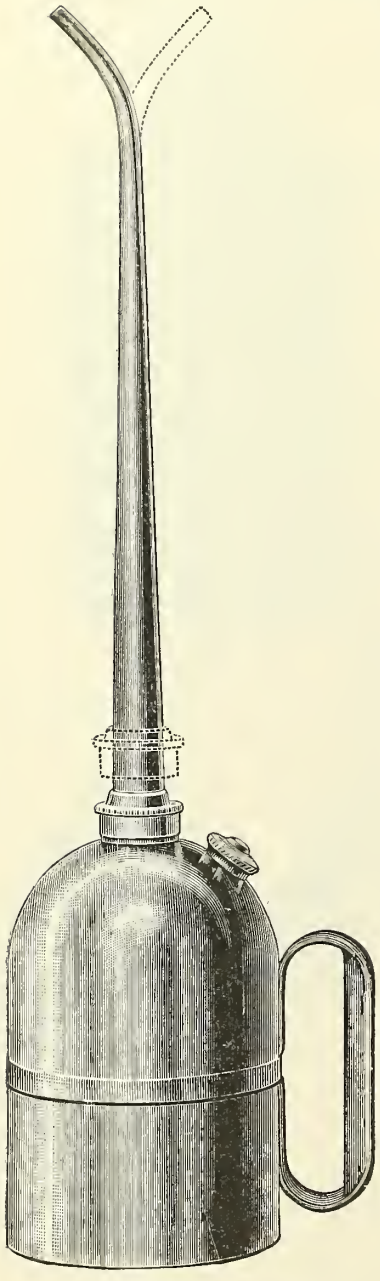
(3) Great power for absorbing and carrying away heat which simply means keeping the bearing cool.

(4) Constituent parts requiring an extremely high temperature to decompose or evaporate and a very low temperature to solidify.

(5) Absolute freedom from any tendency to decompose or oxidize by exposure to the air, which means it will not gum or clog the bearings.

(6) The absence of acidity or moisture or any other property which might have a tendency to corrode or rust the metal.

Railroad Oilers



No. 101

These Oilers have a brass union where the spout joins the body, enabling the spout to be pointed in any direction for delivering the oil.

The advantage over the old style solid screw thread is apparent to any person using such an oiler.

Steel. Copper-Plated

Number	Capacity	Diameter Inches	Height Inches	Spout Inches	Dozen
10	1-pint	3⅜	5	12	$14.00
11	1-quart	4⅛	6	18	18.00

Extra Spouts

Inches	Dozen
12	$5.75
18	7.00

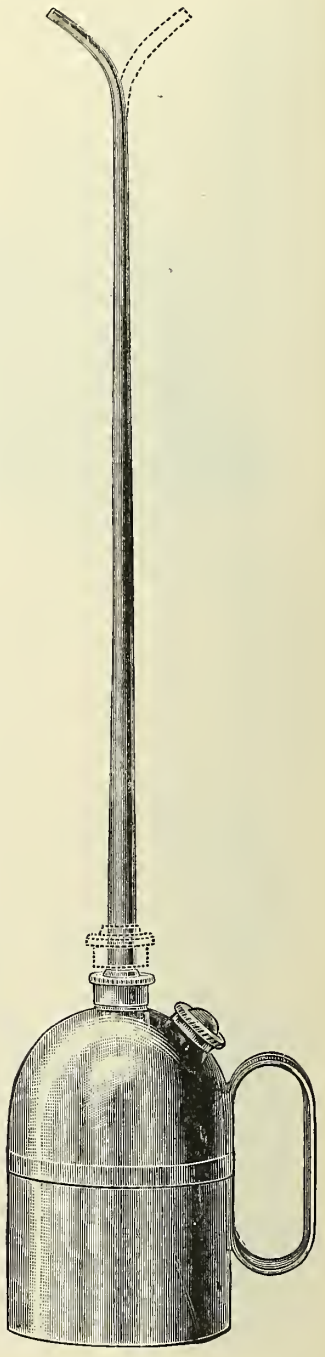
With large spout 1½ inches at base, 12 inches and 14 inches in length.

No. 101 1-quart Railroad Oiler, 4⅛ inches diameter, 6 inches high, 12-inch spout, dozen..... $18.00

No. 111 2-quart Railroad Oiler, 5 inches diameter, 8 inches high, 14-inch spout, dozen..... 20.00

Extra Spouts

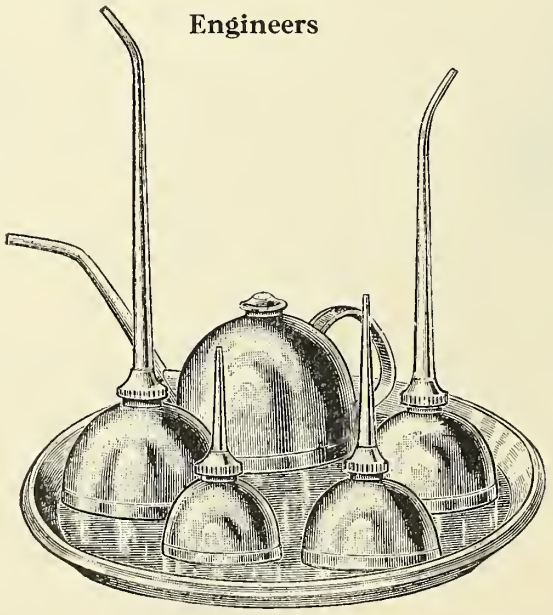
Inches	Dozen
12	$7.00
14	9.00



No. 11

Oilers in Sets

Engineers



Brass

No. 30 Five pieces, polished, 12-inch tray, set..... $6.00

No. 40 Six pieces, polished, 14-inch tray, set..... 9.00

Steel

No. C30 Five pieces, copper-plated, 12-inch tray, set..... $5.00

No. C40 Six pieces, copper-plated, 14-inch tray, set..... 7.00

In all Oiler Sets the tray counts as one piece. When desired for use on board ship they should be specially ordered, as trays are provided with racks to hold oilers in position.

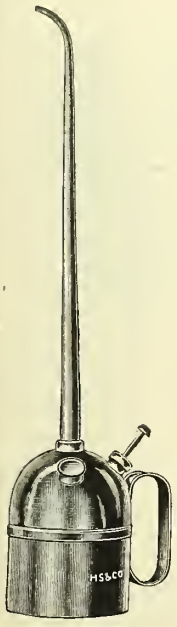
Pump Oilers

Indestructible Copperized Steel

The bodies are drawn from 20-gauge cold-rolled steel, heavily electro copper-plated, making them practically indestructible. Made to order from 20-gauge brass or nickel-plated steel. The spout connections are made by means of a union, making all spouts interchangeable.

With Howland Pumps

Having two valves working automatically, which deliver the oil to the bearings exactly as desired

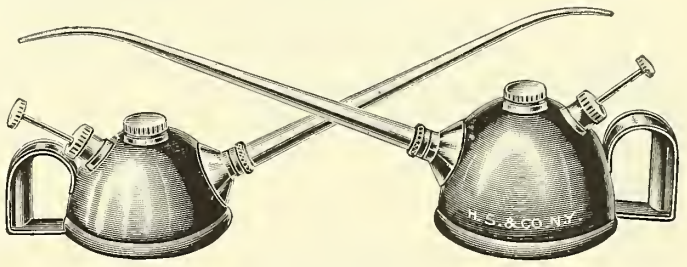


Drawn in two pieces

Regular

	Dozen
No. 1000, 1-pint, 3⅜-inch diameter, 9-inch spout	$30.00
No. 2000, 1½-pint, 3¾-inch diameter, 12-inch spout	40.00
No. 3000, 2-pint, 4⅛-inch diameter, 15-inch spout	50.00
No. 4000, 4-pint, 5-inch diameter, 18-inch spout	60.00

Auto



Drawn in one piece

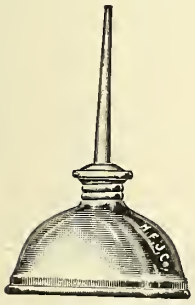
These Oilers are especially adapted for automobiles, motor boats, stationary engines, etc. They form part of the equipment of some of the finest automobiles manufactured, both at home and abroad.

	Dozen
No. 800, ½-pint, 3¾-inch diameter, 3-inch spout	$23.00
No. 801, ½-pint, 3¾-inch diameter, 5-inch spout	23.50
No. 802, ½-pint, 3¾-inch diameter, 9-inch spout	24.00
No. 803, 1-pint, 4¼-inch diameter, 5-inch spout	25.25
No. 804, 1-pint, 4¼-inch diameter, 9-inch spout	25.75

Sewing Machine and Phonograph Oilers

H. S. & Co.

Sewing Machine



No. 559
(Formerly No. 3566)

Made from zinc. Standard chace-oiler thread.

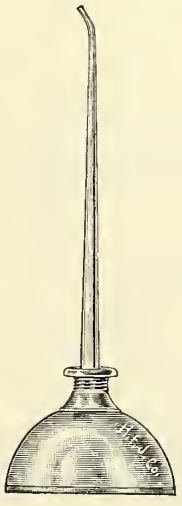


No. 766

Made from highly polished zinc. Also furnished brass-plated.

	559	766
Numbers	559	766
Diameter of bottom, inches	2 1/16	1¾
Height of body, inches	1 5/16	1¼
Length of spout, inches	2⅛	1¼
Capacity, fluid ounce	1	½
Zinc, gross	$6.00	$5.50
Brass-plated, gross	.....	8.00
Air-tight screw-thread stoppers, gross	1.50	

Phonograph



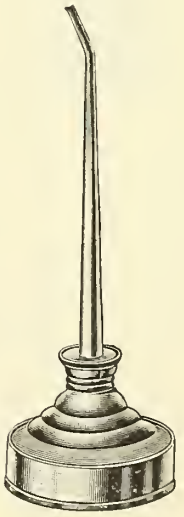
No. 562
Formerly No. 3445

Made from tin-plate; brass hoop; body and spout heavily nickel-plated.



No. 560
Formerly No. 3566A

Made from zinc. Standard chace-oiler thread.



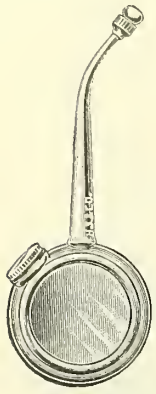
No. 766A

Made from highly polished zinc. Also furnished brass-plated.

	562	560	766A
Numbers	562	560	766A
Diameter of bottom, inches	1⅞	2⅛	1¾
Height of body, inches	1¼	1 5/16	1¼
Length of spout, inches	3⅞	3⅞	3⅞
Capacity, fluid ounces	½	1	½
Zinc, or tin plate, gross	$10.00	$7.00	$6.50
Brass-plated, gross	.....	.....	10.00
Air-tight screw-thread stoppers, gross	1.50	1.50	

Pocket Oilers

H. S. & Co.



Finely nickeled, with needle-point stopper.

No. 12 R Sheet steel with brass spout, 1½ inches diameter, 4¼ inches over all, dozen $1.80

No. 13 R All brass, 1⅞ inches diameter, 4⅝ inches over all, dozen $3.00

H. S. & Co.



No. 969. Nickel-plated body is the same as No. 968 without cap; with needle and cork attachment, and with curved spout 4 inches long, making it 6¼ inches over all.

Dozen $3.00

H. S. & Co.



No. 968 Nickel-plated cap is fitted with needle and cork attachment, preventing stoppage of tip and leakage.
3¼ inches over all when closed
Dozen $1.50

Perfect



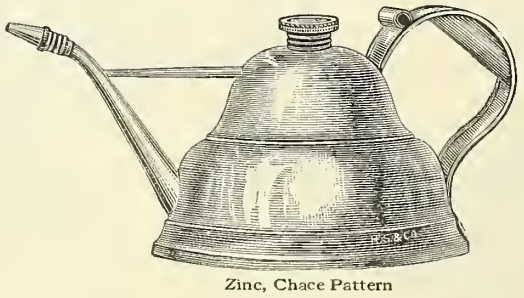
For Bicycles, Guns, Fishing Tackle, Typewriters, Sewing Machines, Roller Skates, etc.

Consists of tube, tip and cap. The tip throws only a few drops at a time thereby avoiding loss.

Dozen $4.00

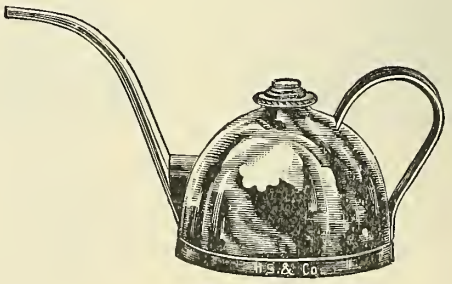
Engineers Fillers

H. S. & Co.



Zinc, Chace Pattern

Number	733	734	735	736	737	738
Capacity	1 pt.	1½ pts.	1qt.	1 qt.	2 qts.	2 qts.
Diameter of bottom, inches	4⅞	5¼	6	6	7⅜	7⅜
Height of body, inches	4	5	5¼	5¼	6½	6½
Length of spout, inches	4¾	4¾	4¾	7½	7½	9½
Dozen	$4.00	5.00	6.00	7.00	12.00	13.00



Drawn Seamless Bodies

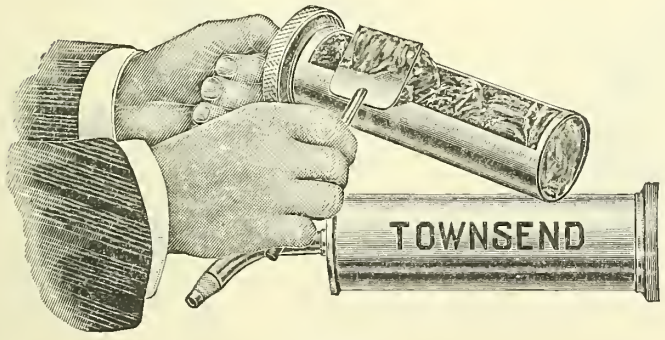
Diameter of bottom, inches		4⅜	4¾	5¼	6
Height of body, inches		3¼	4	4¾	5¾
Length of spout, inches		4½	7	7	7
Capacity		1 pt.	1½ pts.	1 qt.	2 qts.
Copper-plated	Number	19	19A	210	211
	Dozen	$14.00	17.00	20.00	24.00
Brass	Number	180	190	200	201
	Dozen	$20.00	22.00	30.00	34.00

Oil and Grease Guns

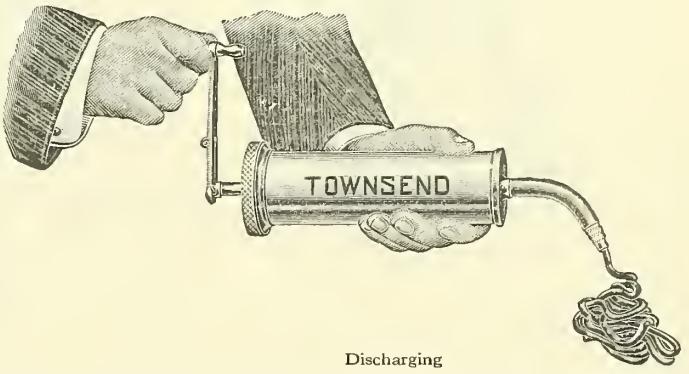
(Handy Devices for Unhandy Places)

Townsend

Grease



Filling



Discharging

This Gun is made of two brass tubes, each .04 inch thick, and secured with cap and funnel at opposite ends. Spout is brass tubing 5/8 inch diameter, and nozzle is turned from solid brass rod; together they are 5 inches long. Nozzle has 1/16 inch hole. Extra length of spout or any size nozzle at special prices. Quickly and completely filled from large opening in the side, with steel paddle supplied with each gun. Has quadruple screw with crank handle, which will discharge a pound of grease exactly where wanted in 15 seconds.

Made in four sizes: 1-pound $5.00, 12-ounce $4.00, 8-ounce $3.50, 6-ounce $3.00.

B Line

Oil and Gasoline (All Metal)

Boulevard



Handles gasoline, light or heavy oils, and light greases. Made of seamless brass tubing, polished and lacquered. The metal plungers are ground to perfect fit.

		Each
3 ounces,	4x1½ inches.	$1.50
5 ounces,	6x1½ inches.	1.75
8 ounces,	9x1½ inches.	2.00
10 ounces,	10x1¾ inches	2.50
18 ounces,	10x2¼ inches	3.50

Back Bay

One Hand



Made of seamless brass tubing, polished and lacquered. The metal plungers are ground to perfect fit. May be easily worked with one hand.

		Each
3 ounces,	4x1½ inches	$1.75
5 ounces,	4x1¾ inches	2.00

Oil, Grease and Gasoline

Boston Combination



Will handle with equal facility gasoline, light or heavy oil, non-fluid oil or the heaviest grease.

For oils or light greases it is used like an ordinary oil gun. For handling heavy greases, screw lock-nut down firmly, then turn handle forward on the heavy square screw thread, forcing grease out in ribbon, which will quickly pack gear case or transmission. Polished and lacquered brass.

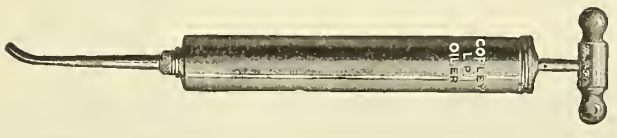
		Each
3 ounces,	4x1½ inches	$1.75
5 ounces,	6x1½ inches	2.00
8 ounces,	8x1¾ inches	2.50
10 ounces,	10x1¾ inches	3.00
18 ounces,	10x2¼ inches	4.00

Each of the above Oilers are equipped with oil tip, grease tip and plug for closing. When used with gasoline, lubricate occasionally.

Copley

(Leather Packed)

Oil



		Each
3 ounces,	5x1¼ inches	$1.00
5 ounces,	8x1¼ inches	1.25
8 ounces,	12x1¼ inches	1.75
12 ounces,	14x1½ inches	2.50
18 ounces,	16x1¾ inches	3.25
30 ounces,	18x2¼ inches	4.00

For handling oil lubricants only (not gasoline). Recommended where a lower priced gun is desired. Piston packings are of specially selected leather and will give long service. B Line (above) Tips fit these guns. Body is seamless brass tubing, polished and lacquered, with piston rods of Bessemer steel. The larger sizes have wooden handles. 4-inch tapered tip with each gun.

Hand Lamps

Malleable Iron

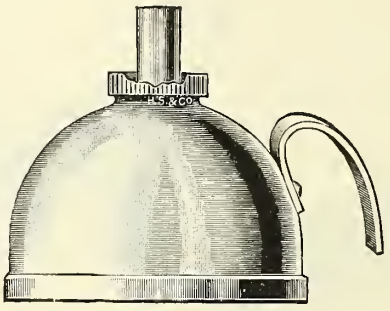


With oil tubes, Kerosene Burner

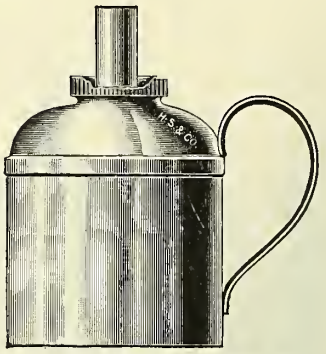
3⅜-inch diameter, ½-pint capacity.

Dozen $5.00

H. S. & Co. Seamless Steel



Nos. 20 and 21



No. 23. Copper-plated inside and out to prevent rusting

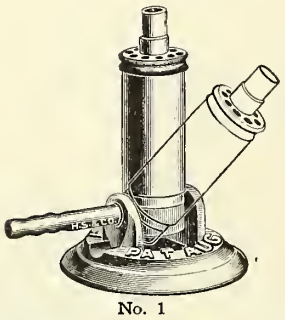
Number	Capacity	Diameter of Bottom, Inches	Height of Body, Inches	Spout Inches	Dozen
20	⅜ pt.	3½	1⅞	2¼	$6.00
21	1 pt.	4⅜	2½	1½	12.00
23	1½ pts.	4⅛	4⅝	1⅞	12.00

Ball Lamp Wicks

For above hand lamps, pound, ... $ .30

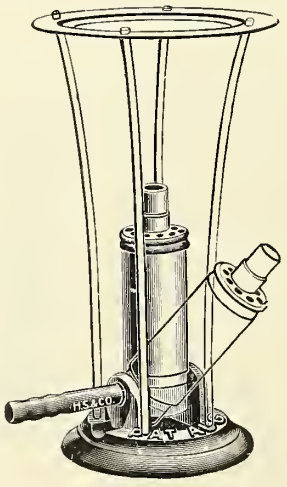
Bunsen Burners or Gas Heaters

H. S. & Co. Adjustable

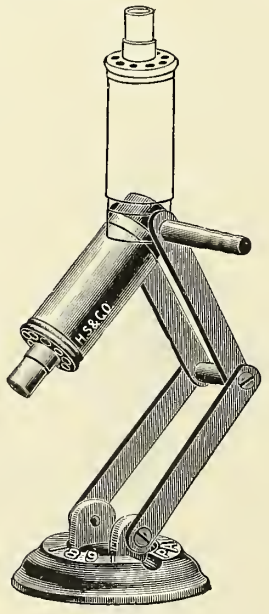


No. 1

With attachments these burners are ideal for the laboratory, office and workshop; are entirely safe, cannot blow out nor can the flame recede inasmuch as the gas inlet is protected from side draughts. The burners can be inclined or tilted at hinge, which is of great importance as it prevents foreign bodies obstructing them. The air is admitted at the top of the burner and, being very near the flame, is superheated before it mixes with the gas whereby a hotter flame is obtained with less consumption of gas.

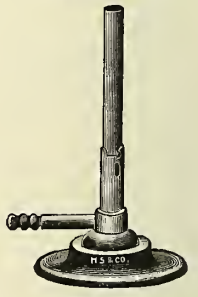


No. 2



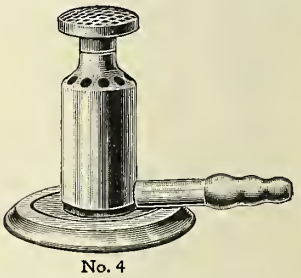
No. 3

Stationary



No. 1851

Each ..... $ .50



No. 4

2½ inches high. Each .. $ .50

No. 1 Hinged Burner, each ..... $ .75
No. 2 Hinged Burner, each 1.15
No. 3 Triple hinged stand, each 1.20

For Blow Pipe fitting above Bunsen Burners, see next page.

Brown & Sharpe



No. 850

For tempering drills, punches, chisels, small tools, etc.

This Heater, in many instances, takes the place of a forge in tempering machinists' small tools and is more convenient and economical in time and fuel. It is provided with a collar with holes corresponding to those in the lower part of the tube. By this arrangement the supply of air can be regulated and the intensity of the flame controlled.

Each ..... $ .75

Buzzer



Torch or Individual Burner

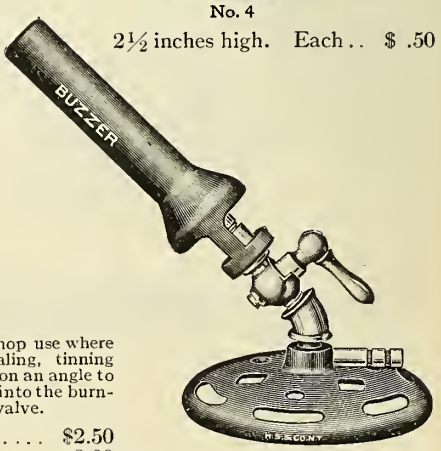
High-power flame, automatic blast, atmospheric burner.

Each ..... $2.00 With Pilot Light, each .... $ 2.50

Buzzer

Adapted for laboratory or shop use where intense heat is required: annealing, tinning baths, melting lead, etc. Placed on an angle to prevent anything from dropping into the burner which would tend to clog the valve.

Each $2.50
With Pilot Light, each 3.00



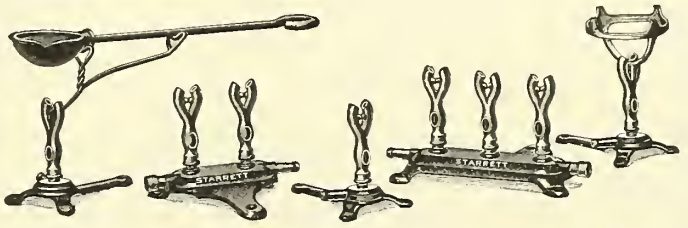
No. 12

Gas Heaters

Starrett Twin Tube



Showing Single Burner attached to ordinary gas connection.



B, E, G C B D B, F

These Double-Tube Gas Heaters are made with nickel-plated burners and japanned bases, and are most convenient and effective heaters for use in various mechanical arts.

They are so made as to cause the gas and air to become thoroughly mixed for perfect combustion while passing through deflectors in base of tubes. The tubes are shaped to cause the flames to penetrate each other at cross angles, thus producing a clean, intense heat, free from smoke and with no waste of gas.

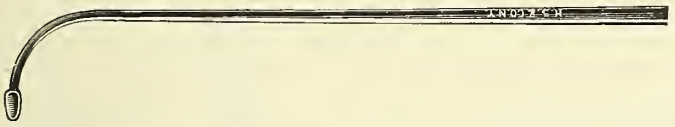
The Heater is convenient for tempering small tools, melting lead, babbit, etc., and is suitable as a forge for light work. Plumbers, tinsmiths, electricians, jewelers, dentists, barbers and others will find it valuable. It will boil a quart of water in six minutes.

No. 100A.	Burner only, without base, each	$ .75
No. 100B.	One burner, with base, each	1.00
No. 100C.	Two burners, with base, each	2.00
No. 100D.	Three burners, with base, each	3.00
No. 100E.	Tool Holder, each	.15
No. 100F.	Dish Holder, each	.25
No. 100G.	Ladle, 14 inches long, 12-ounce, each	.25
No. 100H.	One burner with Base (B), with Tool Holder (E) and Dish Holder (F)	1.40

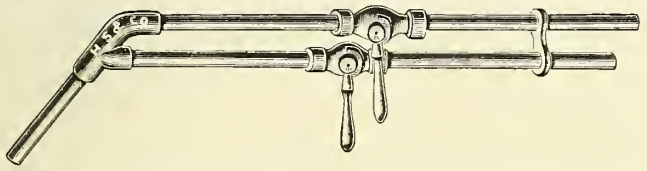
Unless otherwise ordered, No. 100H will be sent.

Blow Pipes

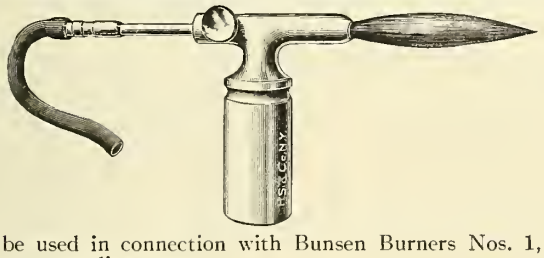
H. S. & Co.



Length, inches	7	8	9	10	11	12
Brass, dozen	$1.10	1.30	1.40	1.50	1.70	1.90



No. 81.	Brass, with 1/8-inch bore (for Bellows see No. 102) each	$1.50
No. 82.	Brass, with 1/4-inch bore (for Bellows see No. 102) each	2.25
No. 83.	Brass, with 5/16-inch bore (for Bellows see No. 103) each	3.00

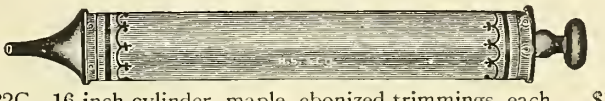


To be used in connection with Bunsen Burners Nos. 1, 2, 3 or 4 shown on preceding page.

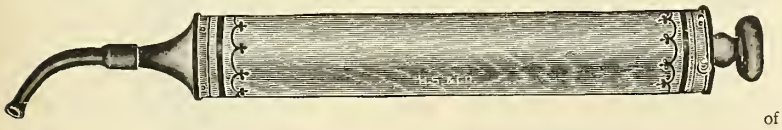
No. 5. Each ..... $.65

Universal Dusters

H. S. & Co.



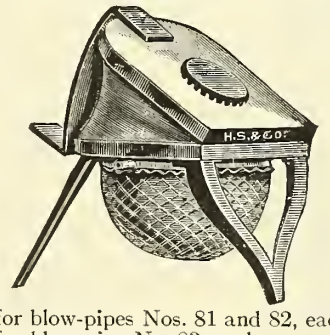
No. 122C.	16-inch cylinder, maple, ebonized trimmings, each	$1.00
No. 122D.	18-inch cylinder, maple, ebonized trimmings, each	1.50



No. 122E. 18-inch cylinder, detachable nose, maple, ebonized trimmings, each $2.00

Foot Bellows

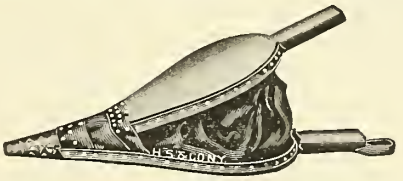
H. S. & Co.



No. 102.	Suitable for blow-pipes Nos. 81 and 82, each	$8.00
No. 103.	Suitable for blow-pipe No. 83, each	10.70

Moulders Bellows

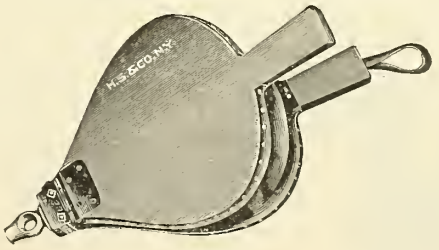
H. S. & Co.



Standard

Made of clear first grade lumber and high grade leather.

Width, inches	8	9	10	11	12	14	16
Dozen	$14.00	15.50	17.50	20.00	22.50	30.00	40.00



Cyclone

Width, inches	9	10	11	12
Dozen	$23.00	25.50	30.50	36.50

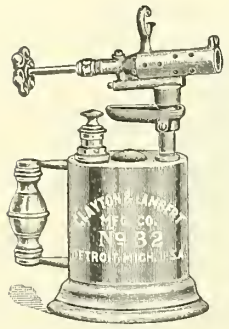
Steel hinge, good clear boards that will not warp and covered with the best grade of selected sheepskin. The back suction through the side holes in spout insures the maximum amount of wind.

While the initial cost is a trifle more than that of the regular type, it is less expensive in the end.

Torches

C. and L.

Gasoline

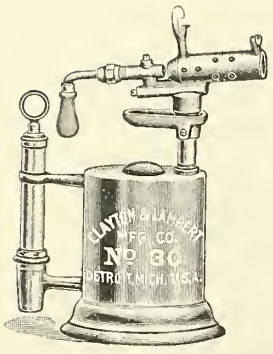


No. 32

No. 32 produces a perfect fire, whether used indoors or outdoors, in any weather. Burner is made of special generator metal which holds the heat and is of the improved type, having a super-heated chamber for the gas and protecting the gas passing into the burner. The intensely hot blue flame burns steadily under extreme conditions; automatic brass pump in tank, fitted with check valve and provided with removable cork seat, insures abundant air pressure.

Capacity one quart, shipping weight 5 pounds, each $5.50

No. 38 is exactly like No. 32 except pint size, shipping weight 3¾ pounds, each 4.85



No. 30

No. 31 is exactly like No. 32 except without hook and support for holding a soldering copper. The burner has a special generating chamber that super-heats the gas before it is burned and is fitted with clean-out plugs to facilitate cleaning the burner, should it become clogged from impurities in the gasoline.

Capacity one quart, shipping weight 5 pounds, each $5.25

No. 37 is exactly like No. 31 except pint size, shipping weight 3¾ pounds, each 4.60

No. 30 is sold at a reasonable price but has the invariable C. & L. quality in its material and construction. The burner, as in the higher priced torches, is made of special generator metal which holds the heat longer and greatly helps to produce a perfect blue flame. Has hook and support to hold soldering copper, a feature much appreciated in repair work.

Capacity one quart, shipping weight 4¾ pounds, each $4.75



No. 108

No. 29 is exactly like No. 30 except without hook and support for holding soldering copper. It is a popular-priced torch and is unsurpassed in point of utility and service by any other tool sold at the price.

Capacity one quart, shipping weight 4¾ pounds, each $4.50

No. 108 is light and well balanced, and fills a long-felt want. The tank is made of heavy seamless drawn brass, reinforced, and C. & L. patented automatic brass pump, with double springs, forms the handle. Remember, a pump with double springs is far superior to a pump with a single spring. The burner is fitted with wood handle and made of bronze metal, producing a steady blue flame of intense heat. No better value was ever offered for the price. The burner is made with a hook and support for holding soldering copper.

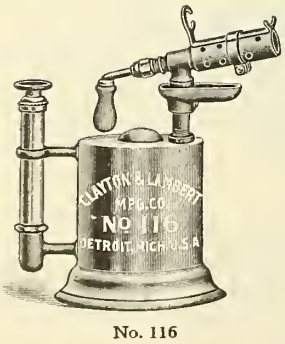
Capacity one quart, shipping weight 5¼ pounds, each $4.25

This soldering copper attachment is supplied with Nos. 116 and 118 torches free of charge.



No. 107 is a duplicate of No. 108 except without hook and support on the burner. It is a first-class torch, extra good value for the money, and is sure to please.

Capacity one quart, shipping weight 5¼ pounds, each $4.00



No. 116

No. 116 is a good torch, with special automatic pump in the handle, at a low price. The pump is made the same as in other competitive torches, with a single spring, and while not as efficient as the double spring pump, will give good service. The tank is made of seamless drawn brass and the burner of good bronze metal. A detachable hook and support for the burner tube is supplied free of charge.

Capacity one quart, shipping weight 5 pounds, each $3.30

No. 118 is similar to No. 116, except pint size. The same style of pump is used and it is supplied with detachable hook and support.

Capacity one pint, shipping weight 4¼ pounds, each $3.10

Torches

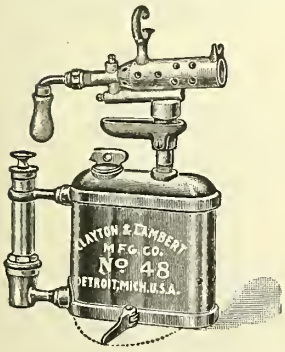
C. & L.

Gasoline



No. 120

No. 120 is a good one-quart Torch. While not as powerful as the higher grade torches, good results will be obtained for medium and ordinary work. It is fitted with single spring check valve which closes off the air automatically after each stroke of the plunger, and is supplied with detachable soldering copper attachment.
Shipping weight 5 pounds, each $3.00



No. 48

No. 122 is the same as No. 120 except pint size. Supplied with detachable hook and support, a convenience when used for repair work.
Shipping weight 4¼ pounds, each $2.50

No. 48 is oblong, 1⅞ inches thick, strongly made of heavy gauge brass and has hook and support to hold soldering copper—a great convenience to the repair man. Hinged supports at the base prevent tipping over.
Capacity one pint, shipping weight 5¼ pounds, each $5.65

No. 47 is exactly like No. 48 except with plain burner tube.
Capacity one pint, shipping weight 4⅜ pounds, each $5.40



No. 61

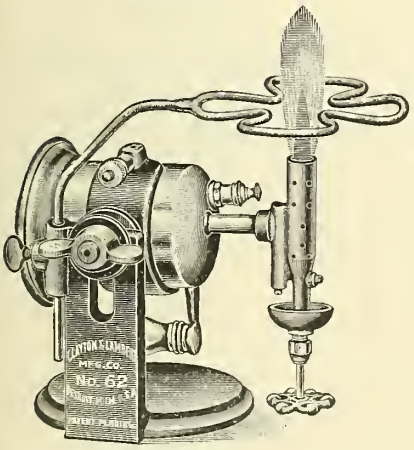
The Laboratory Type

No. 61 is designed to meet the requirements of laboratories, colleges, schools, etc. The rigid burner has a generating chamber which superheats the gas and is made of special generator metal, producing an intensely hot blue flame which is not affected by draft. The air pump is in the handle.
Capacity one pint, shipping weight 5 pounds, each $4.60

Adjustable Laboratory

No. 62 is especially adapted for use in schools and colleges and general laboratory work. The many adjustable features are important. The adjustable stand permits the flame to be pointed in any position desired. The torch itself is adjustable and is pint size. It is made of the very best material and produces a perfect blue flame of intense heat that can be easily regulated. It is strong and durable and is equipped with patented automatic brass pump in tank. The tripod, which is also adjustable, will hold any ordinary size pan or laboratory vessel and can be swung out of the way when not in use.
Capacity one pint, shipping weight 12¾ pounds.

With stand, each $6.70
Torch only, each 4.90
Stand only, each 3.00



No. 62

Kerosene

No. 96 will be appreciated by all users of Kerosene Tools. The burner produces an intensely hot, clear blue flame, about 6 inches in length, generating sufficient heat to quickly melt a quarter-inch copper rod, and will be found excellent for brazing or for outside use under severe conditions of wind and weather. All parts are easily accessible and can be cleaned. The improved construction of the burner and the perfect combustion of the fuel practically eliminates carbon deposit. The tank is of heavy brass, fitted with automatic brass pump, by means of which ample air pressure is secured. A cleaning needle, for cleaning the burner orifice, is furnished free of charge. The No. 96 is the ideal torch for use where insurance restrictions forbid the use of gasoline.
Capacity two pints, shipping weight 6½ pounds, each $6.00



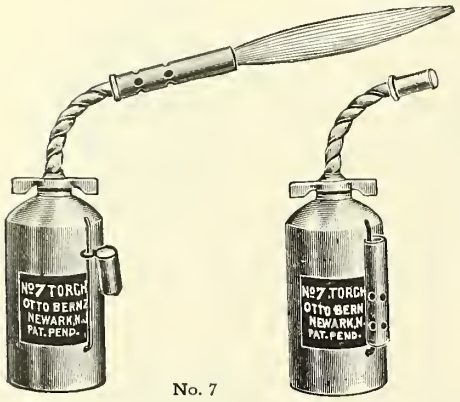
No. 96 Torch

No. 95 is exactly the same in style and construction as No. 96 but smaller.
Capacity one pint, shipping weight 5¾ pounds, each $4.50

Torches

Bernz

Gasoline



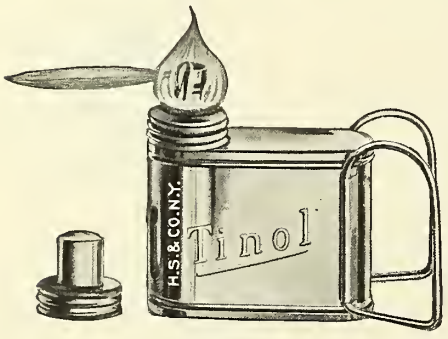
No. 7

No. 7 is an excellent Torch in all cases where a small flame is required. It may be heated and lighted with a match and is started very quickly. A cork-lined cap, a combination cleaner wire and holder and device for holding nozzle on side of body when not in use is supplied with each Torch. Will burn constantly for about three hours with one filling. Capacity ¼ pint.

Each $2.00

Tinol

Alcohol



This Torch has a self-acting blow-pipe flame about 3½ inches long, which gives intense heat without smoke or bad smell. It can be carried in the vest pocket, yet holds sufficient alcohol to burn for two hours. It is lighted or extinguished instantly. A screw cap prevents evaporation or leakage in any position. It is absolutely free from danger of explosion.

It is a useful and convenient tool. Its pointed flame will reach places that are inaccessible to other torches, and it enables the workman to work very rapidly.

It will be found exceedingly useful for heating glue, metals, tools, burning off paint, etc., and many other uses in the workshop beside soldering. It is also very useful for chauffeurs, travelers, campers, and others.

Each ..... $ .50

Torches and Blow Pipes Combined

C. and L.

Alcohol



No 14

The No. 10 is a polished brass Blowpipe or Alcohol Torch. Similar to No. 14 illustrated. Evaporation of fuel is impossible, a closely fitting cap screwing down firmly over the wick, making the tank air tight. The Blowpipe is fitted to a threaded nut to adjust it for the work in hand. Size 1¾x6 inches.

Capacity one-half pint, shipping weight 1 pound, each $2.10

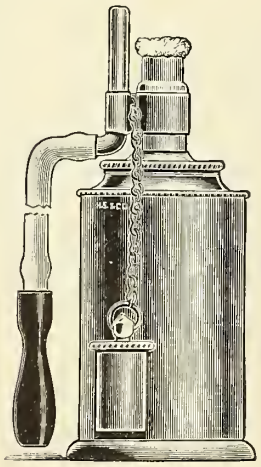
Gasoline or Alcohol

The No. 14 is similar to No. 10 but made with a chamber through which an air blast is passed charged with alcohol or gasoline, making an intense heat. Size 1¾x6½ inches. Polished brass.

Capacity one-half pint, shipping weight 1 pound, each $2.50

H. S. & Co.

Alcohol



No. 3

No. 1. Length overall 5½ inches, diameter 1½ inches, each... $3.00

No. 2. Length overall 6¼ inches, diameter 1½ inches, each... 3.00

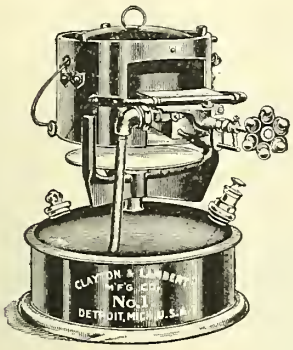
No. 3. Length overall 5¼ inches, diameter 2 inches, each... 3.40

Heavily and substantially made from solid polished brass. Provided with rubber tube and mouth-piece to blow flame on work.

Fire Pots

C. & L.

Gasoline



No. 1

No. 1 is adapted to a greater variety of uses than any other Fire Pot made. Tank is made of heavy galvanized iron, thoroughly braced, which enables it to withstand hard usage. Burner is made of special generator metal which holds the heat and works perfectly in windy or cold weather. Swiveled burner permits moving the flame up or down. No. 1 will easily heat a pair of 12-pound coppers and melt a pot of lead at the same time.

Capacity seven pints, shipping weight 14 pounds, each $9.00



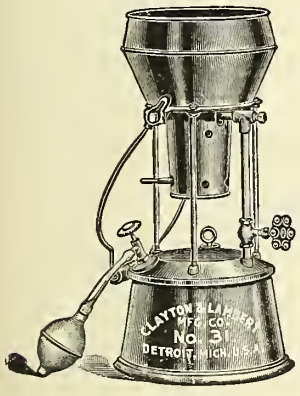
No. 21

No. 5 is one size smaller than the No. 1. Top section accommodates 8-pound coppers and is removable, when the flame can be used as a torch or brazing fire. Burner produces a perfect blue flame of intense heat which is not affected by wind or cold. No. 5, like No. 1, has patented automatic brass air pump in the tank which quickly produces required pressure.

Capacity five pints, shipping weight 12 pounds, each $6.75

No. 72 is one size smaller than No. 71. Heats 8-pound coppers while melting a pot of metal. Burner has double heating surfaces and produces intensely hot blue flames, which can be turned low, yet maximum degree of heat can be quickly obtained. Tank is made of heavy galvanized iron, thoroughly braced, to withstand hard usage. Smokeless, odorless and noiseless and very economical.

Capacity five pints, shipping weight 14½ pounds, each $6.75



No. 31

No. 21 is the latest, improved, up-to-date Coil Fire Pot, made with seamless drawn steel tank, large funnel and filler, heavy uprights, large valve, and heavy malleable top plate and one-piece steel shield. The burners and coils are made of extra heavy steel and the No. 21 produces a steady blue flame in hard wind or extreme cold. Tank is fitted with patented automatic brass pump.

Capacity one gallon, shipping weight 9¾ pounds, each $6.00

No. 11 is exactly the same as No. 21 except that it is fitted with rubber bulb for producing air pressure.

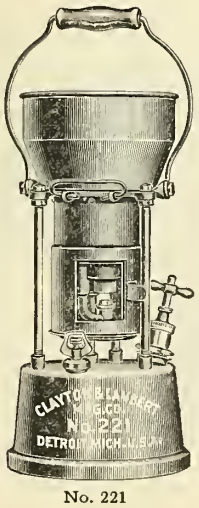
Capacity one gallon, shipping weight 9¾ pounds, each $5.50

No. 31 is made with heavy galvanized iron tank, with sloping sides fitted with heavy ring protecting the bottom of tank. All small fittings are made of malleable iron and are strong and durable. The burner and coil are made of the best steel. A good rubber bulb supplies the air pressure.

Capacity one gallon, shipping weight 12 pounds, each $4.00

No. 41 is similar to the No. 31 except that an automatic brass pump with double-spring check valve is fitted to the tank to produce air pressure.

Capacity one gallon, shipping weight 12 pounds, each $4.50



No. 221

Kerosene

No. 221 Fire Pot contains many improvements that place it in the lead among Kerosene Tools. It is perfect in construction and remarkable in heat-producing qualities, using but little fuel, and will give the user extra good service. The burner is made with a powerful generator that superheats the kerosene gas before it is burned, securing perfect combustion of the fuel and the maximum degree of heat, burning with a clear blue flame free from smoke and odor. All parts are easily accessible for cleaning, and can be removed readily, if desired. The tank is made of heavy gauge steel, with bottom and fittings welded in, not soldered. All parts are made extra strong to withstand severe service. The pump is of brass, with automatic check valve, and of the very best improved construction. A cleaning needle is supplied free of charge.

Capacity 7 pints, shipping weight 16 pounds, list price, each $10.00

Braziers

C. and L.
Gasoline



No. 105 Complete

No. 105 is designed for heavy brazing, preheating surfaces and other work requiring an intensely hot, concentrated flame, and for general repair, shop and factory use. A swivel connection enables the user to point the flame in any direction, as indicated. An adjustable brazing tripod is furnished with the complete Brazier.

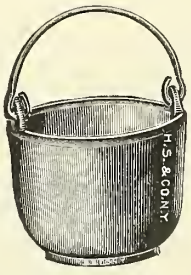
No. 105	Complete, with Tripod and Pump	$37.50
	Brazing Tripod, complete	7.50
	Burners only	12.00

No. 11 is recommended for medium and light work, such as brazing bicycle tubing, tempering and annealing. The tank has a capacity of ten gallons and is constructed of heavy steel with welded seams and galvanized. Two rigid burners are placed opposite so that flames converge. Air pressure is quickly secured by a large compound brass pump.

No. 11	Complete	$27.00
	Burners only	3.75

Melting or Solder Pots

Regular
H. S. & Co.

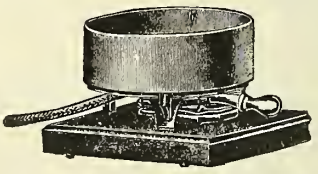


Cast Iron

Numbers	0	1	2	3	4	5	6
Outside diameter, inches	5	6	8	9	10½	12	13½
Depth, inches	3⅜	3 9/16	4⅜	5	5 7/16	6⅛	6½
Lead capacity, pounds.	15¾	25½	44	79¾	118	182	228
Each	$ .40	.65	1.10	1.30	1.75	2.75	3.50

Sizes and capacity are approximate

Electric
Simplex



No. 1719

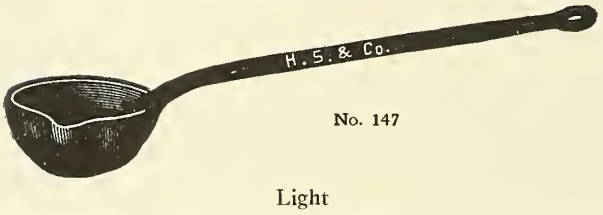
These pots are non-inductive and are equally effective with either direct or alternating current. It is important that actual operating voltage be given when ordering. Electric Pots are ready at a turn of the switch—no time is wasted in adjusting flame. They are arranged with three heats, one high, so that metal can be quickly melted, and two lower, so current can be reduced to keep proper temperature. Specially useful for tinning the ends of wire and other small articles in electric repair shops. Made of cast-iron, mounted on marbleized slate. May be connected to any lamp socket. Each pot is equipped with cord and plug.

Number	Capacity Pounds	Watts Minimum	Watts Medium	Watts Maximum	Each
1718	4	100	150	200	$8.00
1719	10	200	300	440	12.00

Melting Ladles

H. S. & Co.

Regular Type



No. 147

Light

Warranted steel bowls, either single or double-lipped, with iron handle securely welded, making as solid as though one piece. Loop at end to hang up.

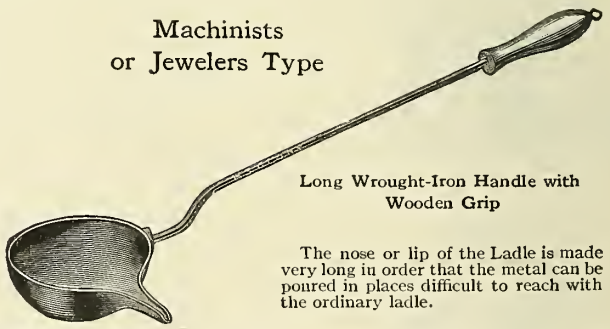
Diameter of Bowl Inches	Depth of Bowl Inches	Capacity of Each Bowl in Lead	Dozen
2½	⅞	1 lb. 2 oz.	$2.75
3	1	1 lb. 13 oz.	3.50
3½	1⅛	2 lb. 15 oz.	4.00
4	1½	4 lb. 11 oz.	4.75
5	1⅞	7 lb. 11 oz.	6.50
6	2¼	10 lb. 7 oz.	8.00

No. 148

Extra heavy for use in foundries

Diameter of Bowl Inches	Depth of Bowl Inches	Capacity of Each Bowl in Lead	Dozen
6	2¼	12 lb. 5 oz.	$10.00
7	2½	20 lb. 15 oz.	12.00
8	3¼	33 lb.	15.00
9	3½	42 lb. 12 oz.	20.00
10	3¾	60 lb.	24.00

Machinists or Jewelers Type



Long Wrought-Iron Handle with Wooden Grip

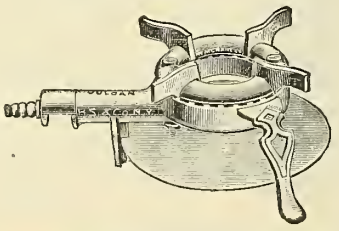
The nose or lip of the Ladle is made very long in order that the metal can be poured in places difficult to reach with the ordinary ladle.

Number	Diameter Inches		Dozen
10	2	Will hold ¾ pound metal	$3.00
11	2½	Will hold 1¼ pounds metal	3.60
12	3	Will hold 1¾ pounds metal	4.20

Gas Stoves

Vulcan

Single burner, 4 inches high, top 6 inches in diameter. Consumes 16 feet of gas per hour.



No. 5

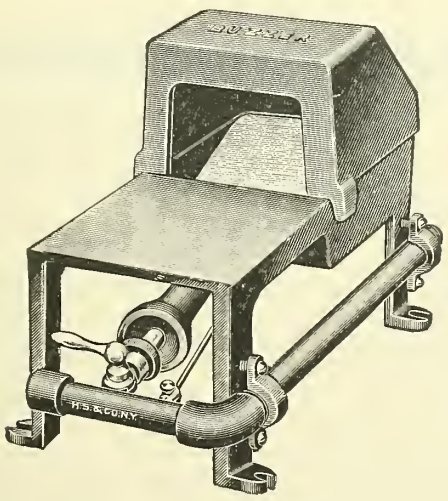
Each..... $1.10

Gas Soldering Furnaces

Buzzer Automatic Blast

All Furnaces Equipped with Pilot Light

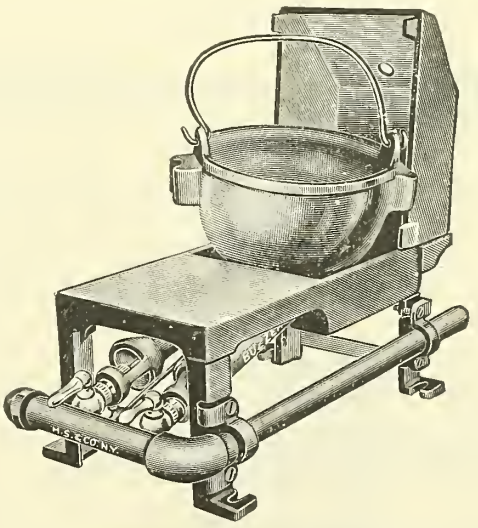
These Furnaces possess high efficiency, simplicity and durability. They are the hottest and quickest heating gas-soldering furnaces ever built without blowers, and with proper care will last a lifetime. They will pay for themselves many times over in the saving effected on coppers and gas. They create their own blast. Built for artificial or natural gas. If natural gas is used so specify on order.



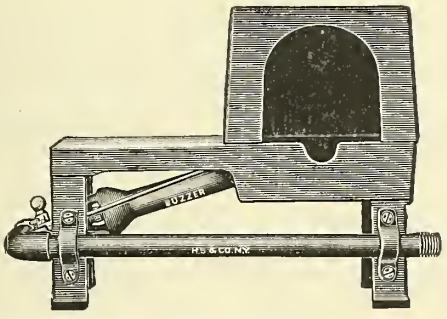
No. 1, with abrasive rest, which prevents tinning being drawn from the soldering coppers. The heating chamber is 3½ inches wide, 5¼ inches deep, and will take coppers up to 5 pounds in weight per pair. Total weight is 13 pounds.

The construction is such that the flame is drawn around and over the coppers.

Each $6.00



Cut showing hood reversed, for melting lead, babbit metal, etc.

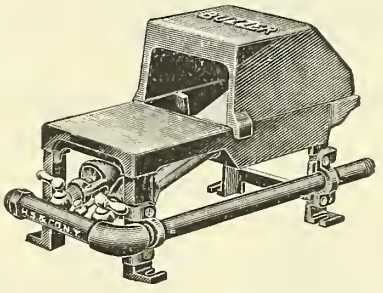


No. 3, with heating chamber, opening 3½ inches, total weight 15 pounds.

This furnace is especially adapted for paint manufacturers and others using round or capping irons.

The hot blast flame impinges upon the side of the iron, passing under and around, distributing heat evenly.

Each $8.00

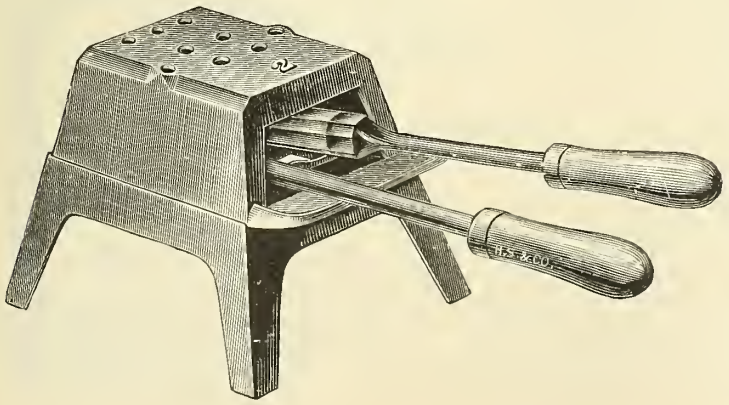


Cut showing hood in place, for use in soldering coppers

No. 2, with abrasive rest, preventing the tinning being drawn from the soldering coppers. The heating chamber is 4½ inches wide, 7 inches deep, and will take coppers up to 14 pounds in weight per pair. Same general design as No. 1 except with double burner, which makes it the hottest and quickest heating gas furnace of its size. Specially adapted for dressing tools and general shop use. Total weight is 15 pounds.

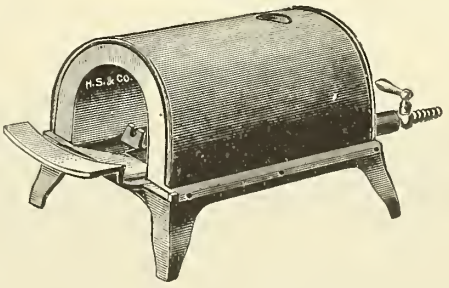
Each $8.00

H. S. & Co.



No. 2 Will hold two No. 8 irons, each..... $2.25

Vulcan



Very substantial. Burner is protected against solder. Brick lined interior.

No.	Height Inches	Width Inches	Depth Inches	Capacity	Each
45	3	4½	7	2 No. 4 Irons	$4.80
46	4	5	7	2 No. 8 Irons	6.60

Soldering Coppers

Hand Forged. Guaranteed Not to Crack in Repointing

H. S. & Co.

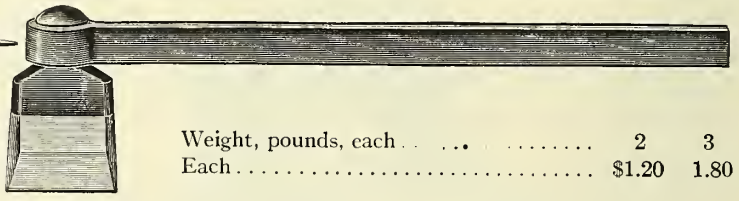
Pointed Pattern



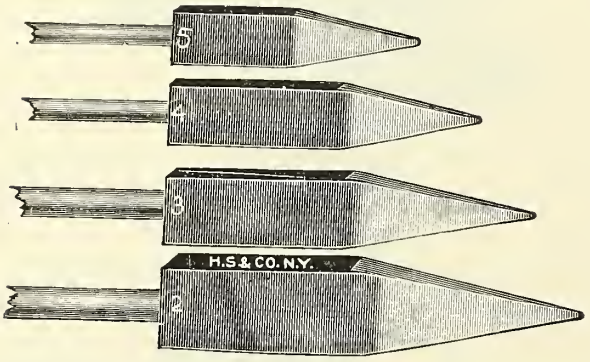
Without Handles

Weight, pounds, each	½	¾	1	1½	2	2½	3	4	5
Each	$.30	.40	.55	.75	.95	1.20	1.45	1.90	2.40

Swivel Hatchet Pattern



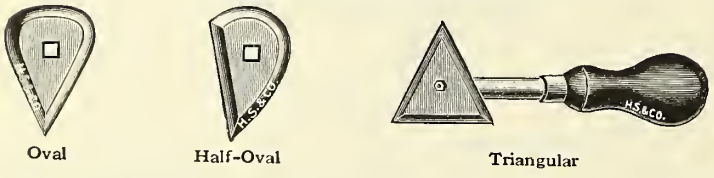
Weight, pounds, each	2	3
Each	$1.20	1.80



Plumbers Shave Hooks

H. S. & Co.

Cast Steel, Black Handles



Oval — Half-Oval — Triangular

Dozen	$3.00
Extra blades, dozen	1.50

Jewelers

Specially adapted for electrical work and fine model making. Made of pure copper, tinned, ready for use.

Black enamel handles.

Number	1	2	3	4	5
Length over all, inches	12½	11½	9½	8¾	8¾
Weight, ounces	5½	3	1¾	1	⅞
Dozen	$6.00	5.00	4.00	2.50	2.00

Book

Soft Soldering, Hard Soldering and Brazing

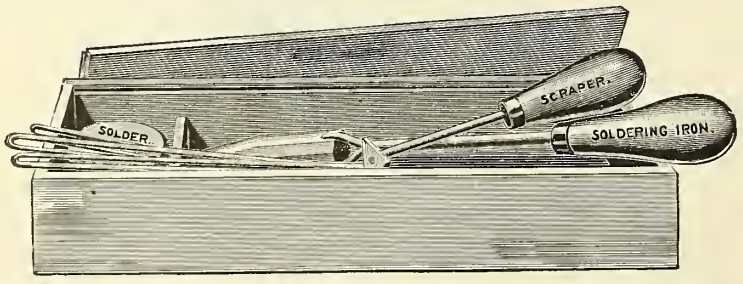
By James F. Hobart, M. E.

A comprehensive treatise in plain language on the many phases of soldering and brazing, most of which involve a wide range of manipulation. This is an "experience book," giving the results of long practice and experiment. Should serve mechanics as a practical aid to improved methods, and employers alert to the importance of efficiency and economy will find much of interest in it.

203 pages, 4¾x7 inches, each $1.00

Soldering Outfits

H. S. & Co.



Each outfit is packed in a small wooden box and consists of a soldering copper, solder, rosin and a scraper.

No. 11 Dozen sets $7.20

Tinol

Consisting of a tin of Tinol Paste, with Alcohol Lamp, in pasteboard box. Tinol is a metal, not a cement, and melts under heat, uniting readily with clean, hot surfaces of tin, brass, copper, iron or steel, but will not solder aluminum.

Set, as above $1.00



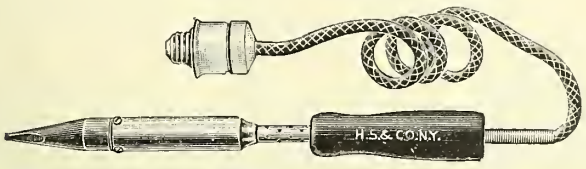
Electric Soldering Tools

These tools are satisfactory within the range of work for which they are designed. For all kinds of intermittent work they meet demands, but for continuous operations, they are not suitable in many cases. On this point we shall be glad to advise where a full statement of requirements is submitted. The field they cover is very broad and many thousands are in daily service.

Exact operating voltage should always be stated when ordering electrical equipment. All tools are plainly marked for the volts required and under no circumstances should the apparatus be used on a higher voltage current.

Automatic Control. It is important that the temperature of electric tools be kept within the desired working limit, and especially soldering irons. To this end we list Automatic Controlling Stands which we strongly recommend.

Simplex



Style of Point No. 239. Style of Heating Element and Handle, all Numbers



Style of Point No. 238



Style of Point No. 240 and Larger

Six feet of cord is supplied with each iron and a plug with each one except No. 250.

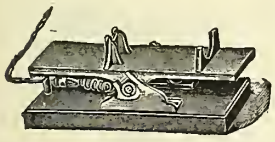
Automatic Handle Switch, which operates to instantly cut off the current if the iron is laid anywhere except on the stand provided for it. This very desirable addition with suitable stand will be supplied for $2.00 list in addition to the quoted price of irons.

Plain Bench Stands for any size are furnished at 50 cents list each, but are not necessary if controller stands or automatic handle switches are selected.

Number		Watts	Each	Extra Tips Each
238	Telephone Type	75	$7.00	
239	⅞-inch diameter, 11 inches long, for light wire work	75	6.00	
240	1-inch diameter, 12 inches long; light, for small work in general	100	6.25	$ .60
241	1¼-inch diameter, 15 inches long; medium, about equal to a 2-pound iron	220	6.50	.65
242	1½-inch diameter, 15½ inches long; about equal to a 3-pound iron	275	7.00	.75
243	1¾-inch diameter, 15½ inches long; about equal to a 4-pound iron	350	8.00	.90
250	3-inch diameter, 16 inches long	450	21.00	3.00

No. 250 is a specially heavy iron, should not be connected to a lamp socket and is not equipped with a plug.

Automatic Stands



One of these stands should be used with the electric soldering iron whenever practical. It wil save far more than its cost in current alone and insure the iron from danger of overheating, thus prolonging its life, but its most obvious advantage lies in keeping the iron ready for use through any length of time, and this without demanding any attention whatever from the workman.

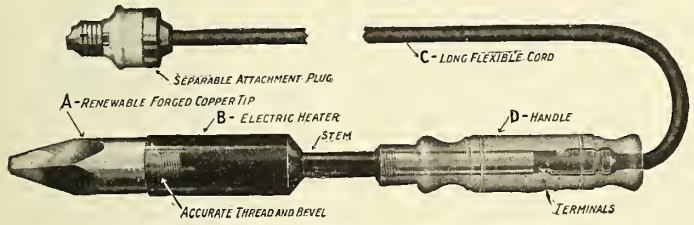
As soon as the iron is placed on top its weight causes the stand to tilt, which moves a rheostat switch that cuts off half the current. As soon as the iron is removed from the stand the full working current is restored. Thus an automatic control of the heat is insured. Stands must be ordered for each iron as listed.

Made of cast-iron and mounted on a slate base. Each stand is furnished with the necessary cord for connecting.

No. 1100	For No. 239 Iron, each	$3.50
No. 1101	For No. 240 Iron, each	3.50
No. 1102	For No. 241 Iron, each	3.50
No. 1103	For No. 242 Iron, each	3.50
No. 1104	For No. 243 Iron, each	3.50

Vulcan

The heating unit in Soldering Tools is hermetically sealed so flux fumes cannot destroy it. The peculiar and patented construction forces all the heat to the tip. The tip is made of pure copper, hand-forged and tinned. The one-piece handle unscrews and slides back on the cord, exposing the very convenient terminals. Each tool has a six-foot cord and a separable Edison base plug. The tips screw in and are easily replaced when worn out.



Cut Showing Construction of Vulcan Tools



No. 100 Style of No. 200



No. 400 Style of Nos. 300, 500 and 700



No. 600



No. 800

Number	Watts Consumed	Total Length Inches	Total Weight Ounces	Diameter of Tip Inches	Each	Additional Tips
100	70	13¾	12	½	$6.00	$ .30
200	150	14⅛	18	⅞	8.00	.50
300	250	14⅜	29	1⅛	10.00	.75
400	350	14¾	46	1⅜	12.00	1.00
500	120	11⅜	16	⅞	7.00	.40
600	55	13¾	9	7/16	5.00	.25
700	60	10	9	½	5.50	.25
800	500	15 9/16	65	1¾	16.50	2.00

No. 100—Equal to 1½ pounds per pair soldering copper. For telephone switchboards, electrical instruments, very light manufacturing, and small fuses.

No. 200—Equal to 3 pounds per pair soldering copper. For fast telephone work, light tinware, automobile repairs and general home use.

No. 300—Equal to 4½ pounds per pair soldering copper. For medium tinware, general manufacturing, metal patterns, general automobile work and "tipping" in canneries.

No. 400—Equal to 6 pounds per pair soldering copper. For heavy tinware, sheet steel work, metal boat making, refrigerator work and automobile work.

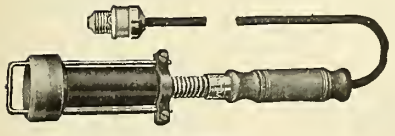
No. 500—Equal to 2 pounds per pair soldering copper. About the same as the No. 200, but recommended when shortness is important.

No. 600—Equal to 1 pound per pair soldering copper. For extremely light soldering, light telephone, multiple switchboard repairs, electrical instruments and the smallest fuses.

No. 700—Equal to 1½ pounds per pair soldering copper. Length 10 inches, weight 9 ounces, tip ½-inch diameter. For bench and open work where light short tip is wanted. Specially adapted for telephone inspector's or lineman's tool kit.

No. 800—Equal to 10 pounds per pair soldering copper. For very heavy metal patterns, copper cornice work, heavy sheet metal work, automobile radiator work and all kinds of heavy soldering.

Can Capping



Vulcan

Constructed with a circular tip the same diameter as the cap to be soldered. A spring plunger is provided to hold the cap down while the solder sets.

These tools may also be applied to power capping machinery, in which case the make of the machine must be specified.

When ordering send a sample of the cap to be used as the tip must be exactly the same diameter.

The standard No. 300 Soldering Tool is recommended for "tipping" in connection with the capping tool for sealing cans.

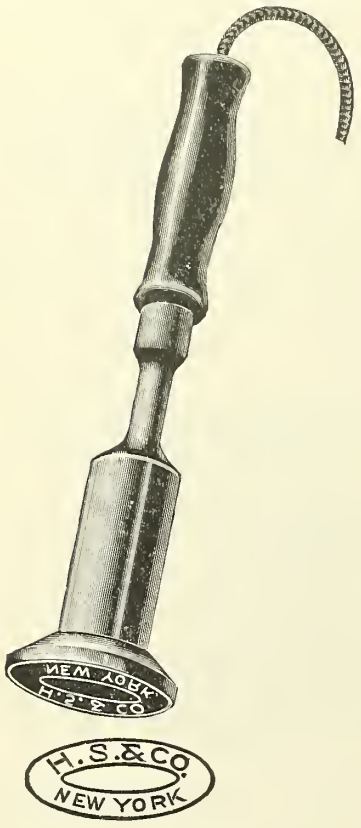
No. 402 Consuming 350 watts, each $16.00
Additional Tips 2.65

See next page for Vulcan Holders and Temperature Controlling Devices

Branding Tools

Vulcan Electric

Brand quickly, accurately, economically, artistically and indelibly on wood, leather, rubber, fibre, pulp board, etc.



Number	Watts Consumed	Square Inches of Face-plate	Each	Add per Character or Inch of Border
200	150	Up to 1	$10.50	$.40
200	150	1 to 1½	11.00	.40
200	150	1½ to 2	11.50	.40
200	150	2 to 2½	12.00	.40
300	250	Up to 1½	13.00	.40
300	250	1½ to 2	13.50	.40
300	250	2 to 3	14.00	.40
300	250	3 to 4	14.50	.40
400	350	Up to 2	15.50	.40
400	350	2 to 3	16.00	.40
400	350	3 to 4	16.50	.40
400	350	4 to 5	17.00	.40
800	500	Up to 4	22.00	.40
800	500	4 to 5	23.00	.40
800	500	5 to 6	24.00	.40
800	500	6 to 7	25.00	.40
800	500	7 to 8	26.00	.40
800	500	8 to 9	27.00	.40
800	500	9 to 10	28.00	.40
800	500	10 to 11	29.00	.40
800	500	11 to 12	30.00	.40

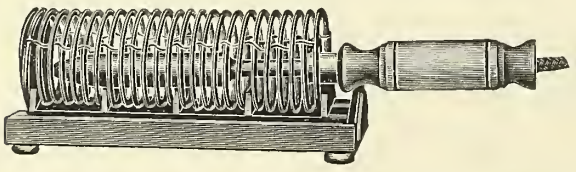
By the face-plate of the tool is meant the full size or area of the face on which the letters are to be cut, allowing $\frac{1}{16}$ inch all around the design.

For borders allow $ .40 for each inch of plain border. For fancy borders or intricate designs a greater allowance must be made.

In ordering always give the exact voltage of the circuit on which the brander is to be used. If this voltage is not constant the variations should be given. The standard voltages are as follows: 80, 90, 100, 104, 110, 115, 120, 180, 200 and 220.

The face-plates are made from a special hard bronze which is far more durable than steel or any other material that might be used.

Holders



Simple, strong, substantial cages for holding a soldering or branding tool when not in use.

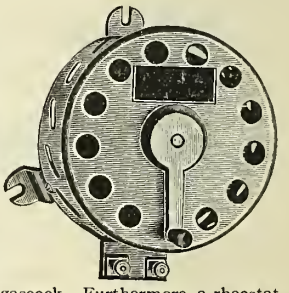
It prevents a workman or other employee from touching or taking hold of a hot tool.

It keeps inflammable materials from touching a hot tool and so prevents fire and reduces the fire risk.

It is handsomely finished in nickel, the base being black enameled.

No. 2100. Each $2.00

Temperature Controllers (Rheostats)



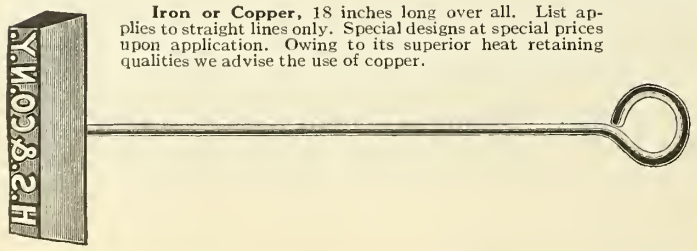
Very fast or heavy work requires a hotter tool than the standard. To secure this higher temperature the tools may be wound for a voltage lower than the voltage of the circuit, thereby increasing the current. In such cases a rheostat is recommended to be used with the tool so that the temperature may be controlled. When not in use the tool may be kept at the proper temperature, without allowing it to over-heat, by adjusting the rheostat to secure just the right amount of current.

A rheostat is a good investment for any one using a tool that is kept on the circuit most of the time. It protects the tool from overheating and permits the workman to regulate the current to the right value, just as a gas flame is controlled by the gascock. Furthermore, a rheostat saves power as the current is reduced to just the value required without any being lost in overheating and excess radiation.

Style	For Tool Number	Each
A	100–600 and 700	$3.60
B	200	4.20
C	300 and 400	4.80
D	800	5.50

See preceding page for Vulcan Electric Soldering Tools, to which the above attachment may also be applied.

H. S. & Co.



Iron or Copper, 18 inches long over all. List applies to straight lines only. Special designs at special prices upon application. Owing to its superior heat retaining qualities we advise the use of copper.

¼, ⅜ and ½-inch, 5 letters or less, each	$1.50
¼, ⅜ and ½-inch, more than 5 letters, per letter	.30
¾-inch, 3 letters or less, each	1.50
¾-inch, more than 3 letters, per letter	.45
1-inch, 3 letters or less, each	2.25
1-inch, more than 3 letters, per letter	.60
Figures, 1-inch and under, per set of 9	9.00
Figures, 1½-inch, per set of 9	13.50

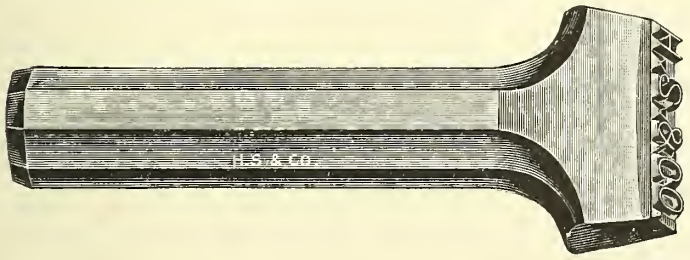
To order only. Prices on larger sizes will be quoted upon application.

Hand-Cut Steel Stamps

H. S. & Co.

Extra Fine Quality

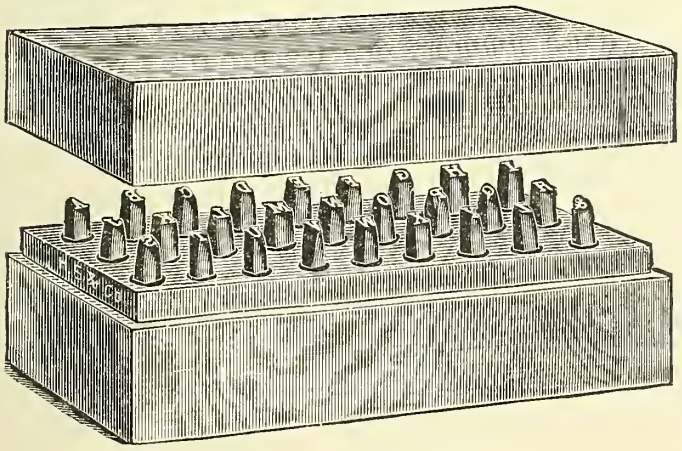
These Stamps are warranted in every way. They are hand-cut from Jessop Tool Steel and may be used for stamping on all kinds of metal, as well as on leather, wood, etc. When ordering, state on what material they will be used.



Size of letter or figure, inch	1/32	1/20	1/16	3/32	1/8	5/32	3/16	7/32	1/4
For each letter or figure	$ .16	.15	.15	.15	.15	.16	.20	.25	.30
Size of letter or figure, inch	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1
For each letter or figure	$ .35	.45	.50	.60	.70	1.00	1.25	1.50	1.75

Stamps with letters or figures over 1/8 inch are subject to additional charge of $ .72 per pound for forging. Prices for larger sizes than listed will be quoted upon application.

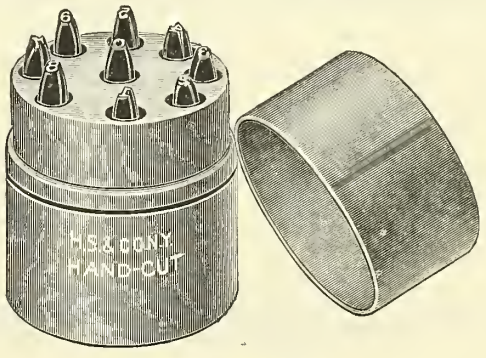
In Sets



Letters, in Sets of 27

Size of letters, inch	1/32	1/16	3/32	1/8	5/32	3/16	1/4	5/16
Set of 27	$4.50	3.00	3.00	3.00	3.60	4.20	5.10	6.60

Size of letters, inch	3/8	7/16	1/2	5/8	3/4	7/8	1
Set of 27	$9.00	11.25	15.00	24.00	30.00	45.00	48.00



Figures, in Sets of 9

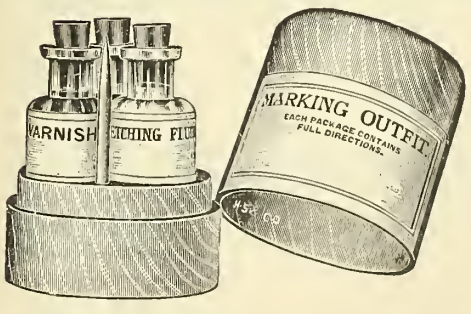
(Reverse 6 to make 9)

Size of figures, inch	1/32	1/16	3/32	1/8	5/32	3/16	1/4	5/16
Set	$1.50	1.00	1.00	1.00	1.20	1.40	1.70	2.20

Size of figures, inch	3/8	7/16	1/2	5/8	3/4	7/8	1
Set	$3.00	3.75	5.00	8.00	10.00	15.00	16.00

Marking Outfit

H. S. & Co.



This outfit is put up to meet the demand for something by which tools of all shapes and sizes, either hard or soft, can be neatly marked without injury to the tool. Every year an immense number of tools and steel stamps are spoiled or injured by parties trying to stamp their names on stock as hard or harder than the stamps themselves.

With this outfit any person who can write or print well can turn out artistic work if he will carefully follow the directions.

The outfit consists of a jointed steel scriber, one bottle of varnish, one bottle of etching fluid, one bottle of cleaning fluid, a camel's hair brush and directions for using, all in a neat wooden box.

Set, in neat box $1.00

Nail Sets

H. S. & Co.

Extra Fine Quality

Round Knurled



No. 10 Polished and Blued

$\frac{5}{16}$-inch diameter, 4 inches long, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$-inch, cupped points.
Dozen $1.50

Square Head Knurled



No. 50 Polished and Blued

Will not roll away. Is hardened on both ends and will not curl up by hammer blows. $\frac{5}{16}$-inch diameter, 4 inches long, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$-inch cupped points.

Dozen $1.80

O. K.

Good quality at low price.

Round Knurled

Polished and Blued

$\frac{5}{16}$-inch diameter, 4 inches long, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$-inch cupped points.
Dozen $1.20

Buck Bros.

Extra Fine Quality

Square with Round Points



No. 77 Polished

$\frac{5}{16}$-inch diameter, 4 inches long. $\frac{1}{16}$ or $\frac{1}{8}$-inch flat points.
Dozen $1.80

Square with Square Points



No. 76 Polished

$\frac{5}{16}$-inch diameter, 4 inches long, $\frac{1}{16}$ or $\frac{1}{8}$-inch flat points.
Dozen $1.80

Prick Punches

H. S. & Co.

Extra Fine Quality

Round Knurled



No. 11 Polished and Blued

Diameter $\frac{5}{16}$ inch, 4 inches long.
Dozen $1.50

Square Head Knurled



No. 22 Polished and Blued, will not roll

Diameter $\frac{5}{16}$ inch, 4 inches long.
Dozen $1.80

Buck Bros.



No. 88 Polished Steel

Sizes, inch	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	Assorted
Dozen	$1.75	1.90	2.20	1.95

Centre Punches

H. S. & Co.

Extra Fine Quality

Round Knurled



No. 10 Polished and Blued

Length, inches	4	4
Diameter, inch	$\frac{5}{16}$	$\frac{3}{8}$
Dozen	$1.70	2.30

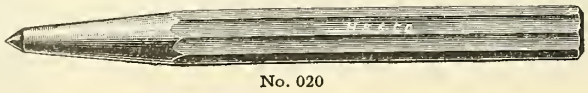
Square Head Knurled



No. 20 Polished and Blued

Length, inches	4	4
Diameter, inch	$\frac{5}{16}$	$\frac{3}{8}$
Dozen	$2.00	2.70

Machinist Octagon



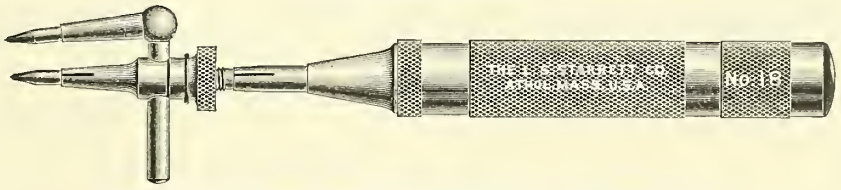
No. 020

Size, inch	$\frac{3}{8}$	$\frac{1}{2}$
Black, dozen	$2.00	2.40

Automatic Center Punches

Starrett

Adjustable Stroke



Showing Spacing Attachment Applied to Starrett Center Punch No. 18

The ordinary hammer with center punches is not sufficiently accurate when laying out fine work. It requires the use of both hands and the accuracy of the blow depends upon the skill of the mechanic.

This Center Punch contains a mechanism which automatically strikes a blow of any required force when the punch is in the exact position desired by the operator. It is provided with a knurled adjustable screw-cap which, working in connection with a spring, regulates the stroke. For work requiring a heavy mark, turn cap down; for work requiring a light mark, turn it up. No hammer is needed to use it. The punch being placed in an upright position over the working line, a downward pressure releases the striking block and makes the impression without danger of slipping, as is liable when a hammer is used. When adjusted for either light or heavy stroke, all indentations are of a uniform size for the starting of the drill, etc., and accurate and quicker work can be done. The working parts are hardened, durable and accessible for such repairs as may ever be needed. The adjustable cap fits the hand, with no stroke-adjusting screw through and above it to bother. The point can be removed for regrinding and easily replaced. The AA size is 3¾ inches long when adjusted for medium stroke, ⅜-inch diameter, and weighs one ounce. The A size is 5 inches long when adjusted for a medium stroke, ½-inch in diameter, and weighs 3 ounces. The B size is 6 inches long when adjusted for a medium stroke, ⅝-inch in diameter, and weighs 4 ounces. It differs from the other sizes in being larger and capable of striking a much heavier blow.

No. 18AA	Each	$1.50	No. 18B	Each	$2.50
No. 18A	Each	2.00	Extra points, each		.15

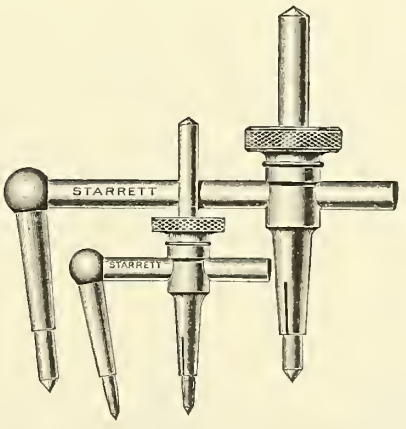
Unless otherwise ordered size A will be sent

Spacing Attachment for Above

For use with Automatic Punches No. 18. This attachment is entirely self-contained and can be instantly applied in place of the regular points. It will be found an indispensable tool for the rapid and accurate spacing of any center distances within its range. The locating point is on the principle of a spring plunger, held in its lowest position by a light spiral spring. It is frictionally held and easily replaced.

The attachment is made in two sizes: Size A has a capacity from $\frac{1}{16}$ inch to ¾ inch and fits either center punch No. 18-AA or 18-A. Size B has a capacity from ⅛ inch to 1¾ inches and fits Center Punch No. 18-B.

No. 18 S	Size A, each	$1.25
No. 18 S	Size B, each	1.25
Extra points, each		.15



Spacing Center Punch

Starrett



No. 118

This Combination Prick or Center Punch and Spacing Tool is just the thing for laying off work quickly and accurately for drilling, cutting out dies, etc. The prick punch is solid — made from best tool steel, properly tempered. The guide point is set in a socket with a spiral spring to press it down. When the punch is struck the guide presses back into its socket, permitting the punch to be held straight over its work and insuring accurate results. The screw with check nuts sets the spacer right for small or large drill, and has a variation from $\frac{5}{64}$ inch to ⅜ inch.

Each ..... $ .75

Automatic Center Punches

Brown & Sharpe



No. 770

This tool is steel, the striking mechanism being enclosed in knurled handle. A downward pressure releases the striking block and makes the impression. All blows being equal the punch marks are of uniform depth.

The points can be taken out for grinding and are easily replaced if broken.

Style 1 is adapted for carrying in the pocket. Styles 2 and 3 are larger and capable of striking a heavier blow.

The Style 4 Punch is designed for use in rolling mills for testing the hardness of metal, and is useful in hardening rooms for testing variations in depth in case-hardening. It is also suitable for laying out work to be drilled, where the Style 3 Punch would not strike a sufficiently heavy blow.

Style 1, 4⅛ inches long, ⅜-inch diameter, each..$1.25
Style 2, 5¼ inches long, ⅝-inch diameter, each.. 1.50
Style 3, 6 inches long, ¾-inch diameter, each.. 2.50
Style 4, 11¾ inches long, 1⅜-inch diameter, each 25.00

Extra Points can be furnished as follows:
For the Style 2 Punch, $.15; for the Style 3 Punch, $.15; for the Style 4 Punch, $.25.

Adjustable

No. 771

This Adjustable Punch combines features that make it convenient for laying out work to be machined or drilled.

It is similar in construction to the No. 770 excepting that the length of stroke is adjustable. This feature is one that is readily appreciated by mechanics as it adapts the tool to all varieties of tool and general shop work.

For example: If a piece of tool work is to be laid out, fine punch marks are required for the outline, but for general shop work as centering for drills, etc., much heavier marks are necessary and the convenience of having a tool that can readily be adjusted to meet both conditions is apparent.

The adjustment of the stroke is made by the knurled thumb-screw on the top of the handle. To adjust for fine work requiring a light mark, turn the screw to the right; for coarse work turn screw to the left.

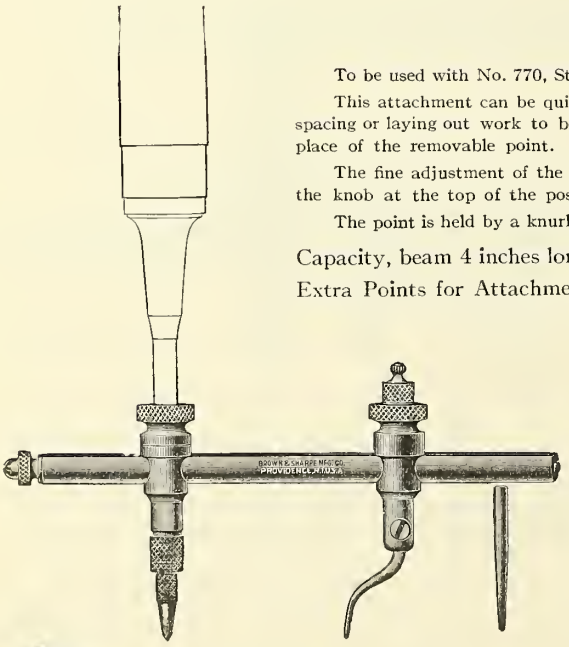
The points can be taken out for grinding and are easily replaced if broken.

5¼ inches long, ⅝-inch diameter, each..... $2.00
Extra Points, each..... .15



Spacing Attachment for Above

No. 775



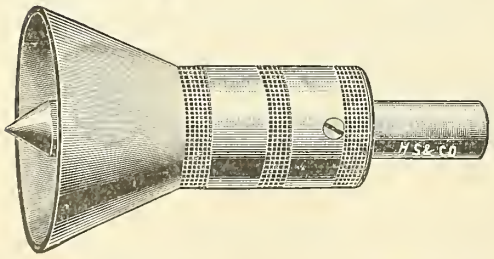
To be used with No. 770, Style 2, and No. 771 Automatic Center Punches.

This attachment can be quickly attached to the Automatic Center Punches listed above. It is useful for quickly and accurately spacing or laying out work to be machined or drilled. When adjusted for use, the attachment is screwed on to the center punch in place of the removable point.

The fine adjustment of the locating point is obtained by the screw at the end of the beam and the quick adjustment by pulling out the knob at the top of the post.

The point is held by a knurled check-nut and can be adjusted to varying lengths.

Capacity, beam 4 inches long, swings 8 inches, each..... $2.50
Extra Points for Attachment, each,..... .15



Centering Punches

(Bell Pattern)

H. S. & Co.

Extra Fine Quality—Polished

No. 1 Centers shafts up to 1⅜-inch diameter, dozen..... $7.20
No. 2 Centers shafts up to 2-inch diameter, dozen..... 18.00

Pin Punches

H. S. & Co.

(Extra Fine Quality)

Octagon, Light



No. 46 A Blued Ends

Diameter ¼ inch, point $\frac{1}{16}$ inch, 4⅜ inches overall, dozen..... $5.25

Round, Knurled

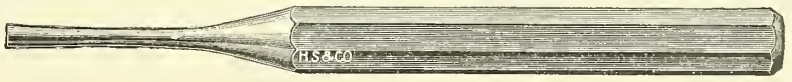


No. 12 Blued

Length 4¼ inches, diameter $\frac{5}{16}$ inch; $\frac{3}{32}$, ⅛, $\frac{5}{32}$-inch points, dozen..... $1.50

Octagon, Heavy

Blued Ends



Size	1	2	3	4	5	6
Diameter of point, inch	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{3}{16}$	$\frac{5}{32}$	⅛
Diameter of stock, inch	⅝	½	½	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$
Length overall, inches	6½	6¼	5⅞	5⅞	5½	5⅜
Dozen	$3.50	2.50	2.50	2.20	2.20	2.20

In sets, consisting of one each of the above sizes, encased in neat leatherette pouch, per set..... $ .73

Metal Punches

H. S. & Co.

(Extra Fine Quality)

Solid Octagon



No. 35 Blued Ends



Size	0	1	2	3	4	5	6	7	8
Diameter of steel, inch	½	$\frac{7}{16}$	$\frac{7}{16}$	⅜	⅜	⅜	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$
Length, inches	5	5	4¾	4¾	4½	4½	4¼	4	4
Dozen	$1.80	1.80	1.60	1.60	1.60	1.50	1.40	1.40	1.40

Hollow Round



No. 25 Blued Head

Inches	⅜	½	⅝	¾	⅞	1	1¼
Dozen	$6.00	6.00	7.50	9.00	10.50	12.00	15.00
Inches	1½	1¾	2	2¼	2½	2¾	3
Dozen	$18.00	21.00	30.00	33.75	37.50	41.25	45.00

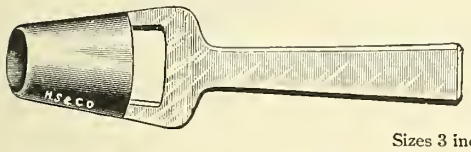
Arch Punches

(For Leather, Cardboard, Paper, etc.)

H. S. & Co.

(Extra Fine Quality)

Solid Steel, Easy Cutting



No. 5 Blued

Sizes 3 inches and under are forged from the solid bar and are not welded

Inches	⅜	$\frac{7}{16}$	½	$\frac{9}{16}$	⅝	$\frac{11}{16}$	¾	$\frac{13}{16}$	⅞	$\frac{15}{16}$	1	1 $\frac{1}{16}$	1⅛	1 $\frac{3}{16}$	1¼	1 $\frac{5}{16}$	1⅜
Dozen	$9.50	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	16.00	18.00	20.00	22.00	24.00	26.00
Inches	1 $\frac{7}{16}$	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2¾	3	3¼	3½	3¾	4	
Dozen	$29.00	32.00	35.40	38.40	42.00	46.80	51.60	57.60	64.80	73.20	90.00	108.00	130.00	150.00	170.00	190.00	

Round Punches

(For Leather, Cardboard, Paper, etc.)

H. S. & Co.

(Extra Fine Quality)



No. 10 Carbon Finish

Size	0	1	2	3	4	5	6	7
Inch	$\frac{3}{32}$	$\frac{7}{64}$	⅛	$\frac{9}{64}$	$\frac{5}{32}$	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{13}{64}$
Dozen	$3.25	3.25	3.25	3.25	3.25	3.25	3.25	4.25
Size	8	9	10	11	12	13	14	15	16
Inch	$\frac{7}{32}$	$\frac{15}{64}$	¼	$\frac{17}{64}$	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{11}{32}$	⅜	$\frac{13}{32}$
Dozen	$4.25	4.25	5.25	5.25	5.25	6.25	8.25	8.25	8.25



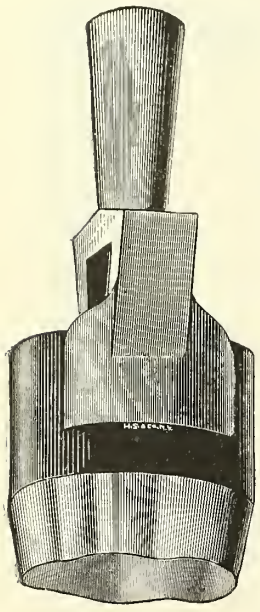
No. 20 Full Polished

Size	1	2	3	4	5	6	7	8
Drill gauge, No.	45	42	33	29	23	18	9	1
Dozen	$3.00	3.00	3.00	3.00	3.00	3.00	3.50	3.50
Size	9	10	11	12	13	14	15	16
Inch	$\frac{17}{64}$	$\frac{19}{64}$	$\frac{23}{64}$	⅜	$\frac{27}{64}$	$\frac{15}{32}$	½	$\frac{17}{32}$
Dozen	$3.50	3.50	4.00	4.00	5.50	5.50	6.50	6.50

Veneer Punches

H. S. & Co.

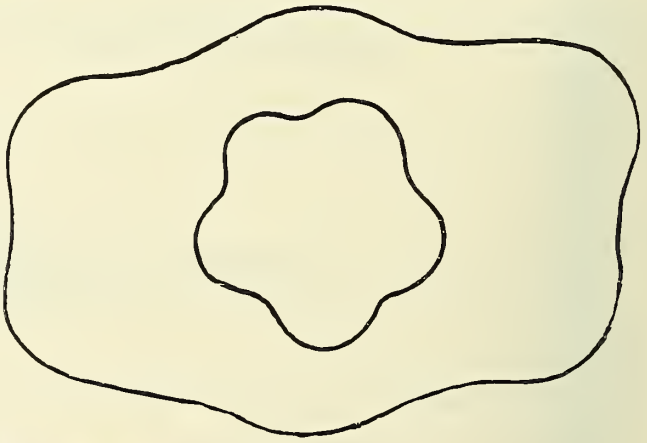
Extra Fine Quality



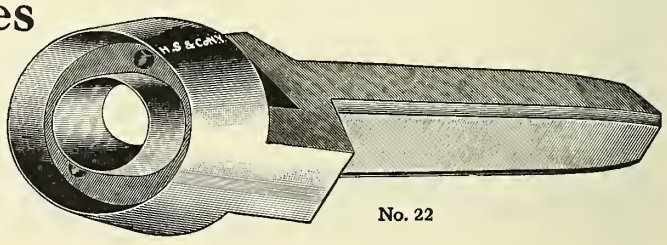
The smaller represents the general shape of the round, and the larger cut the general shape of the oval.

Size	1	2	3	4
Approximate diameter, inches	1¼–1½	1⅝–1⅞	2–2¼	2½–3
No. 42C Round, each	$5.00	5.00	5.40	5.40
No. 42D Oval, each.	5.00	5.00	5.40	5.40

We can make to order special sizes and shapes of Veneer Punches, from either a sketch or sample.



Washer Punches



No. 22

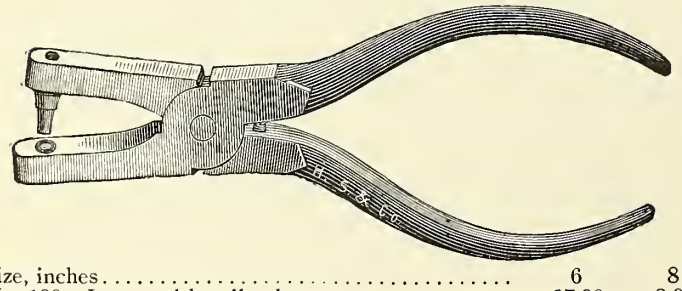
H. S. & Co.

Extra Fine Quality

Cuts washers complete with one blow. Any size to order only. Prices only upon receipt of specifications.

Spring Punches

For Leather, Cardboard, Paper, Etc.



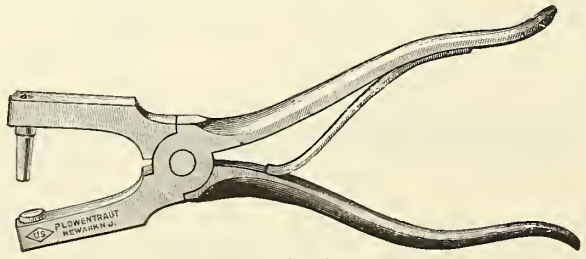
Size, inches	6	8
No. 109 Japanned handle, dozen	$7.00	8.00

Extra Tubes for 109



Stubs Steel Wire Gauge, Nos.	10	15	20	25	30	35	40

The 6-inch can be furnished with tubes Nos. 15 to 40.
The 8-inch can be furnished with tubes Nos. 10 to 35.
Each ..... $ .30

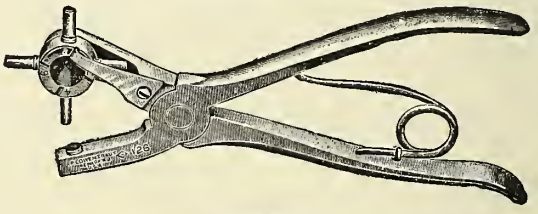


Polished

With single joint, polished, drive tubes, 8 inches overall.

No. 25½A	Assorted Tubes Nos. 3 to 9, dozen	$6.00
No. 25½A	Tubes Nos. 1 and 2, dozen	8.00
No. 25½A	Tubes Nos. 0, 00, 000, dozen	11.00

Revolving Type



Polished

Drop-forged steel with single joint, polished, drive tubes; 8½ inches overall.

Improved style of spring gives quicker action and affords heavier service.

No. 126A	Four tubes, Nos. 4, 6, 8, 10, dozen	$10.00
No. 126A	Six tubes, Nos. 4. 6, 7, 8, 9, 10, dozen	12.50

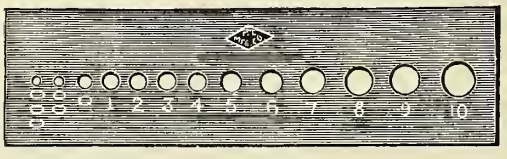


Plate showing sizes of tubes for No. 25½A Spring and No. 126A Revolving Punches.

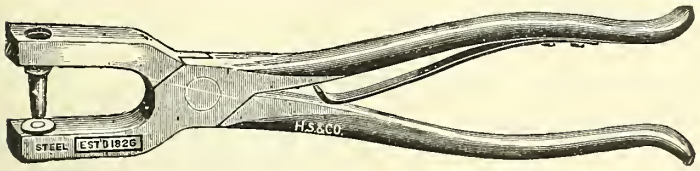
Extra Tubes

Extra Tubes Nos. 3 to 9. Drive, assorted, dozen	$2.00
Extra Tubes Nos. 1 and 2. Drive assorted, dozen	3.00
Extra Tubes, 0, 00 and 000. Drive, assorted, dozen	5.00

Spring Punches

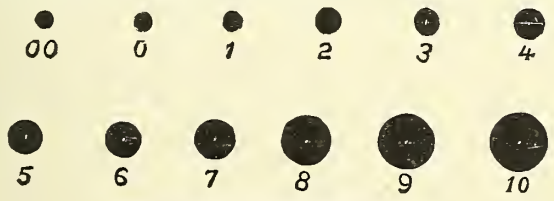
H. S. & Co.

All Steel. Extra fine quality with Steel Screw Tubes



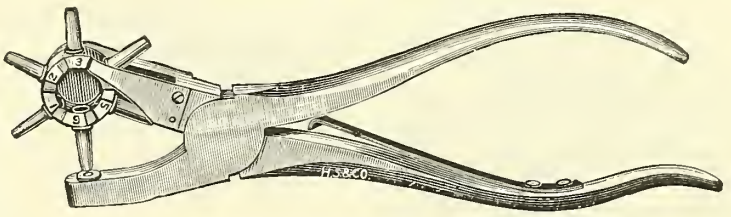
No. 153 Polished, 8 inches overall

With Tubes Nos. 1 to 10, dozen $11.00
With Tubes Nos. 0 and 00, dozen 12.00
Extra screw tubes, Nos. 1 to 10, dozen 2.50
Extra screw tubes, Nos. 0 and 00, dozen 3.50



Size of Tubes for Punches No. 153, 155

Revolving with Side Spring



No. 155 Polished, 8½ inches overall

With 4 Tubes, Nos. 3 to 6, dozen $20.00
With 6 Tubes, Nos. 1 to 6, dozen 24.00

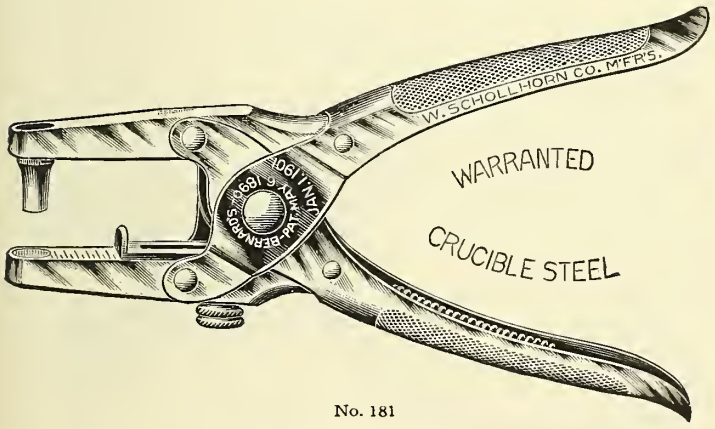
Pony Type. Nickel-Plated

Same style as above, only 5½ inches overall. With four tubes, in leather case.

Dozen $20.00
Extra Screw Tubes for above, dozen 2.50

Bernard

With Screw Tubes and Adjustable Gauge. Warranted Crucible Steel



No. 181

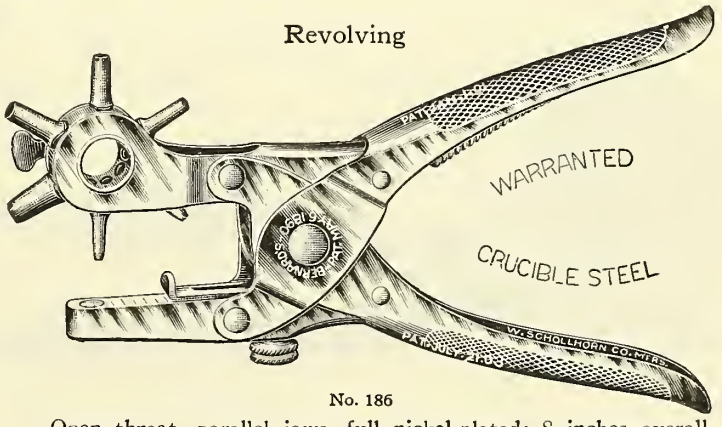
Is heavily and strongly made, to take large tubes only; will not take smaller than No. 8, $\frac{7}{32}$ inch. 8 inches overall. With three tubes, Nos. 8 ($\frac{7}{32}$), 9 ($\frac{8}{32}$) and 10 ($\frac{9}{32}$).

Dozen $14.00

Extra Parts:

Tubes dozen, pairs	2.50
Gauges, dozen pairs	.50
Brass Anvils, dozen pairs	.60
Springs, dozen pairs	.75
Thumb Screws, dozen pairs	1.25
Handles, dozen pairs	9.00

Revolving



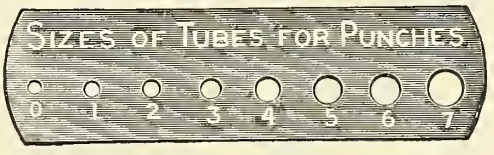
No. 186

Open throat, parallel jaws, full nickel-plated; 8 inches overall. With 6 screw tubes, Nos. 1 to 6.

Dozen $24.00

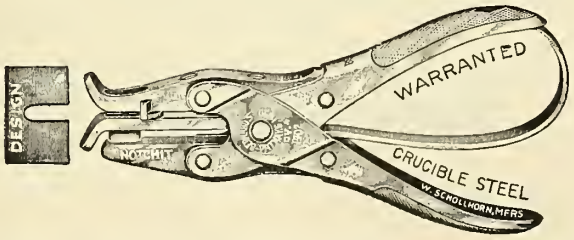
Extra Parts:

Tubes, dozen pairs	2.00
Gauges, dozen pairs	.50
Brass Anvils, dozen pairs	.60
Springs, dozen pairs	.75
Thumb Screws, dozen pairs	1.25
Handles, dozen pairs	9.00



Notchit Punches

Bernard



No. 151

Parallel jaws, full nickel-plated, 5 inches overall. Made especially for cutting out notchits in paper patterns. Used by cloak makers, etc.

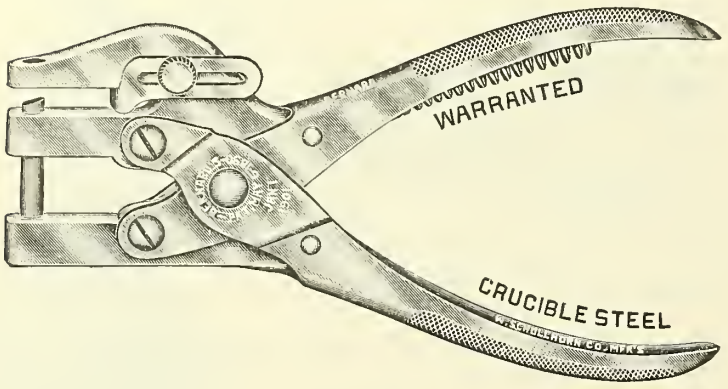
Dozen $20.25

Extra Parts:

Jaws, dozen pairs	3.00
Strippers, dozen pairs	1.75
Springs, dozen pairs	1.25
Jaw Screws, dozen pairs	.40
Gauges, dozen pairs	.50
Handles, dozen pairs	4.00

Paper Punches

Hand



No. 140 Bernard

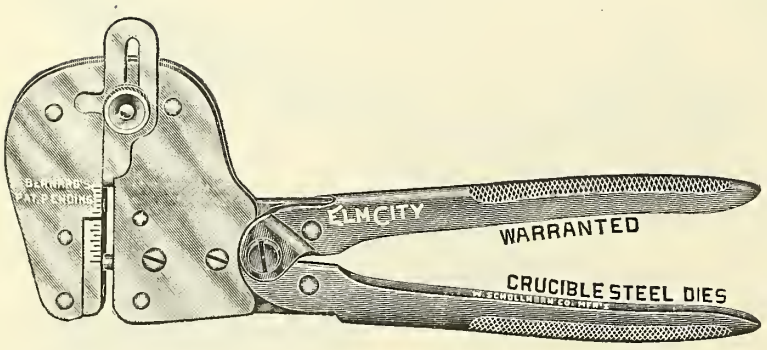
6½ inches overall

Especially made for loose-leaf sheets, etc. Made to punch ⅛ and ¼-inch round holes and will punch a hole 1 inch from edge of paper to center of hole; the jaws open $\frac{7}{32}$ inch. Has drop-forged parallel jaws, fully nickel-plated. Stamped steel handles with spring, also a solid die with a diagonal cutting edge. Fully warranted.

Dozen $20.00

Metal Punches

Hand



No. 17 Elm City

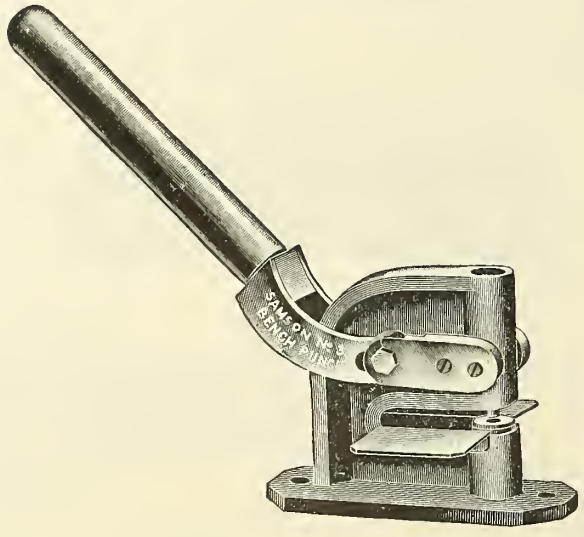
9 inches overall

This Punch is made of stamped steel and has polished jaws or head with black handles. The dies work parallel and there is a gauge to set the holes. This punch has one-eighth inch opening between the jaws and will punch a hole 1 inch from edge of metal to center of hole. If the metal is not harder than regular cold-rolled stock, the ¼-inch dies will punch No. 14 gauge metal, the $\frac{3}{16}$-inch dies will punch No. 13 gauge metal, and the ⅛-inch dies No. 10 gauge metal. This punch will be made with $\frac{1}{16}$, ⅛, $\frac{3}{32}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$ or ¼ inch dies. Packed one tool to a box. Warranted.

Dozen $30.00
Extra dies (one male and one female die to a set), dozen sets 7.00
$\frac{1}{32}$-inch dies can be furnished, but are not recommended and not guaranteed.

Bench

No. 3



Made from cast steel, weight 16 pounds. Screws case hardened, all parts interchangeable. Steel tubing adjustable handle, japanned and polished. Packed in wooden boxes.

For trade requiring a punch which has a broader range and more power than the hand types.

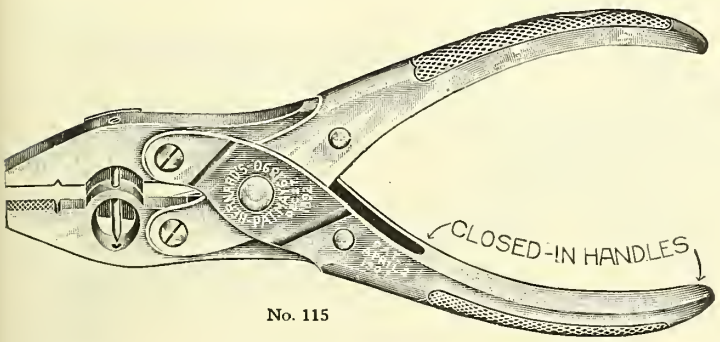
Is light in weight; powerfully and substantially made; compound leverage. Will take punches and dies from $\frac{3}{16}$ to ½ inch, in sixteenths. Will punch a $\frac{3}{16}$-inch hole through soft steel ⅛-inch in thickness.

In other metals and softer materials it will penetrate through any reasonable thickness to the size of its capacity, being ⅝-inch.

Price, each $16.00
Extra dies, 5 in box 5.00

Combination Belt Punches, Cutters and Pliers

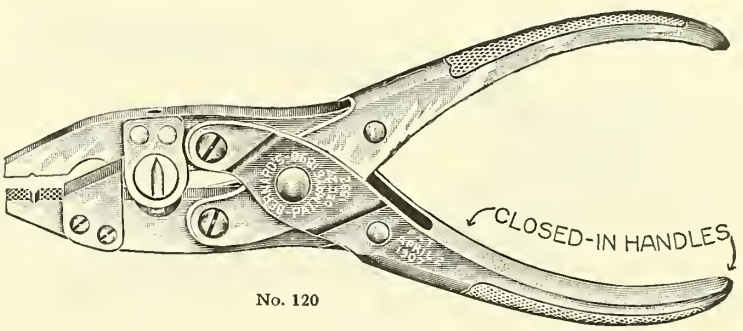
Bernard



No. 115

Parallel jaws, closed-in handles, full nickel-plated. A combination tool for cutting and piercing round leather belting in one operation. The 5-inch used on ¼-inch belt, and the 6-inch on ⅜-inch belting.

Size, inches	5	6
Dozen	$12.00	14.00



No. 120

Parallel jaws, closed-in handles, full nickel-plated. Made for the same purpose as the No. 115 tool, excepting that it cuts and pierces the belt in two seperate operations. The 5-inch made for ¼-inch, and the 6-inch for ⅜-inch belting.

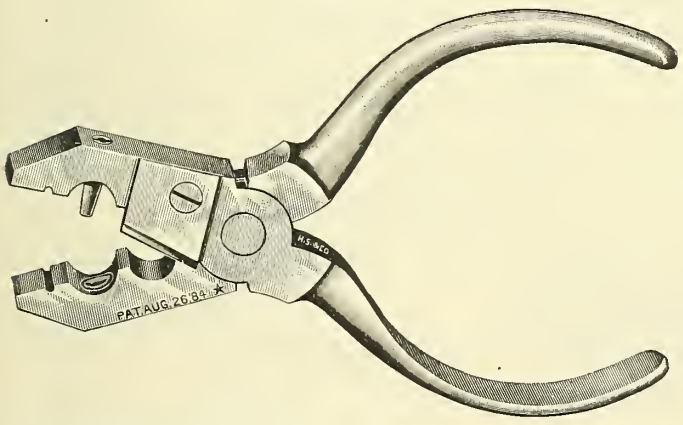
Size, inches	5	6
Dozen	$12.00	14.00

Extra Parts for Nos. 115 and 120

Size, inches	5	6
Jaws, dozen pairs	$3.25	$3.75
Knives, dozen pairs	1.50	1.75
Bolts, dozen pairs	.45	.55

Size, Inches	5	6
Knife Screws, dozen pairs	.25	.30
Piercing Pins, dozen pairs	.50	.60
Handles, dozen pairs	4.00	5.00

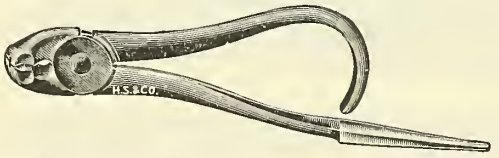
Entrekin



No. 1 Nickel-plated, 4½ inches. Will cut and pierce round leather belting up to ¼-inch diameter, each $1.70
No. 2 Each 2.30
Extra Tubes, dozen 3.00
Extra Cutters, dozen 3.00

Belt Awl and Pliers

Blake

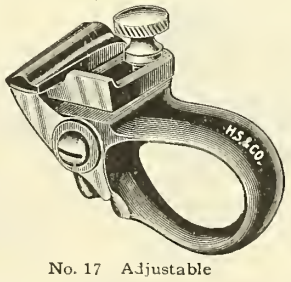


The awl at one end is to spread the slit, and the pliers at the other end are convenient for inserting the stud.

Each ..... $ .40

Belt Lace Leather Cutters

H. S. & Co.



No. 17 Adjustable

Cuts from 3/16 to ¾ inch, each ..... $ .70

Belt Groover

H. S. & Co.



For grooving belt to sink lacing.
No. 135 6 inches long; sizes, inch, ⅛ and 3/32. Dozen $6.00

Belt Marker

H. S. & Co.



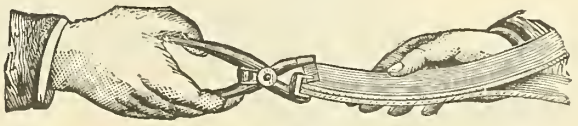
No. 214

For gauging distances of holes. Made of brass with rosewood handle.

Dozen $3.00

Belt Stud Cutters

Blake

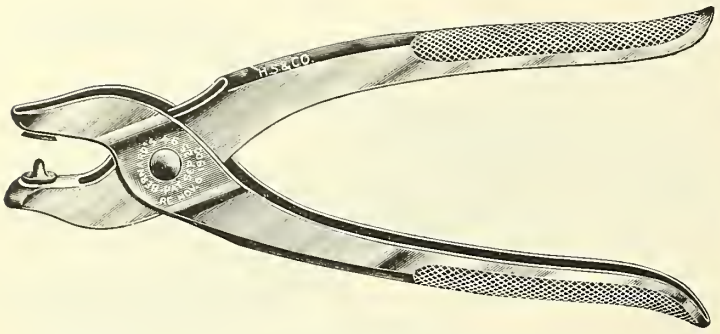


Small (for leather belts), Japanned, 8 inches overall, each ..... $ .90
Large (for rubber belts), Japanned, 10 inches overall, each 1.25

Eyelet Sets

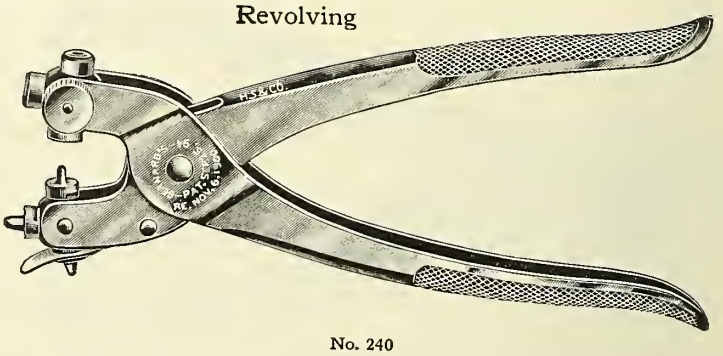
Paragon

With spring in handle, full nickel-plated. 8 inches long



No. 230 For setting shoe eyelets, A. A. F. C.
No. 231 For setting shoe eyelets, No. 11.
Dozen $7.00

Revolving

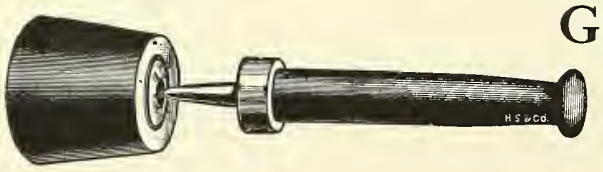


No. 240

Four sets in one tool.
For setting shoe eyelets, Nos. 1 F. C., 2 F.C., 9 and 11.
Dozen $21.00

Grommet Sets

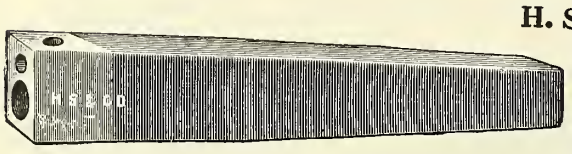
H. S. & Co.



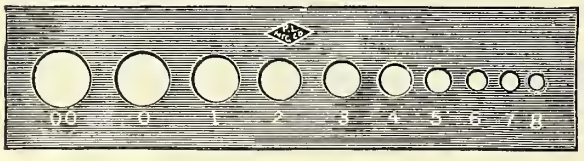
For grommets, numbers	1	2	3
Use round punch, inch	17/64	23/64	3/8
Each	$1.60	$1.70	$1.80

Rivet Sets

H. S. & Co.—Solid Forged Steel



Numbers	00	0	1	2	3
Dozen	$9.00	$9.00	$7.60	$7.60	$6.00
Weight of one dozen	9 lb. 2 oz.	9 lb. 3 oz.	4 lb. 12 oz.	4 lb. 11 oz.	4 lb.
Numbers	4	5	6	7	8
Dozen	$6.00	$4.50	$4.50	$3.85	$3.85
Weight of one dozen	3 lb. 6 oz.	2 lb. 11 oz.	2 lb. 9 oz.	1 lb. 14 oz.	1 lb. 13 oz.

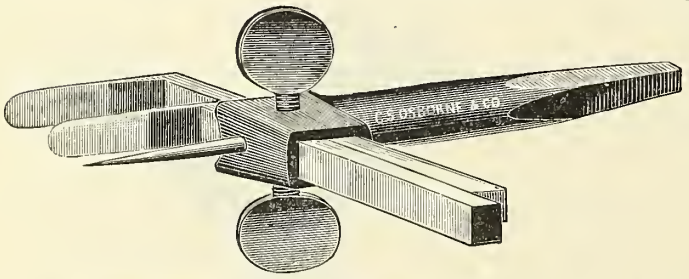


Showing sizes of rivet sets

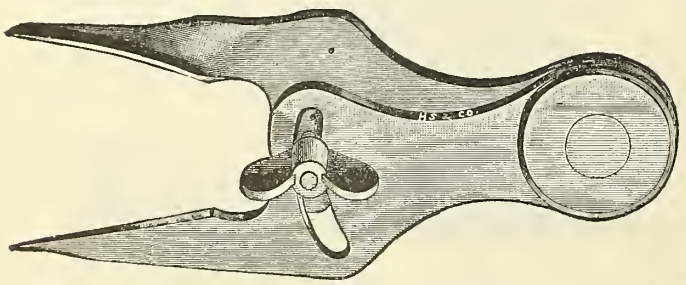
Numbers	00	0	1	2	3	4
For Iron Rivets, pounds	14	12 and 10	8	6	5 and 4	3 and 2½
For Copper Rivets Numbers	..	5	6	7	8	9
Numbers	5		6	7		8
For Iron Rivets, pounds	2		1½	1¼		oz. 12 and 10
For Copper Rivets Numbers	10 and 11		12	13		14

Washer Cutters

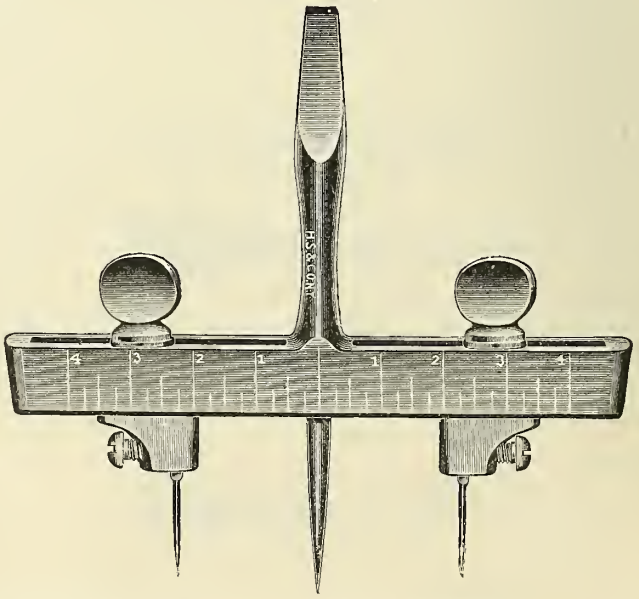
H. S. & Co.



No. 350 Plain, cuts up to 6 inches, dozen $10.00



No. 422 Nickel-plated, cuts up to 3¾ inches, dozen $14.00

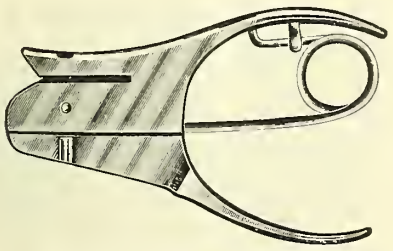


No. 122 Polished steel, cuts from ½ to 4½ inches, each $1.50

For Washer Punches, see page 620

Ticket Punches

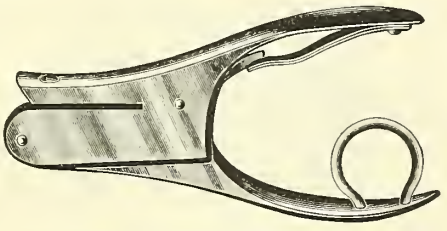
H. S. & Co.



No. 2½ Conductors, Nickel-Plated

Length of frame 4 inches. With coiled steel wire springs.
Single dies furnished in any design in classes A, B and C. See next page.

Single dies, dozen $24.00
Double dies, BC ½, dozen 35.00
Double dies, special, each 5.50



No. 12 Conductors, Nickel-Plated

Length of frame 4¼ inches.
Punches card 1 inch from edge.
Made with any design in classes A or B. See next page.

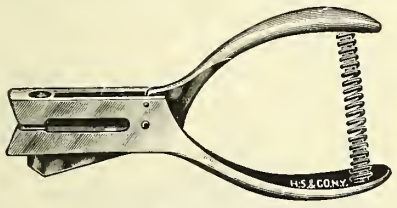
Single dies, dozen $25.00
Double dies, B C or ½, dozen 35.00
Double dies, special, each 5.50



No. 34 Conductors

One of the best punches made for punching street car transfers and other tickets, as the numbers to be punched can be plainly seen through the punch.
No. 33 Conductors Punch. Made same as No. 34, but with flat spring.
Length of frame 4½ inches.
Punches card 1 inch from edge.
See next page for designs.

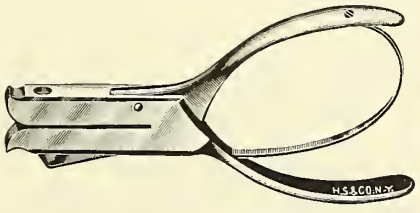
Single dies, dozen $24.00
Double dies, B C or ½, dozen 35.00
Double dies, special, each 5.50



No. 11½

Length of frame 4½ inches. Punches card ⅞ inch from edge. With spiral spring. Made only with the designs shown in class C. See next page.

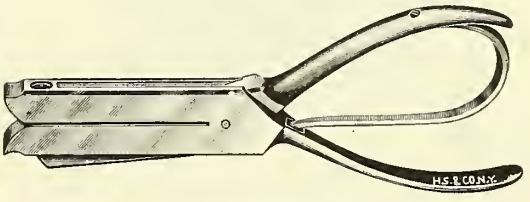
Nickel-plated, dozen $9.00
Polished, dozen 8.00



No. 14

Length of frame 5¼ inches. Punches card 1⅝ inches from edge. Made with any design in class A. See next page. A strong punch with extra deep slot.

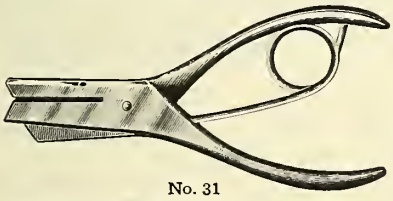
Dozen $18.00



No. 23 Nickel-Plated

Length of frame 6½ inches.
Punches card 2⅛ inches from edge.
An extra large punch. Used where a deep slot is required.
Made only with designs in class A. See next page.

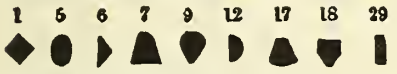
Dozen $19.00



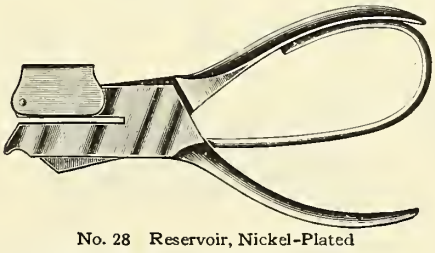
No. 31

Length of frame 4¼ inches.
Punches card ¾ inch from edge.
A very low-priced punch.
Made only with the following assorted dies:

1 5 6 7 9 12 17 18 29



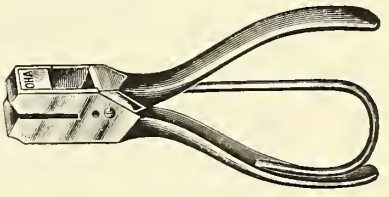
Nickel-plated, dozen $6.00
Polished, dozen 5.00



No. 28 Reservoir, Nickel-Plated

Length of frame 4½ inches.
Punches card 1 inch from edge.
The reservoir or receptacle on this punch retains the punched pieces. Can be opened and closed in an instant.
Furnished with any design in class A. See next page.

Dozen $20.00

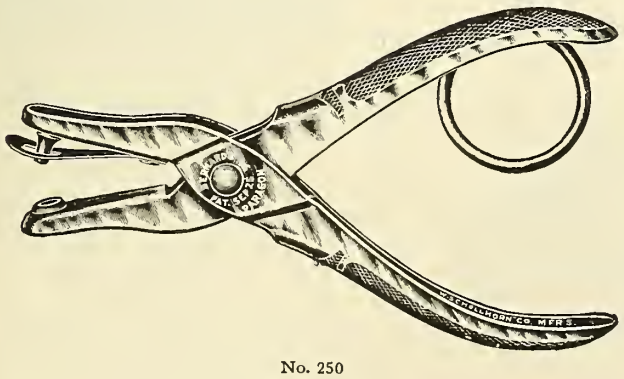


No. 17 Nickel-Plated

Length of frame 5 inches.

This is a special heavy pattern, and can be made with from two to eight letters or figures. No other pattern will punch this many letters or figures.

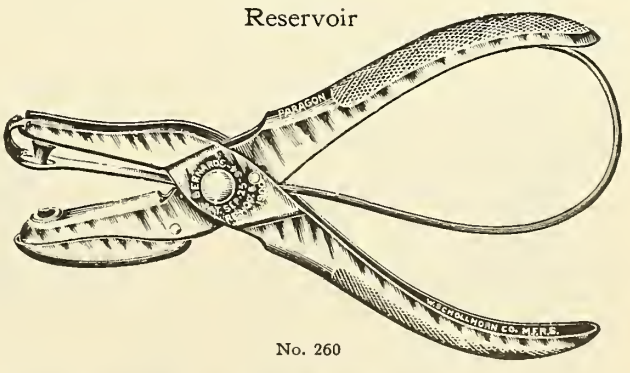
Prices on application, depending on size and number of letters or figures.



No. 250

Simple, low-priced and durable, full nickel-plated, 5 inches long, dozen $3.75

Reservoir



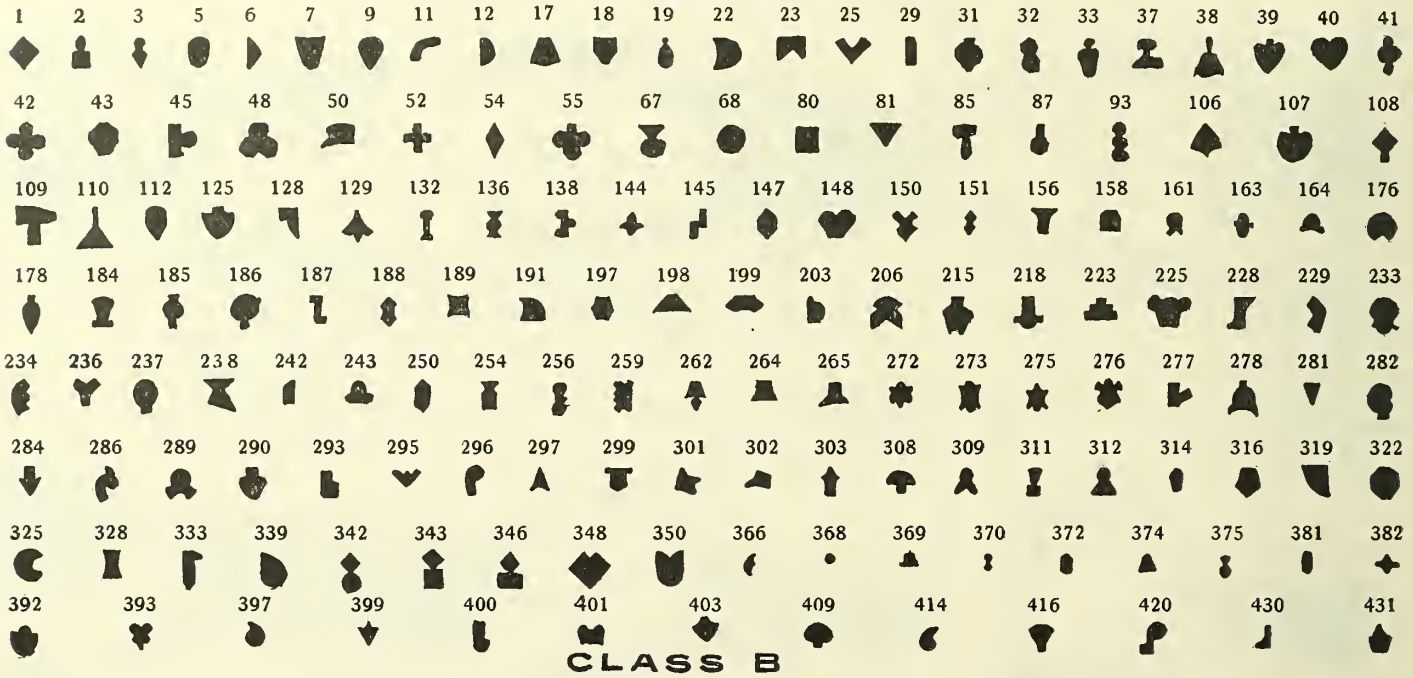
No. 260

Simple, low-priced and durable, full nickel-plated. Especially useful for card parties, as clippings are retained in spring-actuated reservoir, 5 inches long, dozen $4.25

Designs For Ticket Punches

Nos. 2½, 11½, 12, 14, 23, 28, 33 and 34—Illustrations on Preceding Page

CLASS A



CLASS B



CLASS C

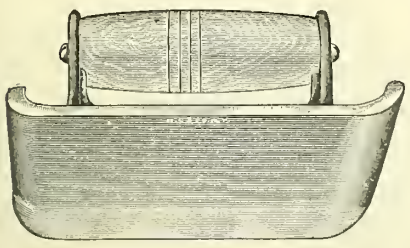


CLASS D



Cement or Sidewalk Tools

H. S. & Co.



Edger No. 1

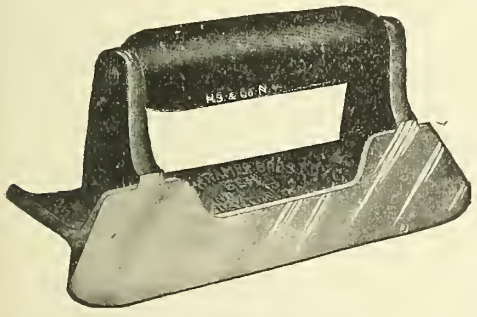
6 inches long, 3 inches wide, ⅜-inch radius.

Iron, nickel-plated, each ..... $ .60
Bronze, each 1.20

Edger No. 3

6 inches long, 3 inches wide, ¾-inch radius.

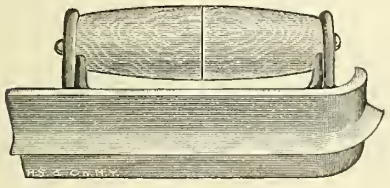
Iron, nickel-plated, each ..... $ .65
Bronze, each 1.30



Step Edger No. 10

With straight-edge for a guide, 7 inches long, 2¼ inches wide.

Iron, nickel-plated, each $1.00
Bronze, each 2.00



Jointer No. 20

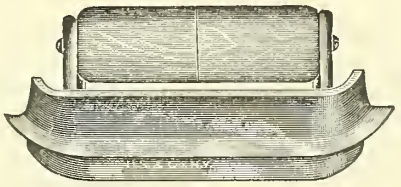
One end straight to cut into sharp corners. Cuts thin grooves. 6 inches long, 3 inches wide.

Iron, nickel-plated, each ..... $ .60
Bronze, each 1.20

Jointer No. 21

Cuts heavy grooves for carriage ways. One end straight to cut into sharp corners. 6 inches long, 3 inches wide.

Iron, nickel-plated, each ..... $ .65
Bronze, each 1.30



Jointer No. 22

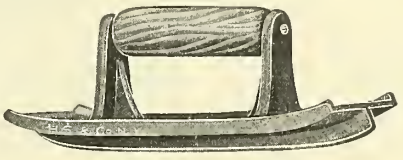
Cuts thin grooves ½ inch deep for side walks. 6 inches long, 3 inches wide.

Iron, nickel-plated, each ..... $ .60
Bronze, each 1.20

Jointer No. 23

Cuts heavy grooves ½ inch deep for carriage ways. 6 inches long, 3 inches wide.

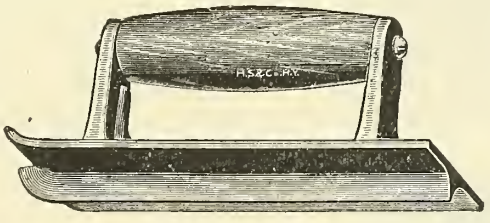
Iron, nickel-plated, each ..... $ .65
Bronze, each 1.30



Jointer No. 25

Cuts thin grooves ½ inch deep for side-walk. 9 inches long, 3 inches wide.

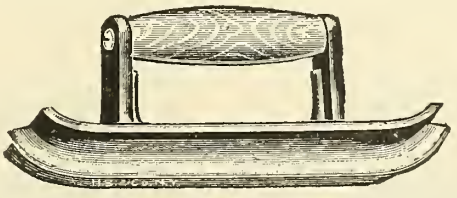
Iron, nickel-plated, each ..... $ .85
Bronze, each 1.75



Jointer No. 26

Cuts thin groove ½ inch deep. 9 inches long, 3 inches wide.

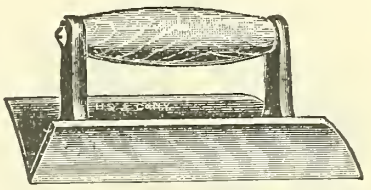
Iron, nickel-plated, each ..... $ .85
Bronze, each 1.75



Driveway Groover No. 27

Cuts heavy groove ¾ inch deep. 9 inches long, 3 inches wide.

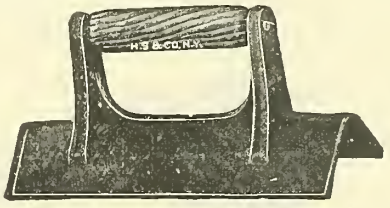
Iron, nickel-plated, each ..... $ .85
Bronze, each 1.75



Outside Square Angle Tool No. 31

8 inches long, 2¼ inches wide.

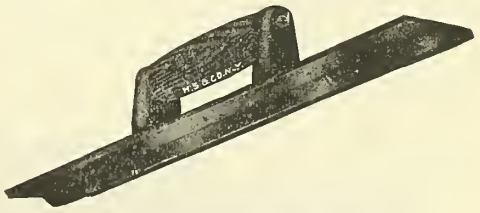
Iron, nickel-plated, each $1.00
Bronze, each 2.00



Inside Round Angle Tool No. 32

8 inches long, 2¼ inches sides, ¾-inch radius.

Iron, nickel-plated, each $1.00
Bronze, each 2.00



Wall Jointer No. 39

For giving a block finish to cement walls. 11 inches long, 2 inches wide.

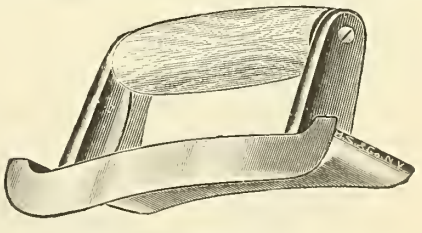
Iron, nickel-plated, each $1.00
Bronze, each 2.00



Gutter Tool No. 41

6 inches long, 4 inches wide, 1 inch deep.

Iron, nickel-plated, each $1.00
Bronze, each 2.00

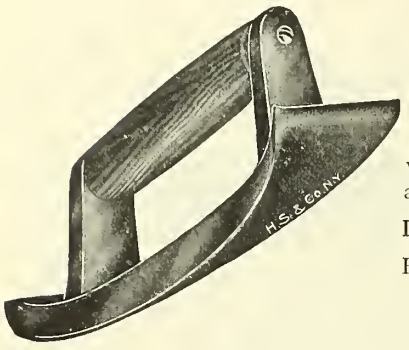


Out-Curve Edger No. 43

5 inches long, 2 inches wide, ⅝-inch turned edge with a radius of ½ inch.

Iron, nickel-plated, each ..... $ .50
Bronze, each 1.00

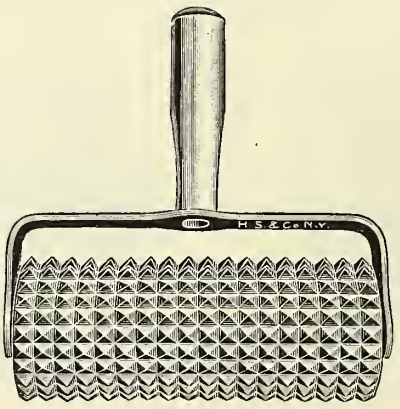
Cement or Sidewalk Tools



In-Curve Edger No. 44

4½ inches long, 2 inches wide, ⅝-inch turned edge, with a radius of ½ inch.

Iron, nickel-plated, each. $ .50
Bronze, each..... 1.00

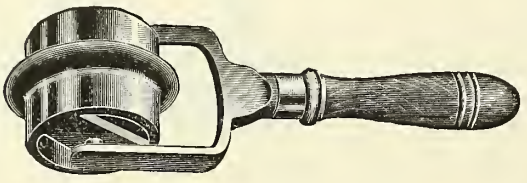


Solid Imprint Roller No. 60½

Roller 4 inches diameter, 9 inches wide, handle 5¼ inches long.

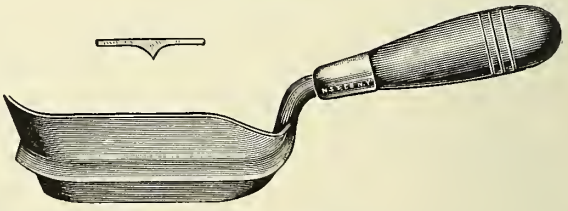
Iron, nickel-plated, each..... $7.00
Bronze, each..... 14.00

Gem Rotary Jointer No. 58



Can be used where other Jointers fail.
Iron, nickel-plated, each..... $1.50
Bronze, polished, each..... 3.00

Creasers

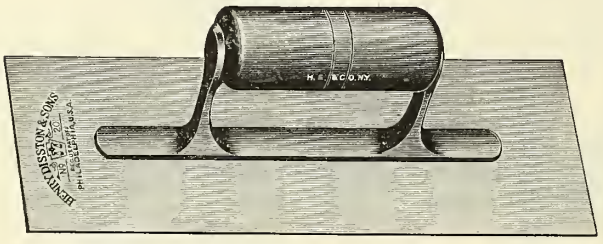


5½x1½ inches, for ⅛-inch crease, dozen..... $9.00
5½x2 inches, for ¼-inch crease, dozen..... 9.60
5½x2 inches, for ⅜-inch crease, dozen..... 10 80
6 x2½ inches, for ½-inch crease, dozen..... 13.20

Trowels

Disston Cementers

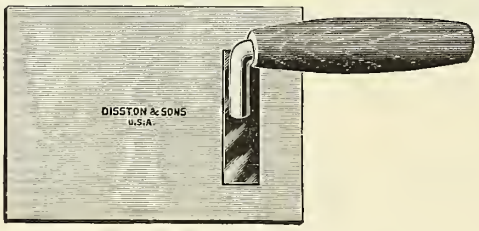
No. 20



Extra heavy blade. Made of 16-gauge high-grade crucible steel, tempered and accurately ground. Handle mounting is ⅞-inch wide and extends within 2 inches of the ends.

Length, inches.....	11	11½	12
Width, inches.....	4⅝	4 13/16	5
Dozen.....	$17.00	18.25	19.75

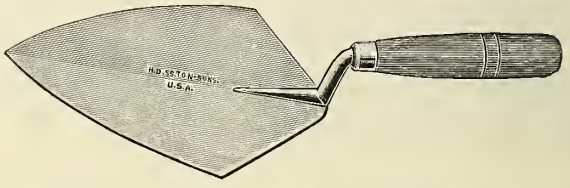
Painters Cement



Used by ironworkers and ship painters in cementing the bilge keel of vessels, etc.

Crucible steel blade, riveted tang, 5½-inch x 4½- inch.
Dozen..... $8.00

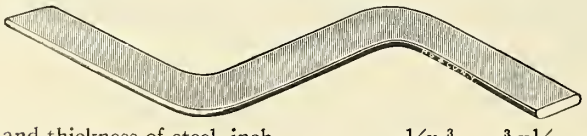
Tile Setters



Crucible steel blade, 6½-inch x 3⅜-inch, dozen..... $9.50

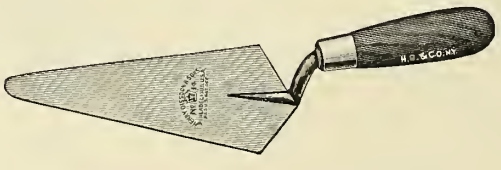
Brick Jointing Steels

H. S. & Co.



Width and thickness of steel, inch.....	⅛x 3/16	3/16x¼	¼x 5/16
Concave, each.....	.....	$1.60	1.60
Convex each.....	$ .50	.60	.70

Cross Joint



Crucible steel blade, 3½-inch, dozen..... $4.35
Crucible steel blade, 4 -inch, dozen..... 4.35

Brick Trowels

Genuine Billings

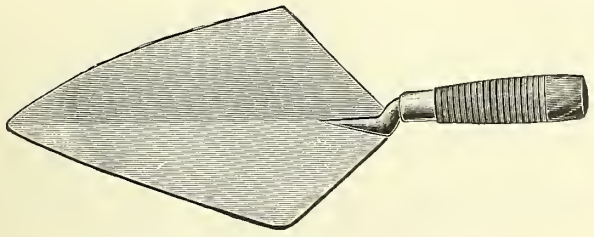


Illustration shows **THE LIMIT**, with leather handle

THE LIMIT

Length, inches	10	10½	11
Width, inches	6¼	6½	6¾
Button handles, dozen	$18.30	18.90	19.50
Leather handles, dozen	21.00	21.60	22.20

X. X.

Length, inches	10	10½	11
Width, inches	5¾	6	6¼
Button handles, dozen	$16.50	17.10	17.70
Leather handles, dozen	19.20	19.80	20.40

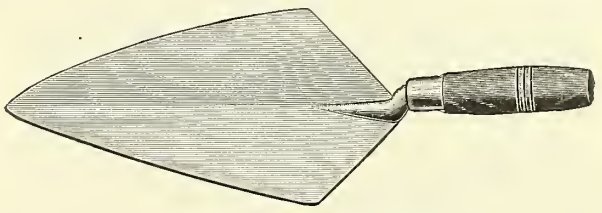


Illustration shows button handle

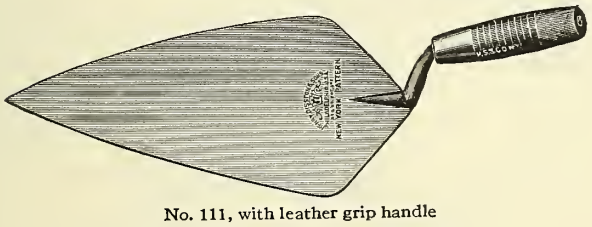
SPECIAL

Length, inches	9½	10	10½	11
Width, inches	5	5¼	5½	5¾
Button handles, dozen	$14.10	14.70	15.30	15.90
Leather handles, dozen	16.80	17.40	18.00	18.60

The leather handles as well as those of the solid button type are non-detachable, and there is no metal to mar the brick when handle is used to place them

Disston

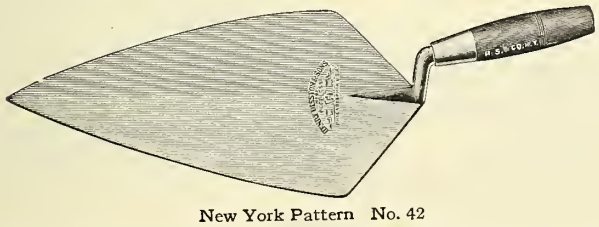
Extra quality crucible steel blade, carefully hardened and tempered, ground to a true and correct taper



No. 111, with leather grip handle

Peerless

Tang Does Not Extend Through Handle



New York Pattern No. 42

These Trowels are each made from a single diamond-shaped piece of highly tempered steel, are taper ground and have the correct spring to secure greatest efficiency. Handles are polished hickory, reinforced with a long, heavy nickel-plated steel ferrule.

Length, inches	10½	11	11½	12
Dozen	$18.75	19.25	19.75	20.25

New York Special Heavy Pattern

Tang Extends Through Handle and is Riveted

No. 11, with wooden handle and metal end

Length, inches	9½	10	10½	11
Dozen	$11.50	$12.00	$12.50	$13.00

No. 111, with leather grip and metal end

Length, inches	9½	10	10½	11
Dozen	$14.00	14.50	15.00	15.50

Tang Does Not Extend Through Handle

No. 11½, with wooden handle and wooden end

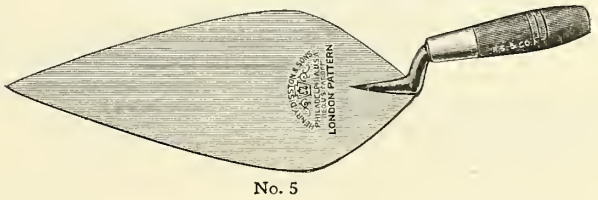
Length, inches	9½	10	10½	11
Dozen	$11.50	12.00	12.50	13.00

No. 111½, with leather grip and wooden end

Length, inches	9½	10	10½	11
Dozen	$14.00	14.50	15.00	15.50

London Pattern

Tang Does Not Extend Through Handle

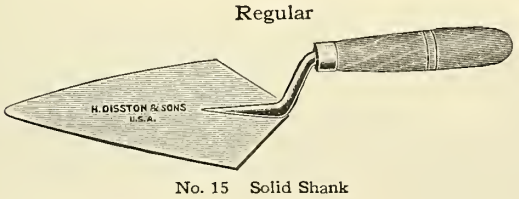


No. 5

Length, inches	9½	10	10½	11
Dozen	$9.50	10.00	10.50	11.00

Pointing

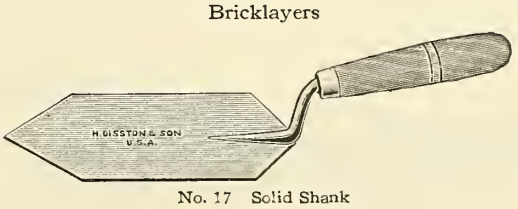
Regular



No. 15 Solid Shank

Length, inches	4	5	6	7
Dozen	$4.25	4.75	5.25	5.75

Bricklayers



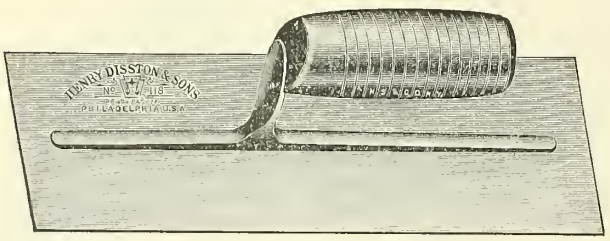
No. 17 Solid Shank

Length, inches	5	6
Dozen	$5.25	5.75

Plasterers Tools

Trowels
Disston

Western Pattern

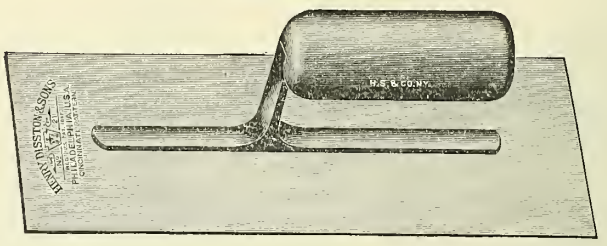


No. 118

Made of highest grade crucible steel, tempered accurately, with thin blades. Blades are securely attached to the extra long handle mountings with ten rivets. Handle has beveled end for thumb rest.

Length, inches	11	11½	12
Width, inches	4⅝	4 13/16	5
No. 18 Spun polished handle, dozen	$16.50	17.00	17.50
No. 118 Leather grip handle, dozen	20.50	21.00	21.50

Cincinnati Pattern

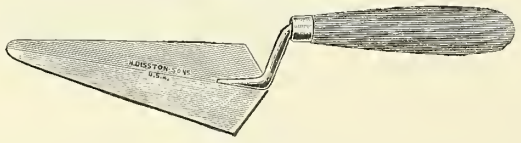


No. 21

Same general style as Western Pattern, but handle is fastened to blade with only five rivets.

Length, inches	10 & 10½	11	11½	12
Width, inches	4½	4⅝	4 13/16	5
Dozen	$12.50	13.00	13.50	14.00

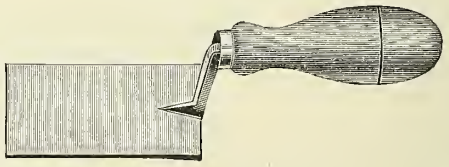
Disston Gauging



No. 14

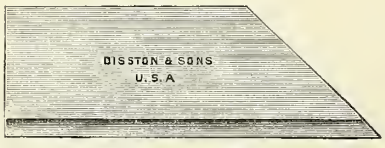
Length, inches	7	7½	8
Dozen	$8.75	9.00	9.25

Billings Margin



Dimensions, inches	3x4	3½x5
Dozen	$8.00	10.00

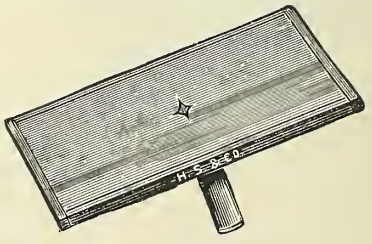
Miter Rods
Disston



Beveled or Long Edge

Inches	4	6	8	10	12
Dozen	$2.50	2.95	3.75	4.80	5.80
Inches	14	16	18	20	
Dozen	$6.70	7.50	8.75	9.15	

Hocks



No. 1 13x13 inches, each $1.00

Mitering Tools
H. S. & Co.



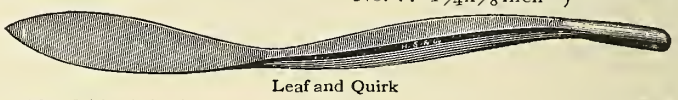
Leaf and Square

No. 61	½x¼ inch	Each	$ .75
No. 62	⅝x¼ inch		
No. 63	¾x⅜ inch		
No. 64	⅞x½ inch	Each	$1.00
No. 65	1 x⅝ inch		
No. 66	1⅛x¾ inch	Each	$1.05
No. 67	1¼x⅞ inch		



Double Leaf

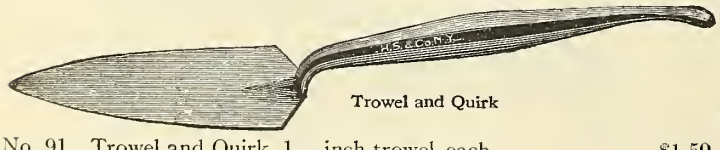
No. 71	½x¼ inch	Each	$ .75
No. 72	⅝x¼ inch		
No. 73	¾x⅜ inch		
No. 74	⅞x½ inch	Each	$1.00
No. 75	1 x⅝ inch		
No. 76	1⅛x¾ inch	Each	$1.00
No. 77	1¼x⅞ inch		



Leaf and Quirk

No. 98 ¾-inch leaf, each ..... $ .75

Trowel Tools
H. S. & Co.



Trowel and Quirk

No. 91	Trowel and Quirk, 1 -inch trowel, each	$1.50
No. 92	Trowel and Quirk, 1¼-inch trowel, each	1.50
No. 94	Trowel and Quirk, 1⅜-inch trowel, each	1.50
No. 95	Double Trowel, ¾ and 1⅜-inch ends, each	1.80



Trowel and Square

No. 96 Trowel and Square, 1½-inch trowel end, 2-inch square end, each $1.80

SEE DISCOUNT SHEET

Plasterers Knives

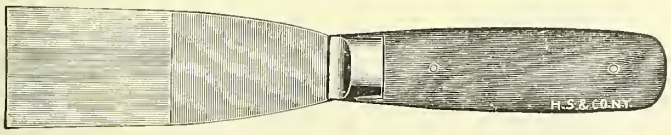
H. S. & Co.



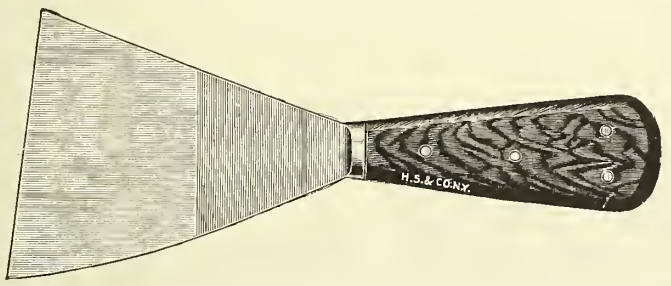
No. 1 4½-inch blade, Maple handle, dozen $8.00
No. 2 5 -inch blade, Maple handle, dozen 9.00
No. 3 5½-inch blade, Maple handle, dozen 10.00

Putty Knives

H. S. & Co.



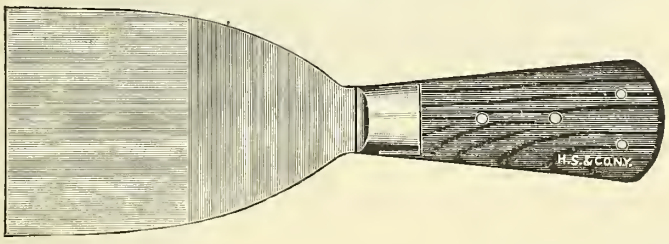
Width of blade, inches	1 5/16	2
Length of blade, inches	3⅝	3¾
No. 1540 Cocobolo handle, stiff blade	$4.20	$6.70
No. 1540E Cocobolo handle, elastic blades	4.20	6.70



No. 515 Cocobolo handle, stiff blade, 3¼ inches wide, dozen $12.00

Scraping Knives

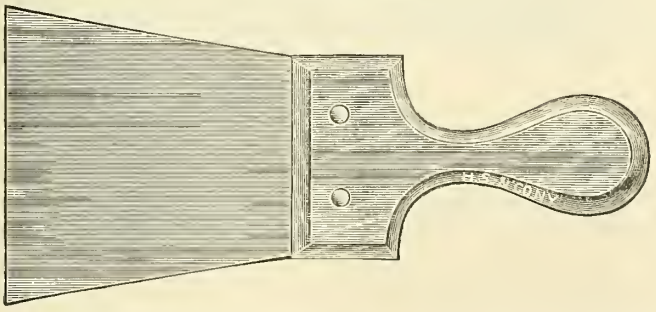
H. S. & Co.



Width of blade, inches	3	3½
No. 530 Cocobolo handle, stiff blade, dozen	$11.30	$12.70
No. 530E Cocobolo handle, elastic blade, dozen	11.30	

Wall Scrapers

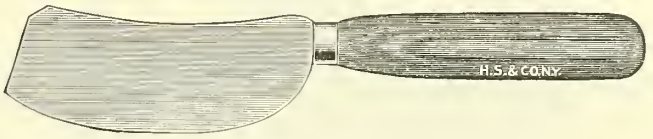
H. S. & Co.



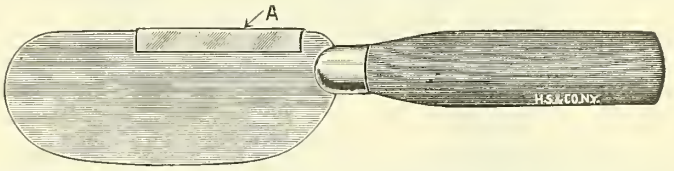
No. 1 Cast steel, 3 inches wide, dozen $1.50

Paper Hangers Knives

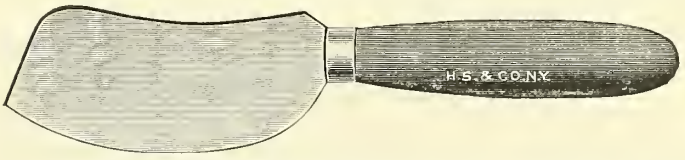
H. S. & Co.



No. 5S Square point blades, 3⅜x1⅞ inches, dozen $4.50
No. 5 Round point blades, 3⅜x1⅞ inches, dozen 4.50

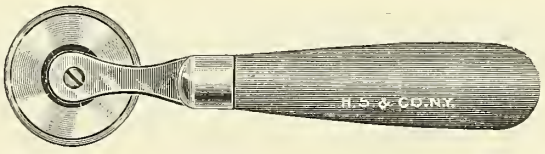


No. 01 Round point with removable protection clip "A." Blade is 3⅜x1⅜ inches; Maple, friction polish handle, dozen $3.80

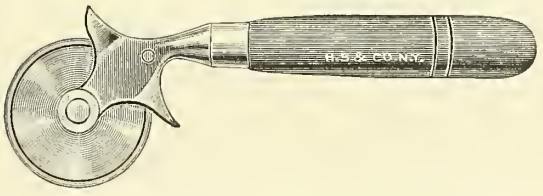


No. 4 Square point blade, 3⅜x1⅞ inches, taper rolled, best steel, white Maple handle, dozen $5.00

Casing and Corner Knives



No. 06 2-inch wheel, smooth edge, nickeled frame, large polished Maple handle, dozen $5.60
No. 02 1½-inch serrated wheel, nickeled frame, large polished Maple handle, dozen 4.50



No. 8 2-inch wheel with protection thumb and finger guard to prevent cutting the hand. Nickel-plated frame, large polished Maple handle, dozen $7.50



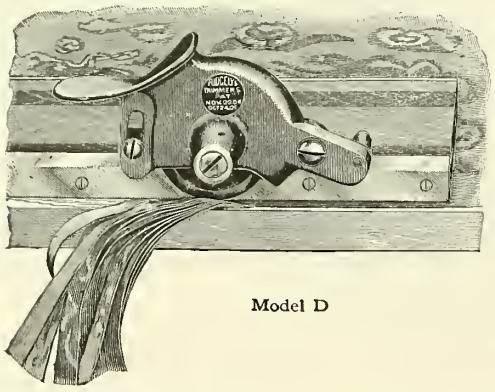
No. 010 1½-inch milled wheel, double bevel nickeled frame, large polished Maple handle, dozen $5.90



No. 1½ Serrated wheel and knife, large polished Maple handle, dozen $6.30

Wall Paper Trimmers

Ridgely



Model D

This Trimmer is made of steel, nickel-plated, is 5 inches long and weighs 5 ounces. It is designed for use with a straight edge and is not suitable for use without one.

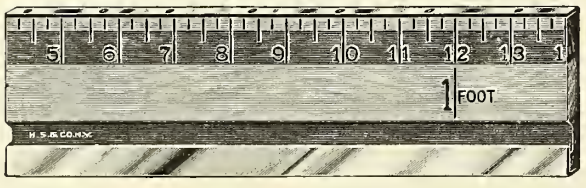
Trimmer only $4.00

Paper Hangers Outfits

The following outfits include a Trimmer, a Straight-edge of the number mentioned (described on this page) and a Zinc Strip, 3 inches wide, which insures clear-cut edges and prevents marring the board.

Outfit with No. 4 6-foot ruled edge, each $7.50
Outfit with No. 16 6-foot sectional edge, each 9.60
Zinc Strips only, each ..... .30

Straight Edges for Trimmers



No. 4 Bound with heavy flat brass, set with screws. Average weight 3 pounds.

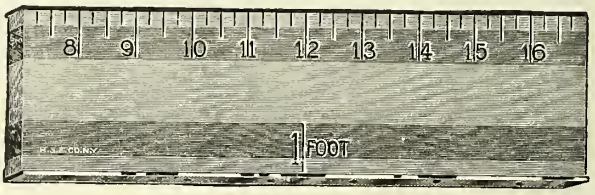
Length, feet	6	7	8
Each	$3.30	$3.60	$3.75

No. 16 Sectional, bound with heavy flat brass, set with screws. For convenience is in two pieces, fastened with device, same style as No. 19 shown on this page, making it as solid as though in one piece. Average weight 3½ pounds.

Length, feet	6	7	8
Each	$5.35	5.50	5.70

Straight Edges

Ruled Knife Edge



No. 5 Bound with heavy flat brass, set with screws; average weight 2½ pounds.

Length, feet	5	6	7	8
Each	$2.80	2.85	3.00	3.20

No. 21 Bound with heavy square-edge steel, set with screws; average weight 3 pounds.

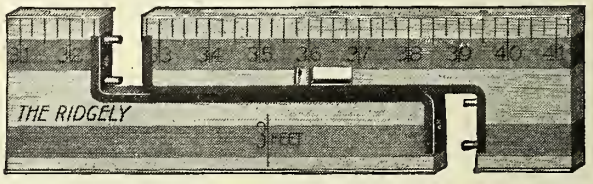
Length, feet	6	7	8
Each	$2.15	2.30	2.50

Plain

No. 3 Without binding or graduations, hard Maple on outer edges with Red Wood and White Pine centers. 6 feet long, 3 inches wide.

Each ..... $ .70

Sectional



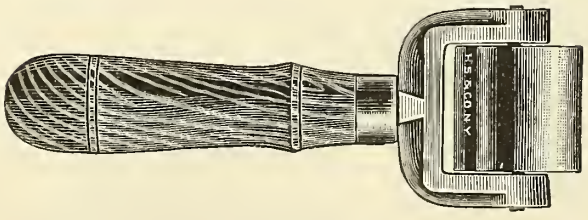
No. 19 Bound with heavy flat brass, set with screws. Has connecting device, as shown. Average weight 2¾ pounds.

Length, feet	6	7	8
Each	$5.00	5.20	5.35

All the Straight Edges on this page are built up from the very best grade of White Pine and Redwood, with the grain reversed and have three coats of Shellac

Seam Rollers

Cravanette

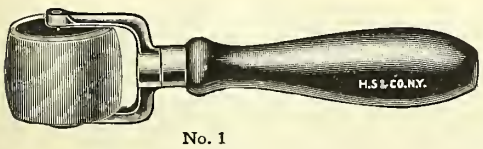


Suitable for work on cravanette. Solid-steel roller, 1⅝ inches wide by 1 11/16 inches diameter. Steel frame, hardwood handle, substantially made, weighs 28 ounces.

Each $1.25

Paper Hangers Seam Rollers

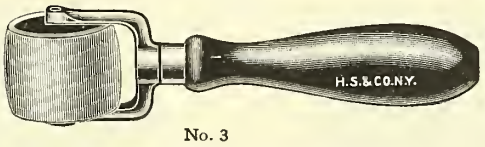
H. S. & Co.



No. 1

1-inch oval face, Rosewood or Lignum Vitae friction polished roller, nickel-plated steel frame, large natural polished Maple handle.

Dozen $4.50

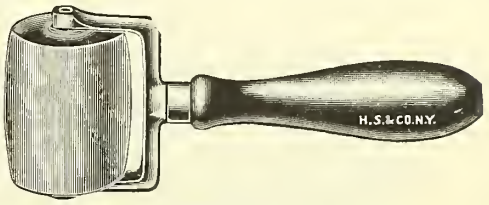


No. 3

1-inch oval face, celluloid tire over Rosewood core, nickel-plated steel frame, large natural polished Maple handle.

Flat face roller may be had if specially ordered.

Dozen $7.20



No. 14

2-inch oval face, Rosewood or Lignum Vitae roller, nickel-plated steel frame, Maple handle.

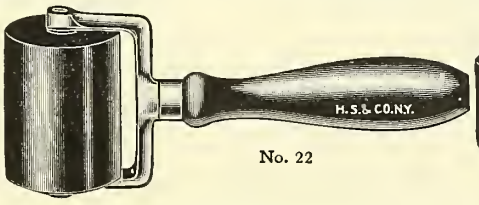
Dozen $5.40



No. 20

½-inch oval or flat face, polished hard rubber roller, nickel-plated steel frame, Maple handle.

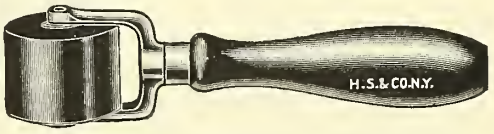
Dozen $6.30



No. 22

2-inch flat face, polished hard rubber roller, nickel-plated steel frame, Maple handle.

Dozen $8.10



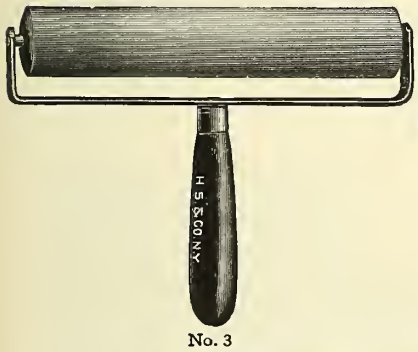
No. 26

1-inch flat face, rubber roller not vulcanized, nickel-plated steel frame, Maple handle.

Dozen $6.30

Paper Hangers Smoothing Rollers

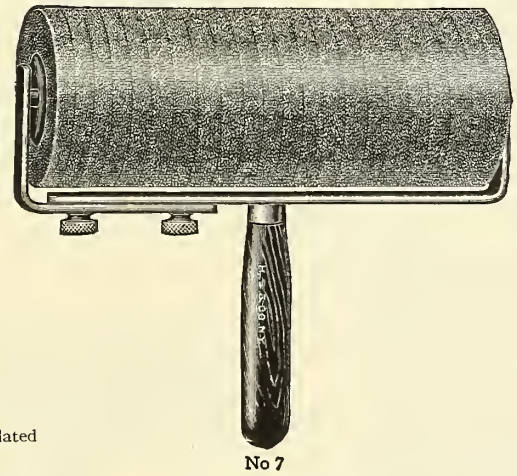
H. S. & Co.



No. 3

No. 3 9-inch hard Maple roller, nickel-plated steel frame, Maple handle, weight 10 ounces.

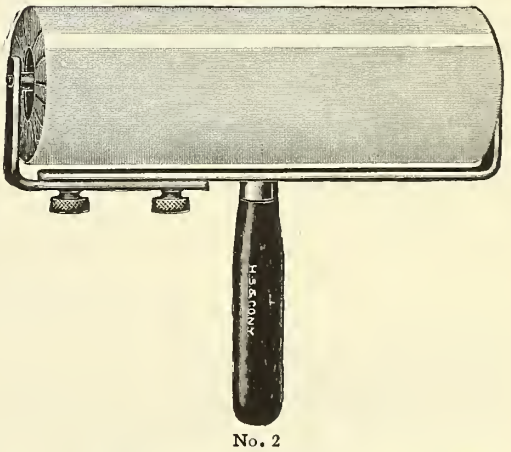
Dozen $7.20



No 7

No. 7 9-inch roller, 2½ inches in diameter, built up of Mexican felt discs; adjustment for tightening or loosening to give solid or resilient roller; easily cleaned and never needs recovering.

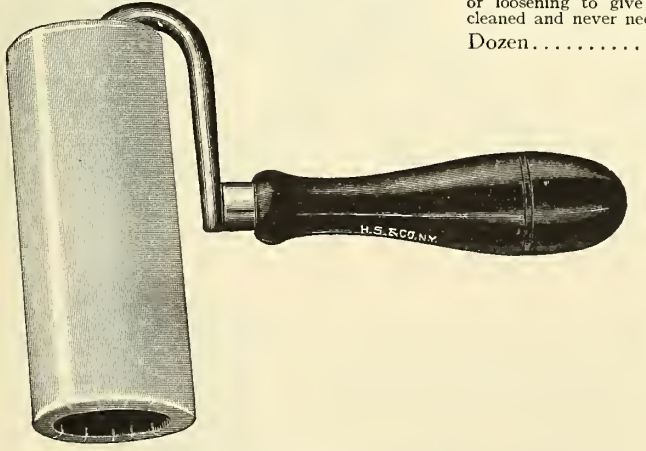
Dozen $31.50



No. 2

No. 2 9-inch roller, covered with six-ply flannel, nickel-plated steel frame, constructed so roller may be removed for recovering. Heavy nickel-plated steel frame for rolling ingrains, burlap, etc.

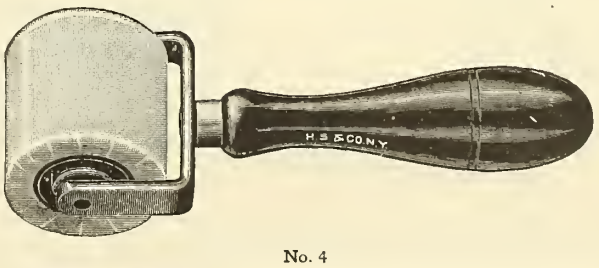
Dozen $9.00



No. 5

No. 5 4½-inch roller covered with six-ply flannel, nickel-plated steel side arm, detachable Maple handle, for work in corners and other inaccessible places.

Dozen $13.50



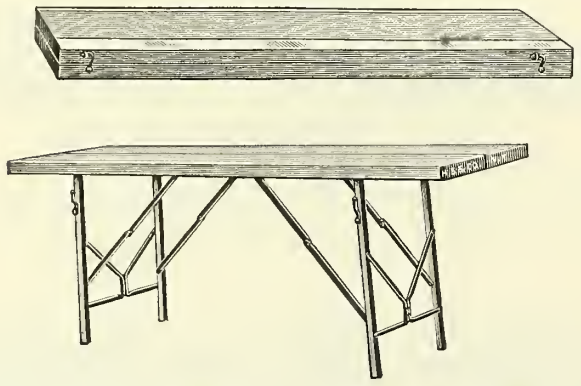
No. 4

No. 4 2-inch roller covered with six-ply flannel, nickel-plated steel frame, Maple handle.

Dozen $7.20

Paste Tables, Boards and Trestles

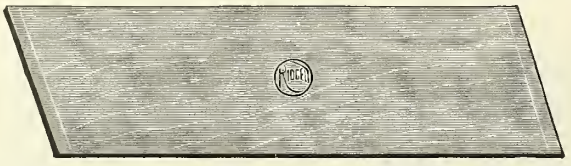
Folding Tables



No. 301 Made of clear air-cured lumber. Top made of two or more pieces, tongued and grooved and glued to prevent warping. Has space inside (when folded) for straight edges and tools. Price includes hooks for straight-edge. Is 33 inches high, 22 inches wide, average weight 17 pounds.

Without Extension Boards, Rods or Bucket Holder, 6 feet long, each $4.30

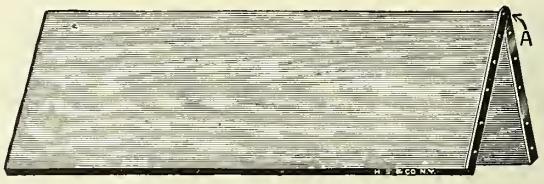
Plain Boards



No. 307 8 inches wide by ½-inch thick, batted and sanded, with or without dowels, in sets, three boards per set, 6 feet long.. $2.10

No. 320 7 inches wide by ½-inch thick, batted and sanded, with or without dowels, three boards in a set, 6 feet long.... 1.90

H. S. & Co. Folding Boards

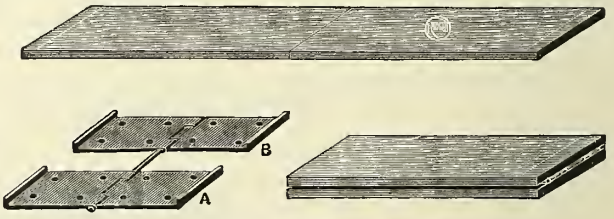


No. 322

Is ½ inch thick, 20 inches wide when open and 10 inches closed, made of air dried, clear Bass wood. Steel end battings (marked "A") are run the entire width of the board as a protection against warping and damage.

No. 322 6 feet long, each $2.25

Sectional



No. 324

The improved hinge is a hinge and a brace at the same time, and when it is acting as a brace there is no strain on the screws.

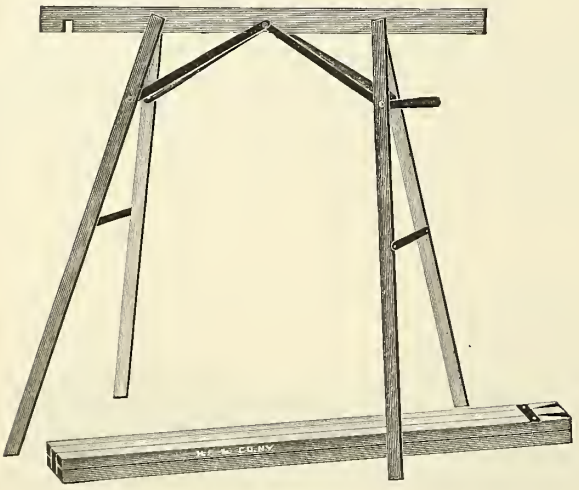
Makes the board as stiff, rigid and strong as though solid.

The ideal board for use in cities, on account of the small size when folded.

6 feet long, each $3.60

Folding Trestles

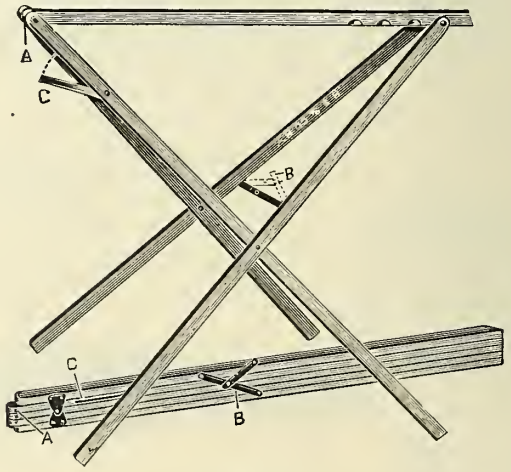
Weight 4½ pounds per pair. Nickel-plated Trimmings



No. 01

Select hard Maple, 32 inches high, 33 inches wide. Stands rigidly on uneven floor. Is strong enough for scaffolding purposes, if necessary. Hook included for holding straight-edge.

Dozen pairs $15.00



No. 2

Select hard Maple, adjustable to various heights, from 30 to 34½ inches.

At "A" are steel clips between each piece of wood to prevent rotting from paste.

"B" is a break-joint spreader for convenience and extra strength; push up or down to tighten or loosen.

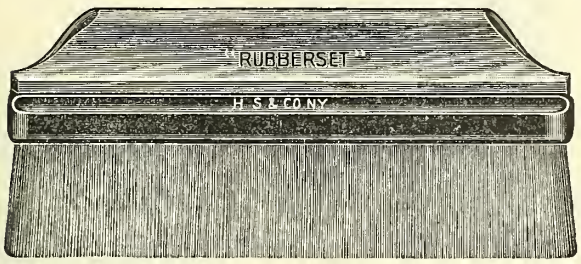
"C" is hook for holding straight-edge, which slides into recess when not in use, as shown in folded cut, and is never in the way in carrying.

Dozen pairs $16.00

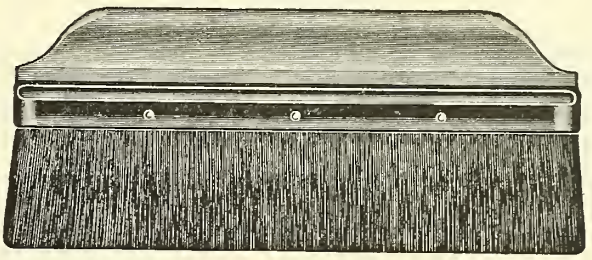
Paper Hangers Brushes

RUBBERSET

Smoothing

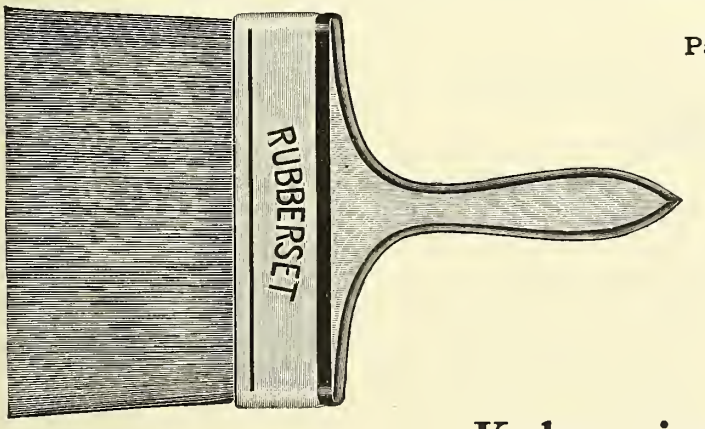


No. 153 All yellow bristle, thick.
Length 10 inches, dozen $22.80
Length 12 inches, dozen 28.20



No. 159 Black Chinese bristle, thick.
Length 10 inches, dozen $18.60
Length 12 inches, dozen 21.50

Paste

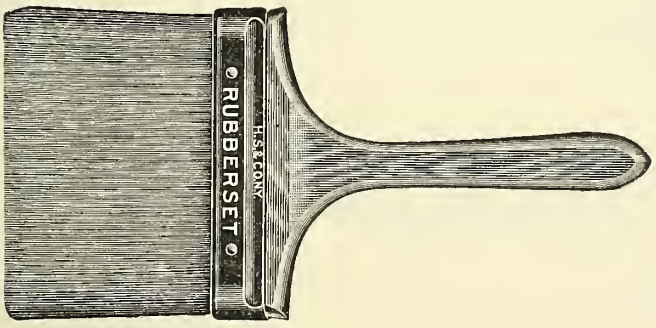


No. 95 All grey Russian bristles, brass bound; an exceptionally fine working brush. 7 inches wide, bristle 4¼ inches out of ferrule.

Dozen $33.30

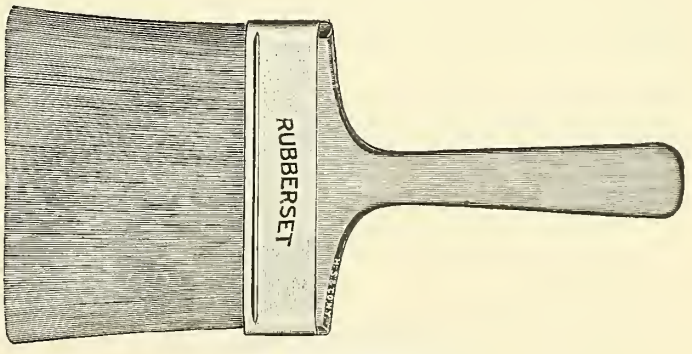
Kalsomine Brushes

RUBBERSET



No. 20 X X X

Russian bristle, grey center, 7 inches wide, bristle 4¾ inches out of ferrule.
Dozen $48.41

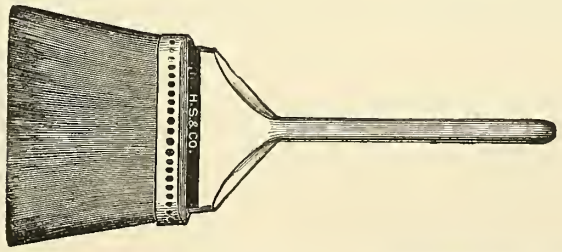


No. 66 Ex. Ex. New York

Grey center, white outside, galvanized-iron bands, 7 inches wide bristle 5½ inches out of ferrule.
Dozen $60.00

Whitewash Brushes

H. S. & Co.



"Russia." Made of long stock, cased with unbleached Russian bristle, 7 inches wide, leather bound.
Dozen $16.00

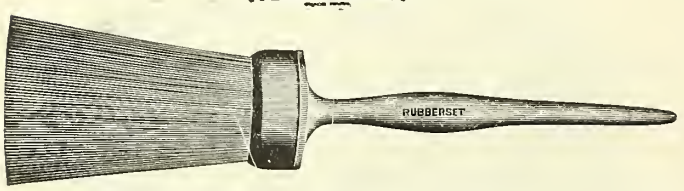
Whitewash Brush Clamps. Used for attaching the brush to long rod so high walls can be easily reached.
Dozen $3.00

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Painters Dusters

Round

RUBBERSET

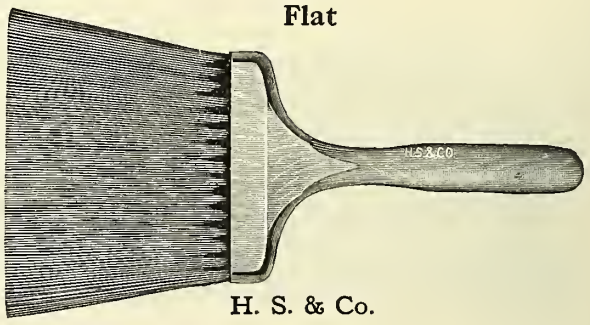


No. 4 Black bristle casing, gray bristle center, dozen..... $20.00

H. S. & Co.

No. 3 Black casing, gray middle; a very serviceable brush, dozen..... $8.20

Flat

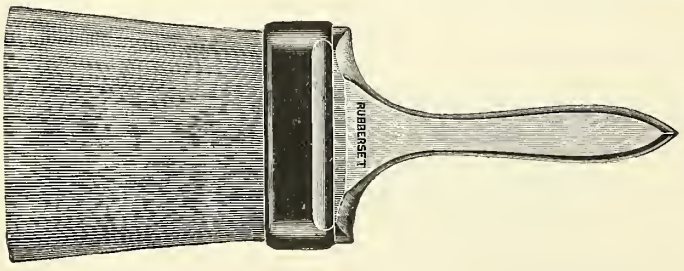


H. S. & Co.

No. 14 Star. Black casing, gray middle; a very serviceable brush, dozen..... $15.00

Flat Wall Brushes

RUBBERSET



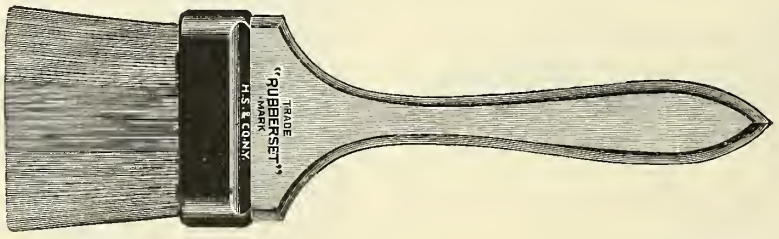
No. 133 Ex.

All white Russian bristle.

2½ inches wide, dozen	$15.70
3 inches wide, dozen	17.20
3½ inches wide, dozen	20.00
4 inches wide, dozen	23.50
4½ inches wide, dozen	26.80
5 inches wide, dozen	32.00
5½ inches wide, dozen	38.00

Bristle Flat Varnish

RUBBERSET



No. 123 Ex. Ex. Chisel Flat

Made of the best quality white boiled French bristles. The best chisel flowing brush.

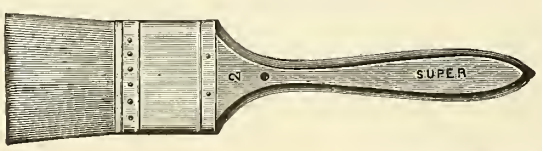
1 -inch, per dozen	$ 3.80
1½-inch, per dozen	5.20
2 -inch, per dozen	7.00
2½-inch, per dozen	9.40
3 -inch, per dozen	12.00
3½-inch, per dozen	16.00
4 -inch, per dozen	19.50

No. 54 Extra Chisel

Made of the best quality boiled French bristles.

1 -inch, per dozen	$3.30
1½-inch, per dozen	4.90
2 -inch, per dozen	6.50
2½-inch, per dozen	8.00
3 -inch, per dozen	10.00
3½-inch, per dozen	13.70
4 -inch, per dozen	16.80

H. S. & Co.



Chisel point, double thick, pure unbleached bristle.

Width, inches	1	1½	2	2½	3
No. EE, dozen	$1.20	1.74	2.40	3.30	4.60

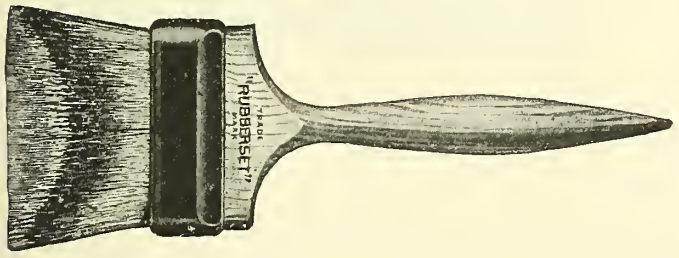
For complete line of Rubberset Brushes, ask for our special catalog.

Brushes

Flowing

RUBBERSET

Badger



No. 56 Single Thick Chisel

1 -inch, dozen	$5.76
1½-inch, dozen	7.92
2 -inch, dozen	9.60
2½-inch, dozen	12.00
3 -inch, dozen	15.00
3½-inch, dozen	22.80
4 -inch, dozen	26.40

No. 57 Double Thick Chisel

1 -inch, dozen	$6.60
1½-inch, dozen	9.48
2 -inch, dozen	10.98
2½-inch, dozen	13.44
3 -inch, dozen	16.96
3½-inch, dozen	25.24
4 -inch, dozen	28.80

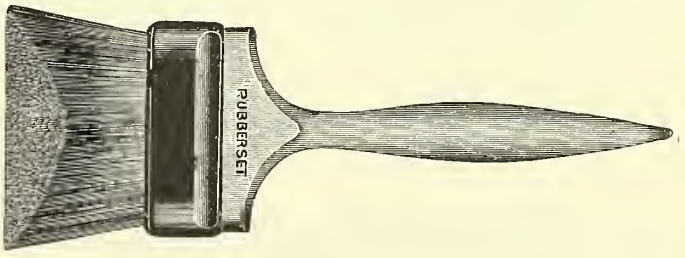
No. 59 Extra Quality Pure. Double Thick Chisel

1 -inch, dozen	$12.50
1½-inch, dozen	18.20
2 -inch, dozen	24.20
2½-inch, dozen	30.50
3 -inch, dozen	36.50
3½-inch, dozen	48.50
4 -inch, dozen	61.20

No. 59A Extra Quality Pure. Triple Thick Chisel. Piano Flowing

1 -inch, dozen	$20.50
1½-inch, dozen	28.10
2 -inch, dozen	37.00
2½-inch, dozen	48.10
3 -inch, dozen	63.00
3½-inch, dozen	73.50
4 -inch, dozen	84.40

Fitch



No. 60 Single Thick Square

1 -inch, dozen	$4.20
1½-inch, dozen	5.20
2 -inch, dozen	7.20
2½-inch, dozen	8.80
3 -inch, dozen	10.30

No. 61 Single Thick Chisel

½-inch, dozen	$4.00
1 -inch, dozen	4.50
1½-inch, dozen	5.90
2 -inch, dozen	7.50
2½-inch, dozen	9.10
3 -inch, dozen	10.50
3½-inch, dozen	15.84

No. 62 Double Thick Square

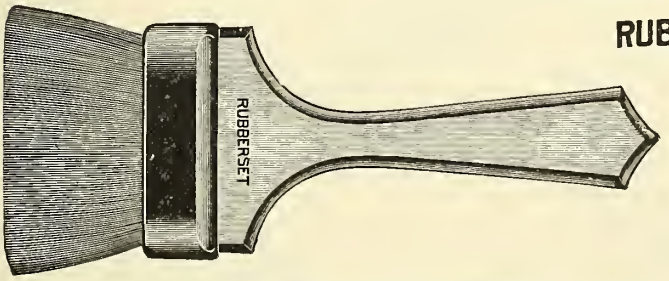
1 -inch, dozen	$4.62
1½-inch, dozen	6.18
2 -inch, dozen	7.68
2½-inch, dozen	10.50
3 -inch, dozen	12.20

No. 63 Double Thick Chisel (as illustrated)

½-inch, dozen	$3.80
1 -inch, dozen	5.00
1½-inch, dozen	6.80
2 -inch, dozen	8.70
2½-inch, dozen	11.00
3 -inch, dozen	12.70
3½-inch, dozen	18.48
4 -inch, dozen	23.00
5 -inch, dozen	28.00

Camel Hair Color

RUBBERSET



No. 68 Single Thick. Make Excellent Photographers Dusters

½-inch, dozen	$4.75
1 -inch, dozen	5.40
1½-inch, dozen	8.50
2 -inch, dozen	12.30
2½-inch, dozen	16.00
3 -inch, dozen	19.44
3½-inch, dozen	25.40
4 -inch, dozen	30.00
5 -inch, dozen	45.00

No. 69 Extra. Double Thick

1 -inch, dozen	$7.10
1½-inch, dozen	11.50
2 -inch, dozen	14.50
2½-inch, dozen	17.80
3 -inch, dozen	22.60
3½-inch, dozen	32.00
4 -inch, dozen	39.00
5 -inch, dozen	64.00

No. 69A Extra. Triple Thick

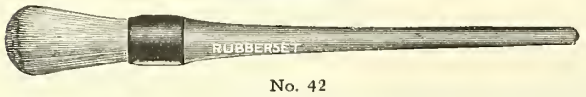
1 -inch, dozen	$10.50
1½-inch, dozen	16.50
2 -inch, dozen	22.00
2½-inch, dozen	26.50
3 -inch, dozen	34.50
3½-inch, dozen	42.50
4 -inch, dozen	50.00
5 -inch, dozen	84.00

For complete line of Rubberset Brushes, ask for our special catalog

Brushes

Sash Tools

RUBBERSET



No. 42

Hard rubber bound. Best all white bristle

Number	1	2	3	4	5	6	7
Diameter, inches	½	⅝	¾	⅞	1	1⅛	1¼
Dozen	$2.35	3.00	3.30	4.20	5.20	7.40	8.70

H. S. & Co.



No. 142

Wire ferrules. French bristle

Number	1	2	3	4	5	6	7	8	9	10
Dozen	$ .40	.44	.50	.56	.70	.80	.90	1.20	1.40	1.50

Marking

H. S. & Co.

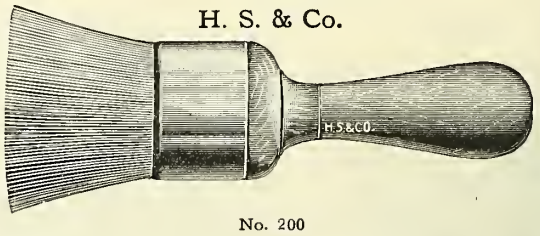


Round, extra quality French bristles, red polished handle

Number	1	2	3	4	5	6
Gross	$12.00	13.00	14.00	15.00	16.00	17.00

Stencil

H. S. & Co.



No. 200

All gray bristle, seamless steel ferrules. An excellent brush for all stencil uses.

Number	4	6	8	10	12
Diameter, inches	¾	1	1¼	1½	1¾
Length of bristle, inches	1	1¼	1⅜	1⅜	1½
Dozen	$1.40	1.90	2.50	3.30	4.10

No. 300

Pure Fitch Hair. Bound in zinc. Soft, elastic hair, suitable for all lacquer stencil work.

Number	1	2	3
Dozen	$3.00	4.50	6.00

RUBBERSET

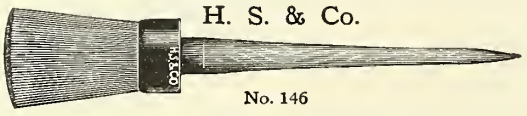
No. 102

Hard rubber bound; all black bristles.

Number	0	1	2	3	4
Diameter, inches	⅞	1	1⅛	1¼	1½
Dozen	$4.10	4.80	5.64	6.90	8.50

Round Glue

H. S. & Co.



No. 146

All gray bristles, iron ferrule pinned to handle

Number	0	1	2	3	4	5	6
Diameter, inches	1⅞	1¾	1 9/16	1 7/16	1 5/16	1 3/16	1 1/16
Regular, dozen	$14.00	13.00	11.50	8.50	7.00	6.00	5.00

RUBBERSET

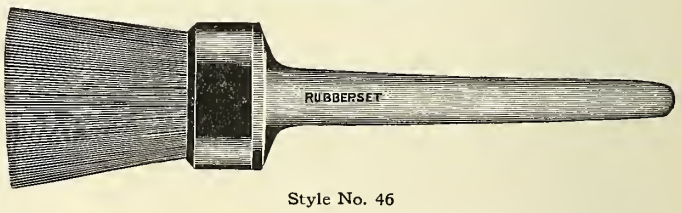


Style No. 96

An excellent brush for small glue or paste work. All gray bristles.

Size Number	Diameter Inches	Dozen
0	¼	$2.10
1	½	2.40
2	⅝	2.80
3	¾	3.20
4	⅞	3.80
5	1	5.10
6	1⅛	6.00
7	1¼	7.90

RUBBERSET



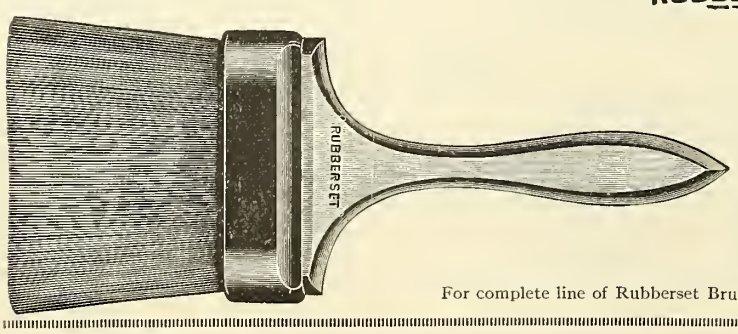
Style No. 46

Gray Russian bristles. For bookbinders, paper box, furniture, piano and casket manufacturers and cabinet makers.

Size Number	Diameter Inches	Bristles out of Ferrule Inches	Dozen
1	1¼	2½	$6.90
2	1½	2⅝	9.50
3	1¾	2¾	10.80
4	2	2⅞	16.50
5	2¼	3	19.20
6	2½	3⅜	28.50
7	2¾	3¾	33.00
8	3	4¼	47.00
9	3⅜	4⅜	82.50
10	4	4½	120.00

Flat Glue or Paste

RUBBERSET



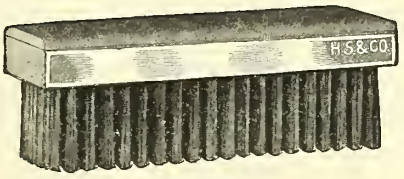
No. 45 Gray Russian Bristles

Inches	Bristles Out of Ferrule Inches	Dozen
2½	2⅝	$10.80
3	2⅞	12.00
3½	3⅛	14.18
4	3¼	16.32
4½	3⅜	18.36
5	3½	20.40
5½	3⅝	23.94

For complete line of Rubberset Brushes, ask for our special catalog

Steel Wire Brushes

H. S. & Co.



No. 1780

Made from fine drawn steel wire for removing paint and varnish from surfaces to be refinished.

Number	Block Inches	Rows of Wire	Length of Wire Inches	Dozen
1780	7¼x2¼	6x19	1¾	$6.00
2816½	7 x2¼	6x14	2¼	8.00



No. 1777 Nos. 1784, 1781

Adapted for cleaning architectural iron work, figured brass and bronze castings. Extensively used for pattern and braziers work; also as a file cleaning brush.

Especially adapted for metal and painted surfaces where a narrow faced brush is required.

Number	Style Handle	Rows of Wire	Length of Wire	Dozen
1777	Bent	3	1¼	$4.00
1781	Shoe	4	1⅛	5.85
1784	Shoe	2	1⅛	3.75



Made of extra fine scratch brush wire (.0055) and designed for fine cabinet and furniture work; and for hand scratch brushing metal finishes. May be used freely on either wood or metal without fear of scratching.

Bent handle, wire drawn.

Total length 12 inches. Length of brush part 5½ inches. Wire 1 inch long.



No. 1778



No. 177

A heavy, full brush made from specially tempered round steel wire; suitable for cleaning metal surfaces of all kinds; also extensively used for cleaning exterior work on stone, brick, terra cotta and rough painted surfaces. The heaviest and most serviceable brush made.



"Painters Friend"—No. 1779

Short trimmed, very full and stiff; made of round tempered steel wire. Particularly recommended in connection with paint and varnish remover for removing varnish and wax from hardwood floors and for cleaning and preparing flat varnished or painted surfaces for refinishing. It leaves the cleaned surface in a smooth condition without roughing the wood; it takes the place of sandpaper, mineral wool and all other abrasives—works faster and lasts longer.

Number	Block Inches	Rows of Wire	Length of Wire Inches	Dozen
177	7⅝x2½	5	1⅝	$8.75
1779	7 x3	9	1¼	8.75

No. 1778

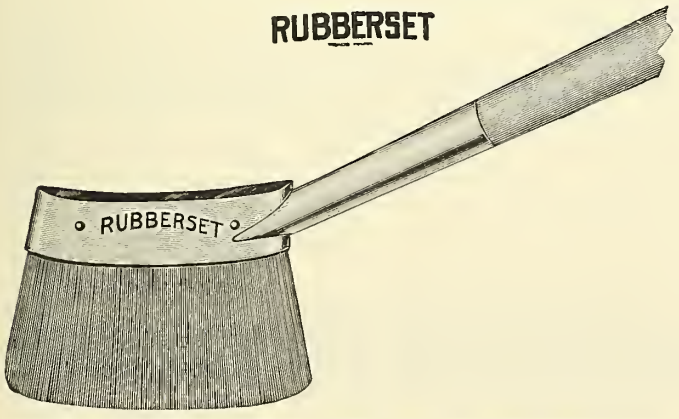
For cleaning mouldings and in applying preparation for removing paints, varnish, etc. They will also be found a handy house brush for removal of dirt and grease from stoves, etc.

Block is 2⅜x1⅛ inches, 6 rows of wire, 2½ inches long, dozen $4.50

Platers

Number	Rows	Width Inches	Dozen
0250	2	⅝	$5.00
0251	3	⅞	6.50
0252	4	1⅛	8.50
0253	5	1⅜	10.50
0254	6	1⅝	13.00
0256	8	1⅞	16.00

Automobile Cleaning Brushes



Hatchet shape with long handles. Made of extra stiff Russian bristles held in a nickel ferrule by hard rubber.

Invaluable for removing oils, greases and dirt from gasolene engines of automobiles, boats or aeroplanes.

Excellent for washing and cleaning chassis and remote parts of vehicles that cannot be reached with an ordinary brush.

Can be used in gasolene, kerosene oil or water.

No. 116 Dozen..... $11.58

Sash Tool Style

Made with very stiff, harsh bristle. Excellent for cleaning grease and dirt from all metal parts.

No. 100 Dozen..... $5.20

Spark Plug



A combination wire and bristle brush for cleaning spark plugs.

The stiff fine wire for cleaning off soot, carbon, grease, etc.

The bristle tuft at end of brush for the finer parts.

Two stiff flat steels are furnished with every brush for cleaning out those parts of the plug ordinarily inaccessible.

Indispensable to the auto.

Put up in individual boxes.

No. 999S Dozen..... $3.00

Chain and Gear



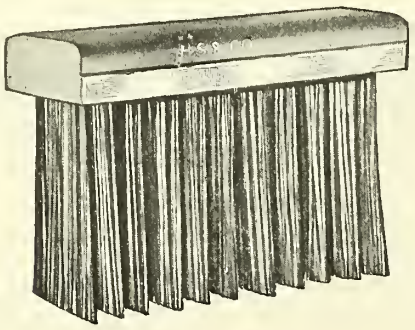
These brushes are made from fine tempered steel brush wire especially for cleaning gears and dirt from the different parts of automobiles. Well finished and handy to carry with the automobile kit to which they are indispensable.

Number	Rows		Trim Inch	Dozen
285	1	Black Chinese bristle	⅞	$1.10
286	2	Black Chinese bristle	⅞	1.45
287	3	Black Chinese bristle	⅞	1.85

Steel Wire Casting Brushes

Solid Block

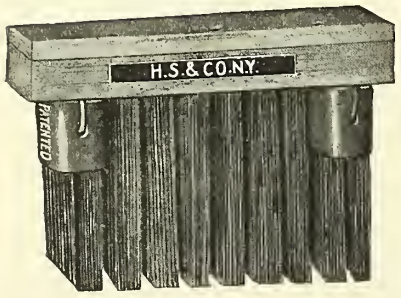
For Brushing and Cleaning Castings



Made of flat tempered steel wire with solid backs; that is, without the separate cover or veneer which sometimes breaks or works loose.

Number	Rows	Wire, Inches	Block, Inches	Dozen
91	4x10	2	7¾x2¼	$3.00
92	4x10	3	7¾x2¼	3.40
93	4x10	4	7¾x2¼	3.60
94	4x10	5	7¾x2¼	3.50
95	5x10	2	7¾x2⅝	4.25
95½	5x10	2½	7¾x2⅝	3.50
96	5x10	3	7¾x2⅝	3.75
97	5x10	4	7¾x2⅝	4.20
98	5x10	5	7¾x2⅝	5.00
99	5x10	6	7¾x2⅝	6.00

Rice Patent Bridled



Made of flat tempered steel wire

This brush contains more wire than is used in any plain casting brush. The end rows are protected by patent bridles attached to the block by reciprocal holders, which permit the bands to move, conforming to the action of the wire when the brush is in use. These bands prevent the breaking of the wires by minimizing the vibration.

Number	Row	Wire, Inches	Block, Inches	Dozen
23	4	4	7½x2⅜	$4.50
24	4	5	7½x2⅜	5.00
27	5	4	7½x2⅝	5.00
28	5	5	7½x2⅝	5.50
29	5	6	7½x2⅝	6.25

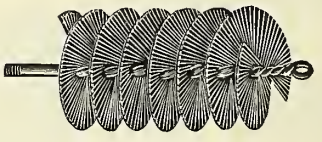
Round



Made of flat tempered steel wire.
Round wire casting brushes adapted for cleaning cast-iron car wheels, etc.

No. 10 Block 3-inch diameter, length of wire 5 inches, dozen... $4.75
No. 11 Block 3-inch diameter, length of wire 6 inches, dozen... 5.00

Wire Flue Brushes

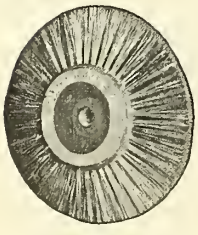


No. 192

No. 192 Flat wire, single spiral, 1 to 6 inches long, per inch.... $ .40

Bristle Wheel Brushes

List Per Dozen Brushes



Converging Shape



Upright Shape

Number	Diameter Inches	Rows	Block Diameter Inches	White Bristle: Extra Stiff	White Bristle: Stiff	White Bristle: Medium Stiff	Black Bristle: Extra Stiff	Black Bristle: Stiff	Black Bristle: Medium Stiff	White Mane Hair	Soft White Goat Hair
1152	1½	2	⅝	$3.00	$2.65	$1.75	$2.55	$2.20	$1.60	$2.60	$2.80
1153	1½	3	⅝	4.45	3.40	2.70	3.50	2.80	2.40	3.50	3.85
1154	1½	4	⅝	5.60	4.90	3.50	4.40	4.00	3.15	5.00	5.50
1155	1½	5	⅝	7.00	6.25	4.40	5.60	4.90	4.00	6.45	6.80
1156	1½	6	⅝	8.45	7.50	5.30	6.80	6.10	4.70	7.75	8.20
1202	2	2	⅞	3.30	2.80	2.10	2.90	2.50	1.90	2.80	3.05
1203	2	3	⅞	4.90	4.50	3.05	4.00	3.40	2.70	4.35	4.70
1204	2	4	⅞	6.55	5.60	4.00	5.30	4.40	3.60	5.85	6.35
1205	2	5	⅞	8.20	7.00	4.70	6.55	5.60	4.20	7.50	8.00
1206	2	6	⅞	10.00	8.45	5.65	8.00	6.80	5.00	8.90	9.65
1252	2½	2	1	4.70	3.50	2.35	3.90	2.95	2.25	3.75	4.10
1253	2½	3	1	6.20	5.30	3.25	5.30	4.20	3.15	5.60	6.20
1254	2½	4	1	7.20	5.85	4.10	6.00	4.70	3.80	6.40	6.80
1255	2½	5	1	8.80	7.25	4.90	7.00	5.85	4.40	8.20	8.55
1256	2½	6	1	10.50	8.90	5.85	8.45	7.15	5.30	9.40	10.00
1302	3	2	1½	5.85	4.10	3.30	4.90	3.50	2.95	4.25	4.70
1303	3	3	1½	8.75	6.10	4.70	7.00	5.30	4.20	7.00	7.70
1304	3	4	1½	11.75	8.20	6.45	9.40	6.55	5.60	9.40	10.50
1305	3	5	1½	14.65	10.50	8.20	11.70	8.75	7.00	11.70	12.85
1306	3	6	1½	17.55	12.90	7.00	14.10	10.55	8.20	14.10	15.85
1352	3½	2	2	7.00	4.70	4.25	5.60	4.30	3.75	5.20	5.85
1353	3½	3	2	10.50	7.00	6.10	8.45	6.30	5.30	8.20	9.00
1354	3½	4	2	14.10	9.40	7.00	11.25	8.20	6.40	10.50	11.75
1355	3½	5	2	18.75	14.05	9.40	15.00	11.70	8.45	14.65	16.05
1356	3½	6	2	22.25	17.00	11.70	17.80	14.10	9.40	18.05	19.90

State size arbor hole required.

SEE DISCOUNT SHEET

Manual Training Knives

H. S. & Co.

All Knives on this page are made of finest crucible tool steel, are accurately ground and finely finished. They are carefully and thoroughly tempered and handles are shaped to give a firm yet easy grip. Fully warranted. We have carefully studied every detail of these goods and have embodied all points of value gained in our experience since 1848 in supplying tools and equipment to schools, colleges and institutions.

Sloyd



Nos. 6 and 7



No. 7A



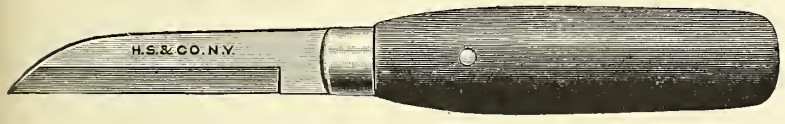
Swedish "A"



No. 8

These Knives have shank running through handle and riveted on end.

No. 6	2¾-inch blade, dozen	$5.00
No. 7	2½-inch blade, dozen	4.35
No. 7A	2½-inch blade, dozen	4.35
Swedish "A"	2½-inch blade, dozen	2.40
No. 8	2⅜-inch blade, dozen	3.65



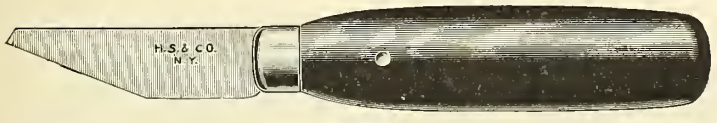
Style C

Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

1⅝-inch blade, dozen $4.50

(Specially adapted for kindergarten use.)

2½-inch blade, dozen $5.40



Style D

Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

2-inch blade, dozen $4.20



Style G

Carvers



No. 1



No. 2



No. 3

Particular attention is called to the No. 3 Knife, as it is the proper "shape" and size best adapted for chip carving.

No. 1	Extra quality, 2½-inch blade, dozen	$3.00
No. 2	Extra quality, 1¾-inch blade, dozen	2.40
No. 3	Extra quality, 2¼-inch blade, dozen	4.20



Style E

Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

1⅝-inch blade, dozen $4.00

(Specially adapted for kindergarten work)

2-inch blade, dozen $4.50



Style F

Blades are riveted into handles, preventing any looseness or possibility of ever coming out. Heavy nickel-plated oval ferrules, oval rubberoid finish handles, closed ends adding stiffness to blades and attached so they cannot come off.

2-inch blade, dozen $3.45

Stencil



Style E-1

Blade is 1 inch long by ¼ inch wide.

Dozen $2.85

Handle is stained wood, 6¼ inches long. Blade is 4¾ inches long by ¼ inch wide.

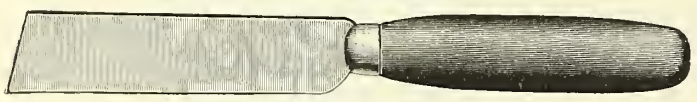
Dozen $4.50

Knives

H. S. & Co.

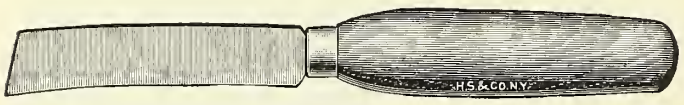
These Knives are made of the best crucible tool steel, correctly shaped, tempered and ground for the purpose. Handles are shaped to give a firm grip and each knife is finely finished.

Wood or Leather



Square Point

No. 1 2⅝-inch blade, dozen $2.00
No. 2 3 -inch blade, dozen 2.00
No. 3 3½-inch blade, dozen 2.20
No. 4 4 -inch blade, dozen 2.40
No. 5 5 -inch blade, dozen 3.00
No. 76 3¾-inch blade, dozen 3.00
No. 78 5 -inch blade, dozen 4.50



Paring

No. 2 3-inch blade, dozen $2.00



Sharp Point

No. 2 3-inch blade, dozen $2.00
No. 79 3⅝-inch blade, heavy, dozen 3.00



Gothic Point

No. 3 3½-inch blade, dozen $2.00

Felt

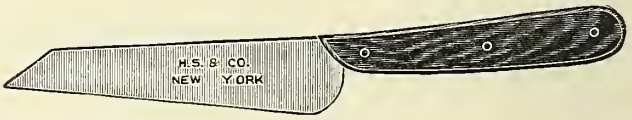


Hollow Ground

No. 63 Hollow ground 6-inch blade, dozen $14.40



No. 63A 5½-inch blade, especially adapted for cutting large pieces of felt and cloth of any thickness, rare tropical wood handle, dozen $18.00



No. 66 5-inch blade, dozen $19.20



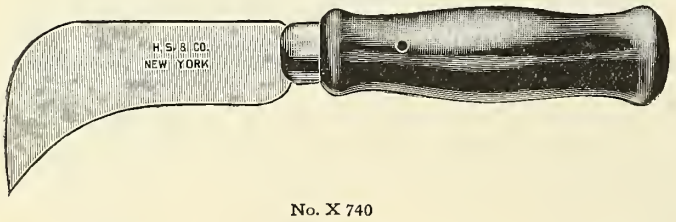
No. 66A Hollow ground, 6½-inch blade, especially adapted for fine, accurate cuttings, such as damper wedges, etc., rare tropical wood handle, dozen $15.60



No. 67C Tuners, 2 -inch blade, dozen $5.28
No. 67D Tuners, 2½-inch blade, dozen 6.24

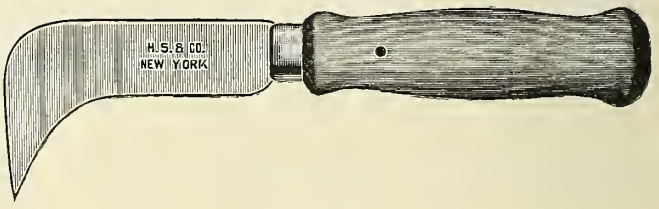
Linoleum or Oilcloth

These knives are all made of the best quality of crucible steel, finely and correctly tempered, polished and ground



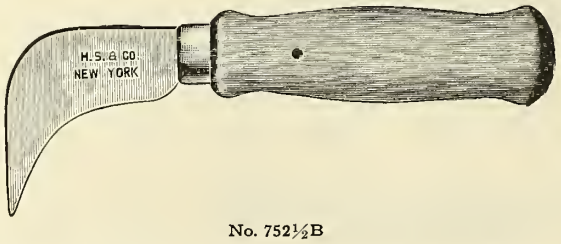
No. X 740

With round rubberoid finish handle, extra fine quality steel blade, 3½ inches long, round, closed end, nickeled ferrule, dozen $6.75



No. 752B

With burnt wood handle, nickel ferrule, 3½-inch blade, dozen.. $4.50

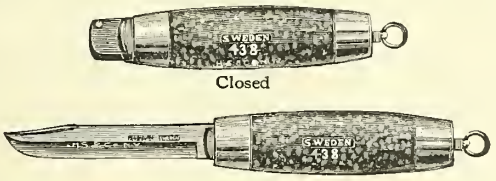


No. 752½B

With burnt wood handle, nickel ferrule, 2½-inch blade, dozen.. $4.50

Folding or Hunting Knives

Swedish



Closed

Open

Blades are made of finest quality crucible tool steel, heavily designed so as to give good service. Opened and closed quickly by spring, operated by ring in end of handle. Handles are selected mottled Swedish birchwood.

No. 2 2¾-inch blade, dozen $11.25
No. 3 2½-inch blade, dozen 10.50

Chipping or Hacking Knives



No. 321 Blades are 4½, 5 or 6 inches in length, dozen..... $5.00

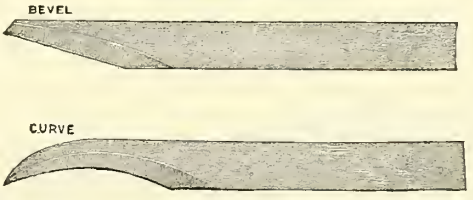
Bench Knives and Blades

Dexter



Made of highest grade steel, polished, correctly shaped. Parallel jaws. All parts interchangeable.

Styles of Points

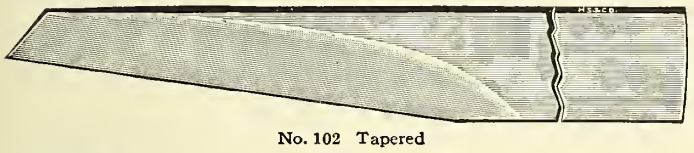


No. 2 Complete with blade, dozen $7.00
Extra blades, 4¾ inches long, 23/64 inch wide, dozen 2.00
Always supplied with bevel blade unless otherwise specified

Knife Blades

All Blades are fully warranted against any imperfections. Made of the finest quality English steel, hand-forged and carefully tempered

Shirt or Cloth



No. 102 Tapered

Full length, inches	9	11
Width, inch	9/16	9/16
Dozen	$3.00	3.00

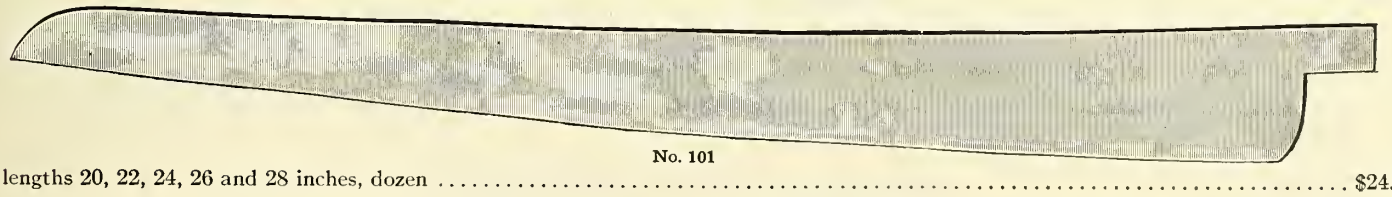
Mat



No. 103 Square Point

Full length, inches	9	11
Width, inch	9/16	9/16
Dozen	$3.50	3.50

New York Pattern, Cloth or Slot



No. 101

In lengths 20, 22, 24, 26 and 28 inches, dozen $24.50

Knife Handles

These Handles are made of composition metal, warranted not to corrode, and will not discolor the hands of operators. They are highly finished, full nickel-plated, double screw black ebony trimmings

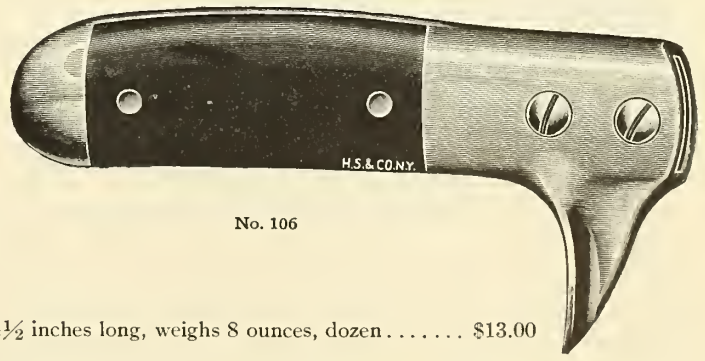
Shirt or Mat



No. 104

4½ inches long, weighs 5½ ounces. Made with 5/8-inch slot to take a 9/16-inch blade, dozen $9.00

Cloth or Slot



No. 106

4½ inches long, weighs 8 ounces, dozen $13.00

Feather Knives



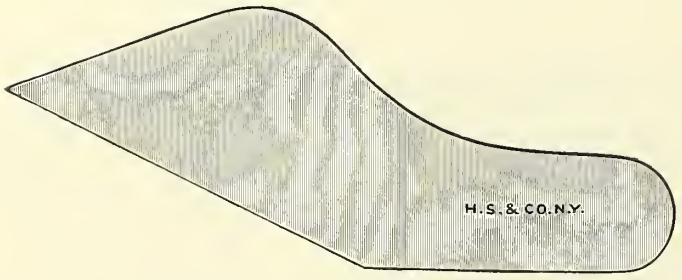
6½ inches overall, 2¾-inch blade, rubberoid finish handle, dozen $4.50

Feather Curlers



6½ inches overall, 2½-inch blade, rubberoid finish handle, dozen $4.50

Furriers Knives



Overall, inches	5	5½	6	6½
Cutting edge, inches	3	3	3⅜	3½
Dozen	$7.00	7.00	7.00	7.00

Furriers Combs

Steel



6½ inches long overall, $1\frac{1}{16}$ inches wide.

Number	½	1	2	3	3½
Teeth to the inch	12	14	16	18	20
Depth of teeth, inch	$\frac{11}{32}$	$\frac{5}{16}$	¼	$\frac{9}{32}$	$\frac{7}{32}$
Dozen	$6.00	6.00	6.00	6.00	6.00

No. 6 Steel Handle

8 inches long overall, 1¼ inches wide.

Toothed 4¼ inches, handle 3¾ inches, 9 teeth to the inch, ⅝-inch deep, dozen $7.80

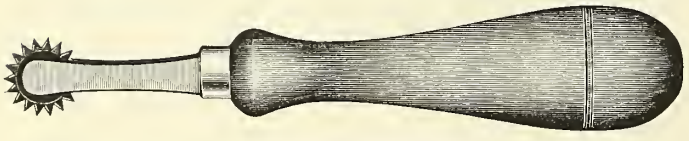
No. 5 Combination

6¾ inches long overall, 1¼ inches wide; ½ has 11 teeth to the inch, $\frac{9}{16}$ inch deep; ½ has 14 teeth to the inch, ½ inch deep.

Can also be furnished with all coarse or all fine teeth, if desired.

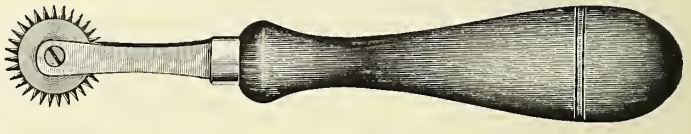
Dozen $7.80

Tracing Wheels



No. 1 With White Handles

The wheel is ¾ inch in diameter and has 18 teeth, making them rather coarse. 6¾ inches in length overall, dozen $2.50

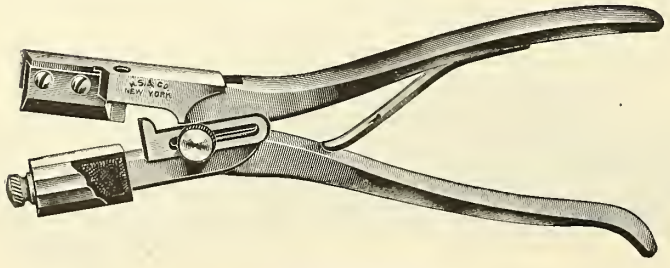


No. 2 With Rosewood Handle

The wheel is 1 inch in diameter and has 32 teeth, making them very fine and pointed. 6¾ inches in length overall, dozen .. $4.50

Button Hole Cutters

Bauer Pattern

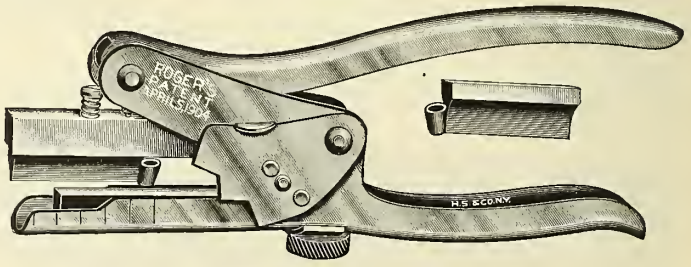


No. 100 Revolving

9⅝ inches in length overall, polished handles, dozen $24.00

Extra knives, cylinders, thumb-screws, tubes, gauges or springs, dozen 3.00

Rogers



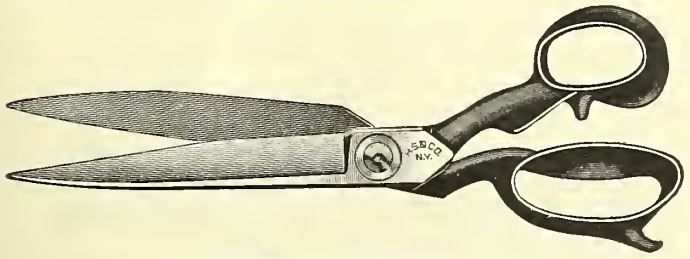
7 inches in length overall.

Has a reversible blade which can be adjusted without the aid of any tools. This allows the tailor to cut button holes with perfect oblong-shaped eyelet or the hole in lapel of the coat with absolute assurance that it will not cut the edge or any part not desired.

Nickel-plated, dozen $30.00

Tailors Shears

Genuine Heinisch



Japanned Handles with Brass Bolt and Nut

Right-hand

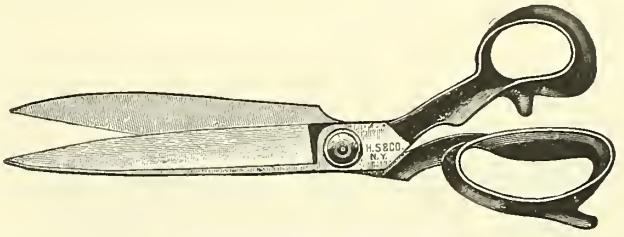
Number	3	3½	4	4½	*5	6
Length overall, inches	12	12¼	12¾	13	13	13¾
Pair	$3.50	4.00	5.00	6.00	8.00	9.00
Number	7	8	9	10	11	12
Length overall, inches	14	14¼	14¾	15¼	15¾	16¼
Pair	$10.00	11.00	12.00	13.00	14.00	15.00

*Heavy.

Left-hand

Number	3	5	8
Length overall, inches	12	13	14¼
Pair	$4.50	8.00	12.00

Reliance

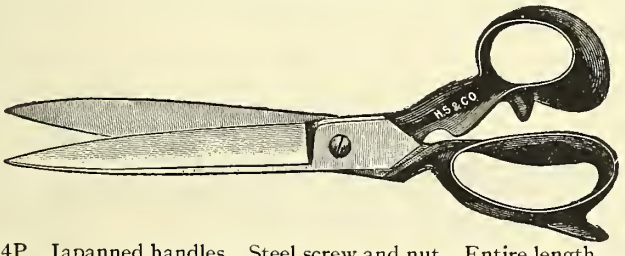


Japanned Handles, Right Hand

Number	1R	2R	3R	3½R	4R	4½R
Length overall, inches	10¾	11¾	12	12½	12¾	13
Pair	$2.75	3.00	3.50	4.00	5.00	6.00

Tailors or Carpet Shears

H. S. & Co.

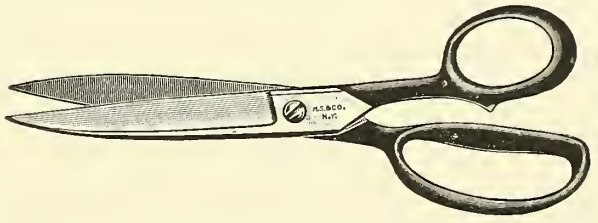


No. 4P Japanned handles. Steel screw and nut. Entire length 12½ inches, pair $3.00

No. 4P Ball Bearing. Japanned. Entire length 12½ inches, pair 4.00

Rubber Shears

H. S. & Co.



Japanned Handles, Nickel Blades. No. 43

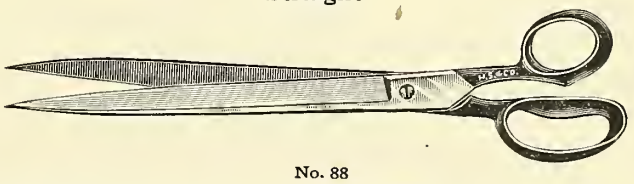
A strong tool for heavy work, shaped to the hand of operator to allow continual use without tiring the wrist.

Length overall, inches	8½	9½
Dozen, plain screw	$19.00	25.00
Dozen, screw and nut	23.00	27.00

Bankers or Paper Shears

H. S. & Co.

Straight



No. 88

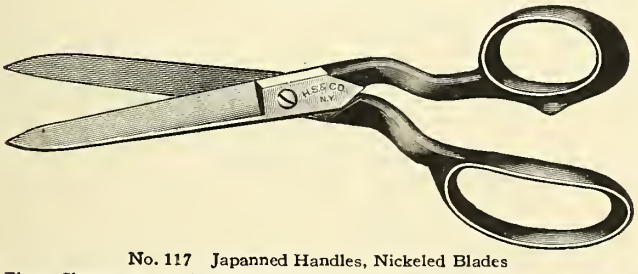
Straight japanned handles, nickel blades.

Length overall, inches	10	11	12	13	14
Dozen	$27.00	31.00	34.00	38.00	44.00

Hatters Shears

Trimming or Edging

H. S. & Co.



No. 117 Japanned Handles, Nickeled Blades

These Shears are used extensively in hatting shops, also in hatters' finishing rooms, to clean the brim of both soft and stiff hats.

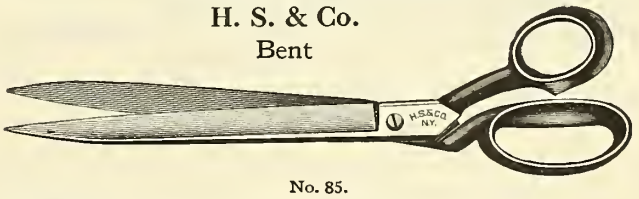
When specially ordered, handle and blade are reversed, for use by rug makers

Lengths overall, 9 inches, dozen $36.00

Paper Shears

H. S. & Co.

Bent



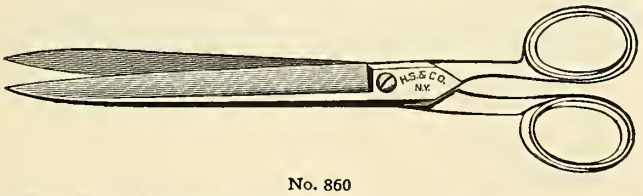
No. 85.

Bent japanned handles, nickel blades, length overall 12 inches, dozen $36.00

Paper Shears

With Ring Handles

H. S. & Co.

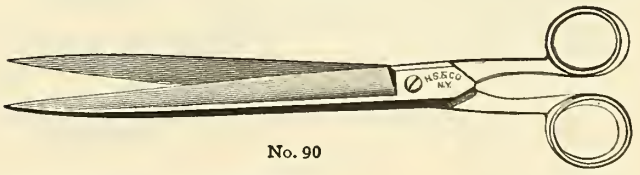


No. 860

Ring handles, full nickel-plated, length over all 10 inches, dozen, $27.00

Coupon or Desk Shears

H. S. & Co.



No. 90

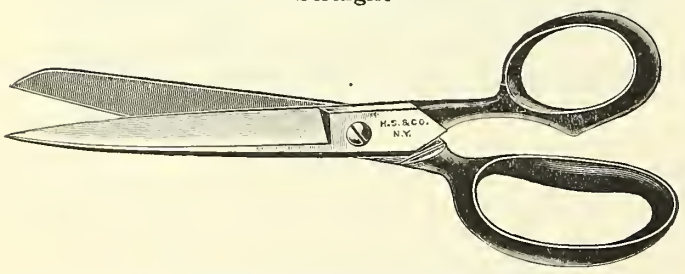
Ring handles, full nickel-plated.

Length overall, inches	8	9
Dozen	$17.00	21.00

Trimmers

H. S. & Co.

Straight



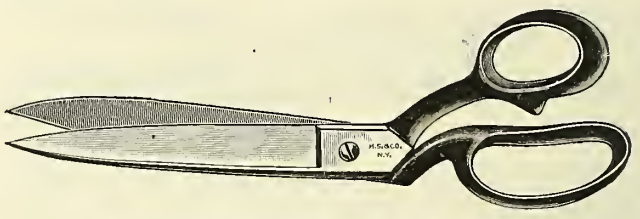
No. 3 Japanned Handles. Nickel-Plated Blades

Length overall, inches	5	5½	6	6½	7	7½	8
Dozen	$13.00	13.00	13.00	14.00	15.00	16.00	17.00
Length overall, inches		8½	9	10	11	12	13
Dozen		$18.00	21.00	27.00	31.00	34.00	38.00

Full nickel-plated, No. 13.

Length overall, inches	7½	8
Dozen	$16.00	17.00

Bent



No. 2 Japanned Handles. Nickel-Plated Blades

Length overall, inches	9	10	11	12	13
Dozen	$24.00	30.00	33.00	36.00	40.00

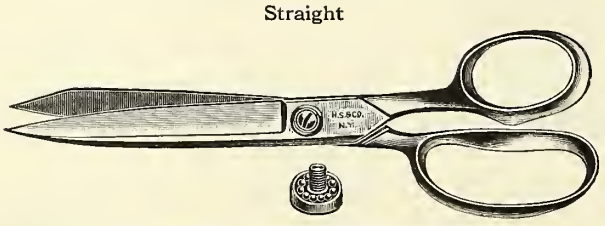
Full nickel-plated, No. 112.

Length overall, inches	9	10
Dozen	$24.00	$30.00

Ball Bearing

These Trimmers have no complicated devices to get out of order, being a practical cutting tool, with a frictionless ball bearing correctly applied. The screw acts simply as a lock, not as a tension support, and is so arranged that the blades are held firmly in their relative positions and there is no possibility of any loosening of the screw except by adjustment of operator.

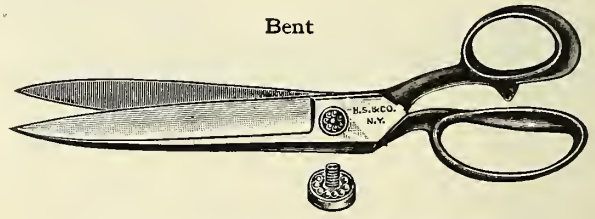
Straight



No. 61 Japanned Handles. Nickel-Plated Blades

Length overall, 8 inches, dozen $16.00

Bent

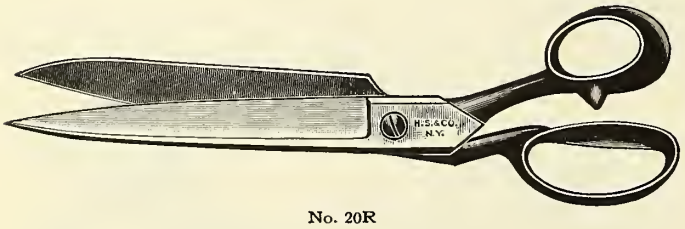


No. 51 Japanned Handles. Nickel-Plated Blades

Length overall, 8½ inches, dozen $20.00

Raised Blade

Bent



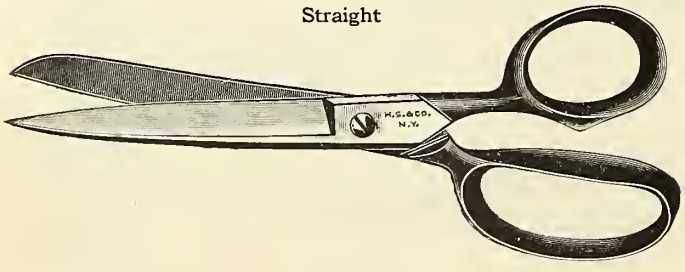
No. 20R

Extra heavy pattern, fitted with strong, durable steel screw and nut.

Length over all, inches	10	11	12	13	14
Dozen	$32.00	35.00	40.00	48.00	54.00

Left-Hand Handles with Right Blades. Japanned Handles, Nickel Blades

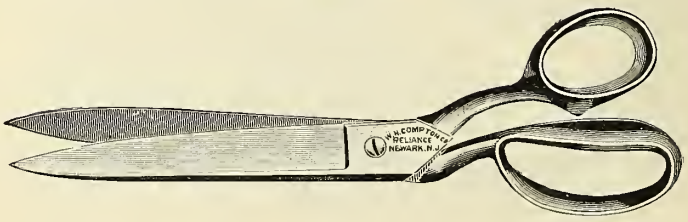
Straight



No. 3L

Length overall, inches	7	8	9	10
Dozen	$20.00	22.00	26.00	32.00

Bent



No. 2L

Length over all, inches	9	10	11	12	13
Dozen	$30.00	36.00	39.00	42.00	46.00

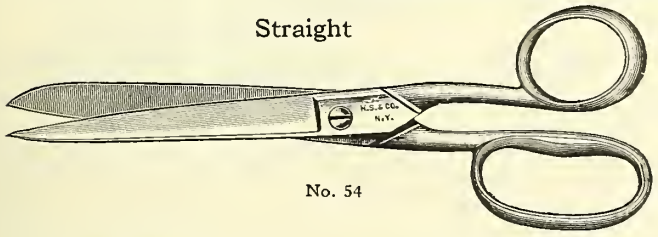
Trimmers

H. S. & Co.

Hand Forged. Solid Steel

Unquestionably, the finest finished and best adjusted Shears made

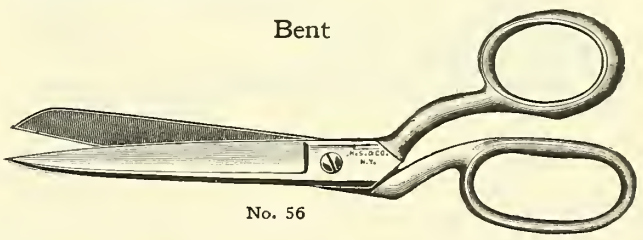
Straight



No. 54

Length overall, inches	6	6½	7	7½	8
Dozen	$12.00	13.00	14.00	15.00	16.00

Bent



No. 56

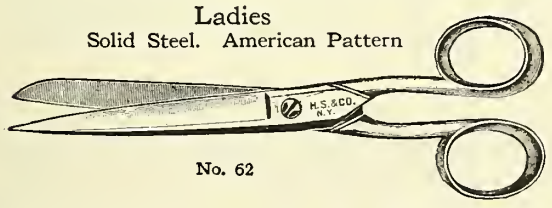
Length overall, inches	6	7	8	9
Dozen	$13.00	15.00	17.00	19.00

Hand Forged Scissors

H. S. & Co.

Ladies

Solid Steel. American Pattern

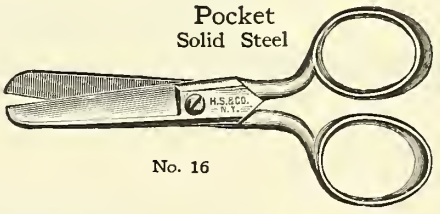


No. 62

Length overall, inches.	4	4½	5	5½	6	6½	7
Dozen	$11.00	11.50	12.00	12.50	13.00	14.00	15.00

Pocket

Solid Steel



No. 16

Length overall, inches	3	3½	4	4½	5	6
Dozen	$10.00	10.50	11.00	11.50	12.00	13.00

Imported

Ladies No. 1212

Length overall, inches	3½	4	4½	5	5½	6	6½	7
Dozen	$3.20	3.20	3.45	3.75	4.05	4.30	4.85	5.70

Imported

Pocket No. 1216

Length overall, inches	3½	4	4½
Dozen	$3.50	3.75	4.00

Ladies Double Pointed

Solid Steel. American Pattern

Same style as No. 25 shown below

No. 26

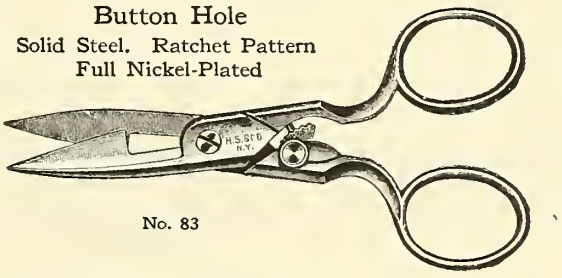
Length overall, inches	4½	5	5½	6
Dozen	$11.50	12.00	12.50	13.00

H. S. & Co.

Button Hole

Solid Steel. Ratchet Pattern

Full Nickel-Plated



No. 83

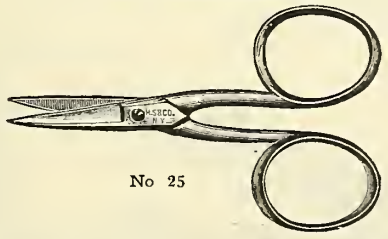
One of the most practical Scissors manufactured. The size of hole to be cut can be gauged accurately and quickly.

Length overall, inches	4¼	4¾
Dozen	$16.00	17.00

Embroidery

Solid Steel

Full Nickel-Plated



No 25

Length overall, inches	3	3½	4
Dozen	$10.00	10.50	11.00

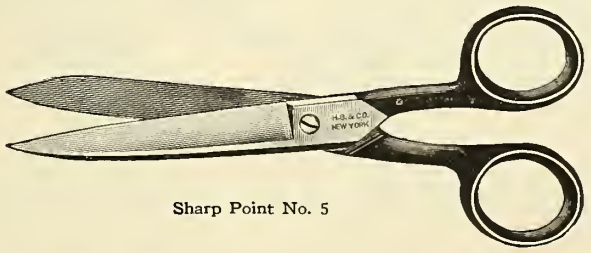
Imported

Button Hole No. 1750½

Length overall, inches	4¼
Dozen	$8.00

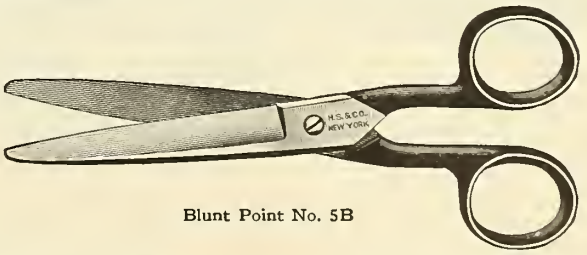
Manual Training Scissors

Japanned Handles. Nickel Blades



Sharp Point No. 5

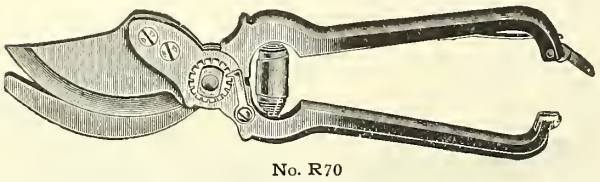
Length overall, inches	5	5½	6
Dozen	$11.50	12.00	13.00



Blunt Point No. 5B

Length overall, inches	5	5½	6
Dozen	$12.00	13.00	14.00

Pruning Shears



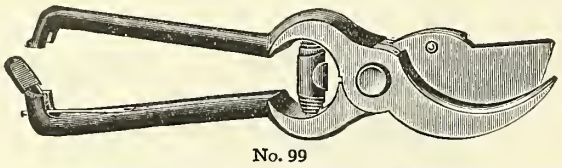
No. R70

Has ratchet nut which may be tightened whenever wear is evident, and the pawl slipped a notch or two ahead, thus always holding blades in firm adjustment. Straw-colored tool-steel blades of extra quality, correctly tempered. Volute spring. Removable blades.

9 inches overall, dozen $15.00

No. 50—Same style as No. R70, but is lighter in construction, has narrower blade and is without ratchet nut and removable blade features.

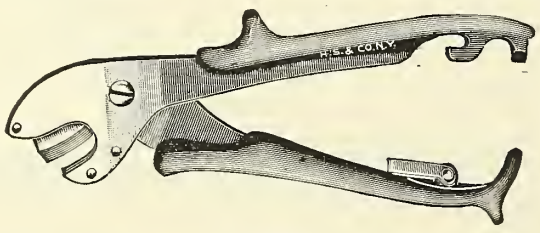
9 inches overall, dozen $6.75



No. 99

"The Buckeye," polished steel blades, tempered. Finely finished. Volute spring.

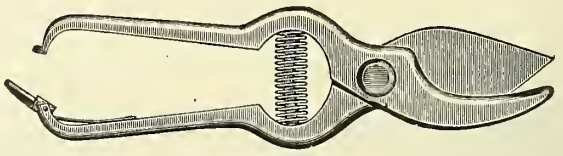
9 inches overall, dozen $15.00



The Levin

No. 23 7 inches overall. Cuts ½-inch dry oak. Weighs 7½ ounces, dozen $5.50

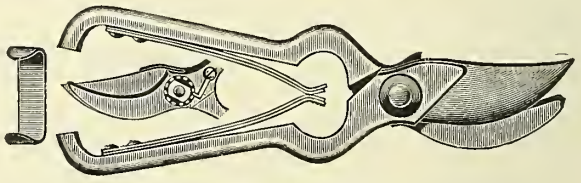
No. 24 9 inches overall. Cuts ¾-inch dry oak. Weighs 13 ounces, dozen 7.50



No 9

French pattern. Also known as California pattern. Full polished steel blades extra tempered. Spiral steel spring.

9 inches overall, dozen $12.00



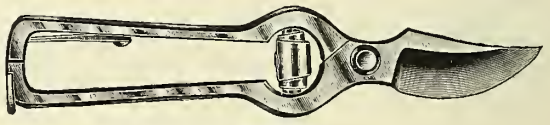
No. R85

Swiss pattern. Full polished, best quality crucible steel blades, tempered, ground convex; adjusting nut and regulating ratchet, longitudinal double brass spring removable handle-clip.

Made in three lengths: 8, 8½ and 9 inches. Specify size wanted.

Each shear individually boxed, with an extra blade, which practically doubles the life of the shear.

Dozen $21.00



No. 1011

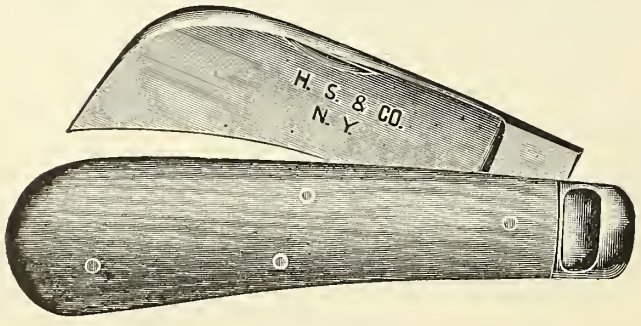
Drop-forged steel, full nickel-plated.

Length overall, inches	4¾	5½	6½
Dozen	$9.00	10.50	12.00

In addition to being first-class Pruning Shears, above Shears are used extensively by manufacturers of baskets and willowware.

Pruning Knives and Shears

Knife

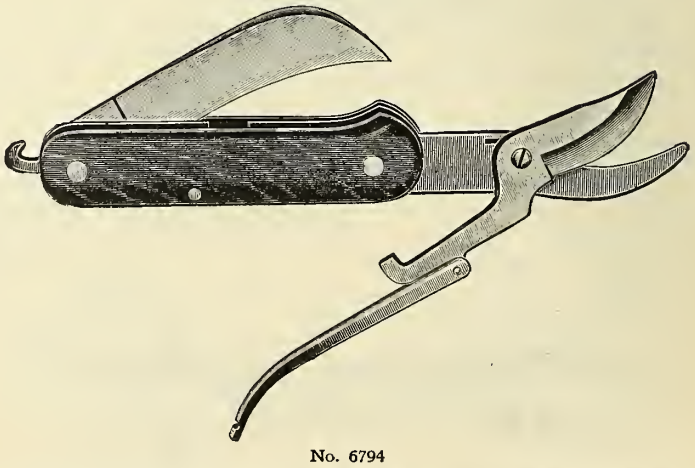


No. 43

7 inches overall when open. 3-inch blade. Rosewood handle, dozen $11.00

Genuine IXL, No. 256. 7½ inches overall when open. 3-inch blade. Horn handles, dozen 16.00

Combination



No. 6794

Shears and blades are of best quality shear steel and handles are cocobolo wood. Shears are guaranteed to be durable and practical.

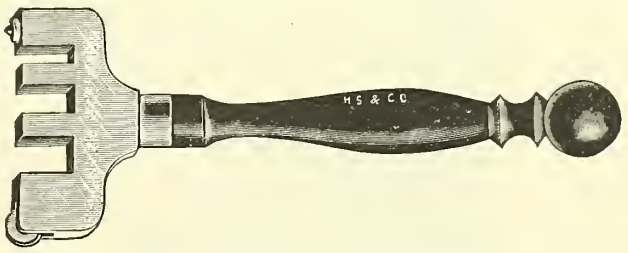
Dozen $42.00

Glaziers Diamonds

All Glaziers Diamonds listed on this page have been carefully selected and tested and are of the best quality. The diamonds can be reset at least three times.
To obtain the proper cut, hold the diamond as slanting as possible, raising it gradually until a smooth, sound and clear cut is made. Do not hold it perpendicularly—any diamond can be spoiled in one attempt to cut glass by being held this way. Never try to cut twice in the same place.



No. 1 Extra tulip key. For general use on ordinary glass, each $4.20
No. 2 Extra rosewood key. A very good diamond for general use, each 5.00
No. 3 Superior boxwood. Specially adapted to single and double-thick glass and where a diamond for heavy work is constantly required, each 10.00
No. 4 Plate-glass diamond. Specially adapted for general use. It is of best quality of diamond and large spark. For all kinds of work where an extra heavy diamond is required. Can be used when needed on single thick glass 13.35



Anyone can cut with this style, however inexperienced in glass-cutting, as it merely requires to be set on the glass and drawn over it to make a perfect cut.

No. 5 Sure-cut, each $4.20

Glass Cutters

Genuine "Red Devil"



Finest in the World. Hand-Honed Wheels.

No. 024 Dozen $1.20

H. S. & Co.



The turret contains six high-grade steel wheels, hardened and tempered and carefully tested.
The turret may be revolved on or clamped to the frame by the screw, the head of which appears on the reverse side of the tool from that shown in the cut.
This screw is slotted so that it may be operated by a screwdriver, thus enabling any of the cutters to be placed in position for use instantly.

The turret is held within a circular recess, which protects all of the cutters not in a position for use.
When desired, the turret may be removed, and new cutters inserted instantly and with ease. The axles are permanently secured to prevent their falling out while new wheels are being inserted.

No. 10 Rosewood finish handle, nickeled ferrule. Cutter head and revolving turret of steel, highly polished and nickeled, dozen $3.50

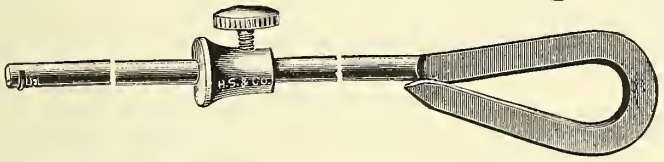


No. 2 Enameled wood handle. Metal parts nickel-plated, gross $12.00

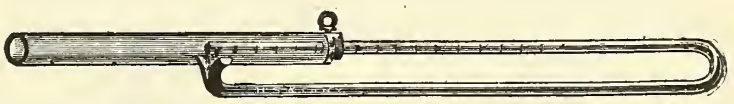


No. 30 Enameled wood handle. Metal parts nickel-plated.
2 cutters, dozen $2.00

Gauge Glass Cutters



No. 7 Nickel-plated, dozen $2.00

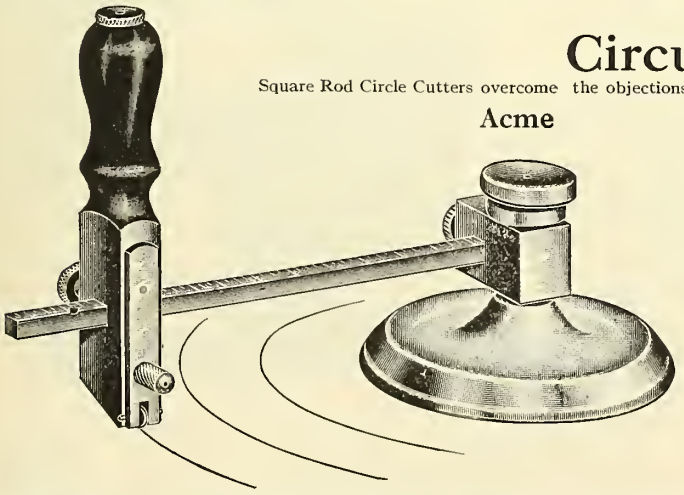


Chicago. Nickel-plated, each ..... $ .75

Circular Glass Cutters

Square Rod Circle Cutters overcome the objections to round rod cutters since the cutter head cannot turn on the rod

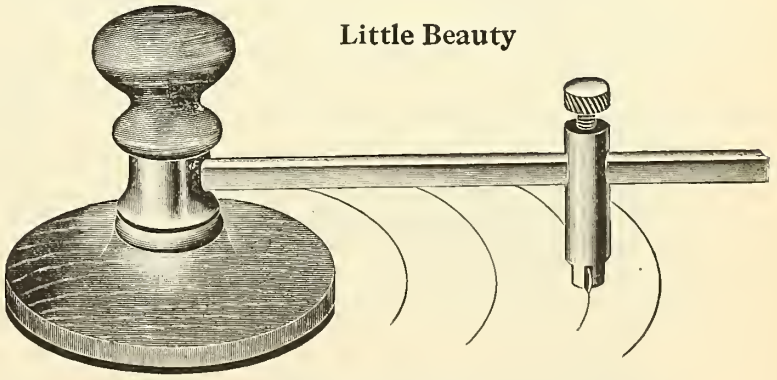
Acme



Nickel-plated. Thumb piece does not revolve. Interchangeable head for renewing cutters, secured firmly to 12-inch graduated rod marked with ⅛ inch. Movable base, instantly adjusted to measurements on rod from side of post. Rubber bottom. Cuts circles from 3 to 23 inches.
Complete with 12 extra wheels and axles.
Cutters with longer rods furnished at additional cost.

Each $5.50

Little Beauty



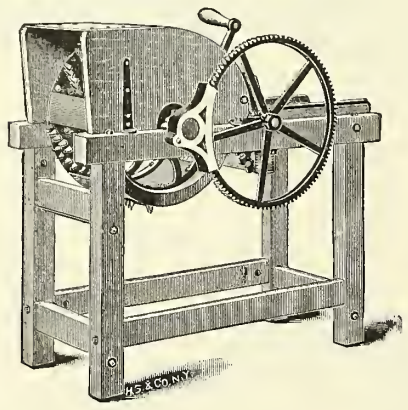
Parts nickel-plated. Hardwood base and thumb piece.

20-inch circle, dozen $3.50
40-inch circle, dozen 4.00

Hair Pickers

Champion

Hand Power Machine



These Pickers have been on the market since 1884, and having met with a favorable reception throughout the trade, have gained a reputation that place them far in advance of other machines.

They are strongly built, great care being taken to make all working parts as simple and durable as possible.

The frames are hardwood, securely put together with joint bolts. The journal boxes are lined with babbit metal. The teeth are held in place by iron plates attached to the wooden cylinder. The lags are bolted to iron flange wheels, adding additional strength and security to the cylinder.

The Hand Power Machines are operated by a handle placed at the side opposite the gearing, thus protecting the operator from accident from the revolving wheels. In addition to this precaution an iron guard covers the gearing of all machines, thus minimizing the danger of accident.

The Foot Power Machine is exactly the same as the hand power type except that handle is removed from right-hand side and a treadle action attached to each end of the wheel shaft.

The Belt Power Machines are built on the same general lines as the hand and foot machines, but somewhat heavier. Has steel shafts, endless feed bolts and tight and loose pulleys 3½x8 inches. The cylinder can make 400 revolutions per minute with absolute safety.

They are made to meet the demands of car builders, upholsterers, mattress makers, carriage makers, etc., where large quantities of moss, tow, curled hair, etc., are handled.

The "Special" Machines have two hackles instead of one, as in the "Regular," containing a greater number of teeth and are especially arranged for picking cotton and other materials extra fine.

Hand Power

Length, feet	4
Width, inches	19
Height, feet	3½
Circumference of cylinder, feet	5¾
Width of cylinder, inches	12
Weight crated for shipment, pounds	240
Regular Machine, 140 teeth, each	$30.00
Special Machine, 698 teeth, each	37.50

Foot Power

Length, feet	4
Width, inches	19
Height, feet	3½
Circumference of cylinder, feet	5¾
Width of cylinder, inches	12
Weight crated for shipment, pounds	240
Regular Machine, 140 teeth, each	$40.00
Special Machine, 698 teeth, each	47.50

Belt Power

Length, feet	4
Width, feet	3
Height, feet	3½
Circumference of cylinder, feet	5¾
Width of cylinder, inches	16
Weight crated for shipment, pounds	350
Regular Machine, 240 teeth, each	$65.00
Special Machine, 1000 teeth each	75.00
Regular, with Dust Blower Attachment, each	115.00
Special, with Dust Blower Attachment, each	125.00

Boston

Belt Power

This Picker, with the exception of the feed table, is made entirely of iron and steel.

A Solid Iron Cylinder, machine turned and accurately balanced, is used instead of the wood cylinder of the "Champion" Picker.

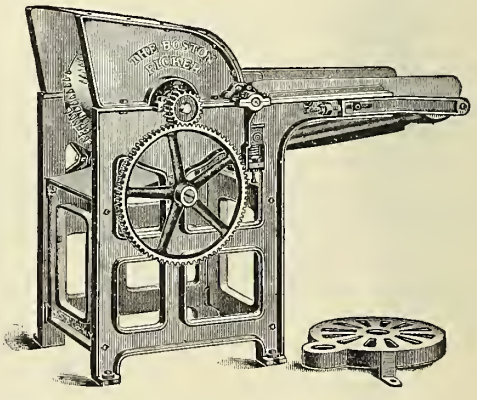
Crucible Steel Teeth, tempered and ground especially for this work, are also used.

The several gears are extra wide and heavy and are "cut" from solid blanks.

Guards are provided as a part of the machine to protect the operator against accident from the gearing or moving parts.

The machine is most solidly constructed and is mechanically perfect. It is capable of doing all the work for which much larger and more expensive pickers are ordinarily required.

Power, Regular Size, 16-inch width cylinder, each	$145.00
Power, Large Size, 20-inch width cylinder, each	185.00
Power, Regular Size, with Dust Blower Attachment, each	195.00
Power, Large Size, with Dust Blower Attachment, each	235.00

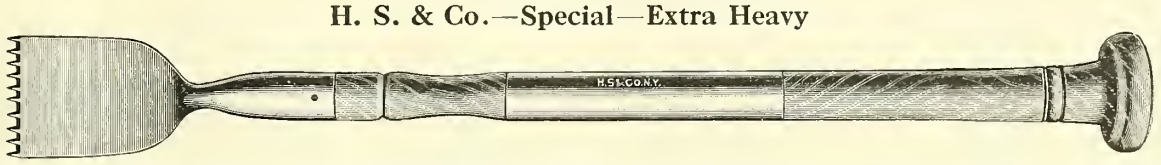


Circumference of cylinder, inches	46
Width of cylinder, inches	16
Width of picker, overall, inches	35
Length of picker, overall, inches	54
Height of picker, overall, inches	54
Weight of picker, crated, pounds	675
Number of teeth in cylinder and hackle	236
Power required, horse	2

The Boston Power Picker can also be built to order in larger sizes. Estimates furnished upon receipt of required dimensions and capacity

Carpet Stretchers

H. S. & Co.—Special—Extra Heavy



We call particular attention to this Stretcher, which we designed to meet the demand for a strictly first-class tool. It is made of forged steel, with extra strong teeth, has jointed hickory handle with lignum vitae head, 8-inch heavy brass tube ferrule and throughout is finished in the best possible manner. Length overall 32½ inches, length of longest joint 20½ inches.

Complete, as shown, each $6.00

Blades Only

For H. S. & Co. Special, each $4.20

The following are smaller, lighter stretchers, for amateur use.

No. 90 Straight, dozen 7.60

No. 90A Bent, dozen 7.60

Handles Only

For H. S. & Co. Special.

No. 4 Polished hickory, 1½x23 inches, 8-inch ferrule, each ... $1.80

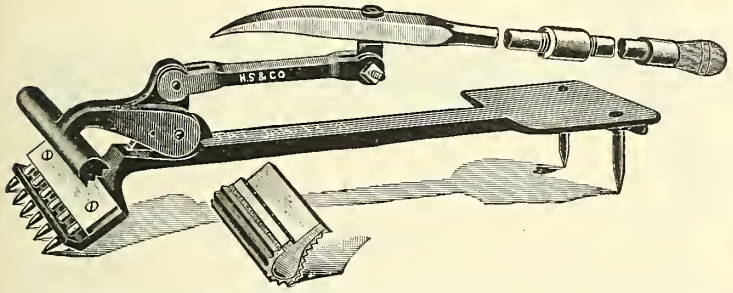
For lightweight blades.

No. 1 Polished maple, plain, 1¼x21 inches, per dozen 3.00

No. 3 Polished maple, jointed, 1⅜x21 inches, 6-inch ferrule, each 1.50

Carpet Vise and Stretcher

Anderson



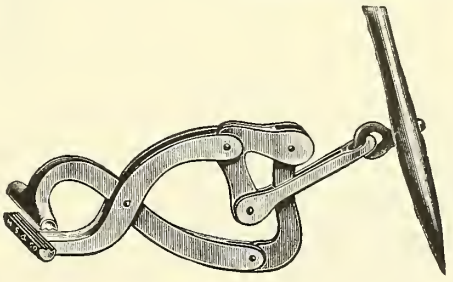
In addition to stretching carpets this Stretcher can also be used on oilcloth, linoleum, matting, etc., by placing the attachment shown in smaller illustration over the tooth-plate. This attachment is covered with corrugated rubber, which prevents slipping, and also prevents the teeth from leaving any marks upon the floor covering.

Complete, as shown, each $6.00

Toothed Blades only, each 1.20

Carpet Vises

Kelly Pattern



No. 2



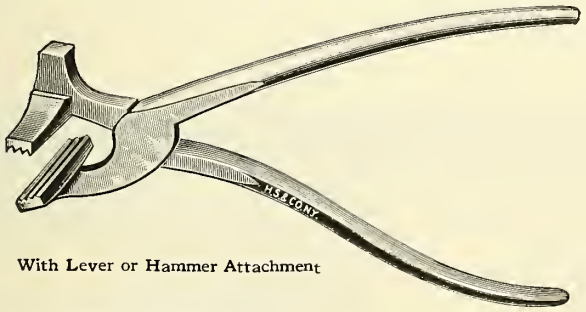
Showing Lever for No. 1

No. 1 Polished steel, with three-prong lever, each $4.80

No. 2 Polished steel, with single point lever, each 4.20

Webbing Pliers

H. S. & Co.



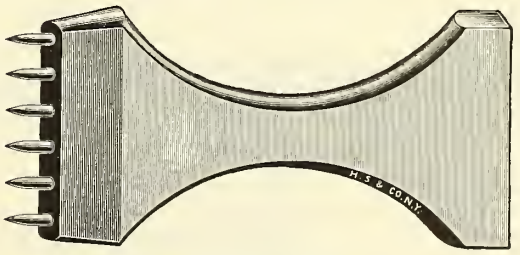
With Lever or Hammer Attachment

3-inch face, polished steel, each $1.50

3½-inch face, polished steel, each 1.50

Webbing Stretchers

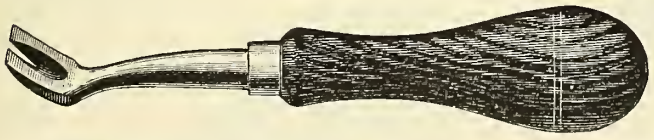
H. S. & Co.



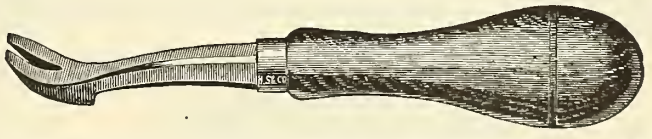
Finely finished maple handle, steel pins, dozen $5.00

Tack Claws

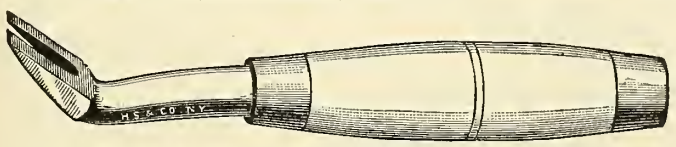
H. S. & Co.



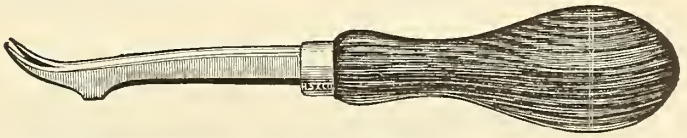
No. 122 Claw Tools, black handle, dozen $3.00



No. 124½ Rosewood handle, riveted. For heavy work, dozen . $6.00



No. 123½ Maple handle, iron bound ends, extra heavy and strong, dozen $9.00



No. 352 Cherry handle, best quality, dozen $3.75

Nail Pullers

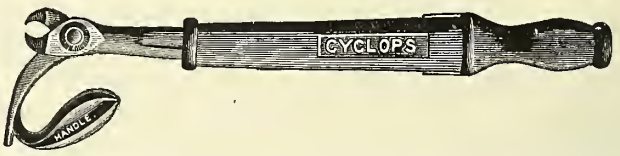
Morrill



The jaws and shank are drop-forged, of high-grade steel specially finished to prevent rust. The ram is best quality cast iron, finely japanned. The handle and hand guard on shank make it impossible to bruise or pinch the hand. The shank is centrally mounted within the foot instead of the usual lap or lay joint. This keeps the jaws from spreading sidewise and gives the tool long life.

Dozen $20.00

Cyclops



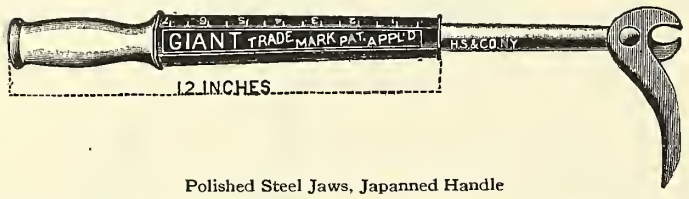
The handle forming part of the pressure foot saves the hand from cut or injury by the blow of the ram. Gives control of both jaws. Guides the jaws directly and quickly to the nail. Holds the jaws steadily and firmly where placed.

The pivot cannot become loose by strain or wear.

The steel parts are fire finished to prevent rust. The ram is finely japanned.

Length 18 inches, weight 4½ pounds, dozen $18.00

Giant



Polished Steel Jaws, Japanned Handle

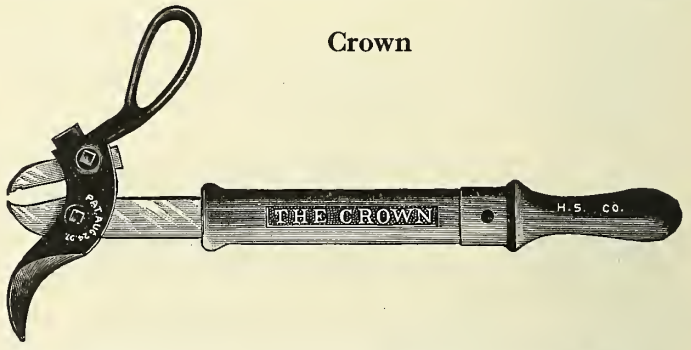
No. 1 18 inches overall closed, 23 inches overall extended; weight about 5 pounds

Dozen $18.00

No. 1½ 17 inches overall closed, 22 inches overall extended; weight about 4 pounds.

Dozen 16.50

Crown



Steel polished jaws, japanned handle. Length 18 inches; when extended 24 inches. Will pull nails without noise. Easily operated; dozen $18.00

Box Opener

Morrill

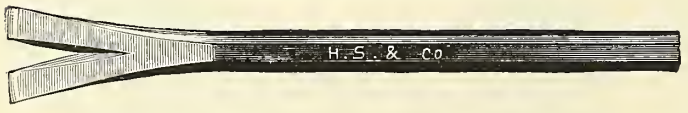


Will open the largest cases and pull out the longest nails. It may be used as a claw bar, box chisel, strap cutter, nail puller or hammer and will perform all these operations quicker and easier than any other single device without injuring nails or damaging cases.

Length overall 14 inches, weight 1¾ pounds, dozen $18.00

Box Chisels

H. S. & Co.



Length, inches	10	12	15	18	21
Diameter, inch	¾	¾	¾	¾	¾
Octagon, dozen	$7.25	7.75	9.00	10.00	11.00



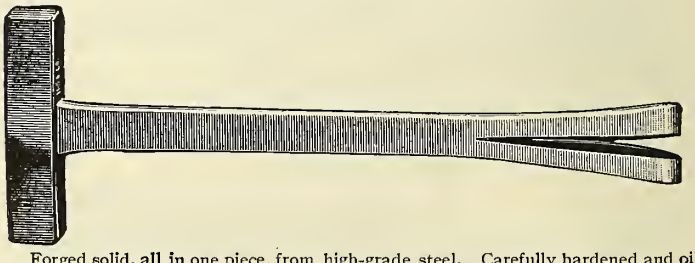
Round. 16-inch, japanned steel, dozen $13.00

Hatter's No. 7. 6-inch, japanned steel, dozen 10.00



Flat, 10-inch, polished steel, dozen $8.00

Noxtox



Forged solid, all in one piece, from high-grade steel. Carefully hardened and oil tempered. Fully guaranteed. One hammer head, plain; one scored. Weight 14 ounces. Length overall 9 inches.

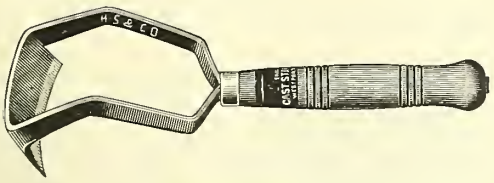
No. 70 Black finish, polished claw, dozen $8.00

Packing Needles



Length, inches	4	5	6	7	8
Common heavy, best cast steel, tempered, gross	$1.85	3.05	4.40	6.10	8.00
Collier pattern, forged spring steel, gross	$13.20	16.80	20.40	24.00	28.80

Box Scrapers



Single Handle

A high-grade scraper of extra quality.
Each $1.95

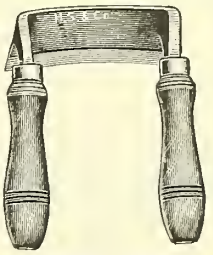
Lowentraut No. 22

Cast steel; blades screwed on.
Dozen 9.00



Triangular No. 21

Extra strong. Length overall 11½ inches.
Dozen $5.00
Extra blades, dozen 3.00



Double Handle

A high grade scraper of extra quality.
Dozen $2.20

Lowentraut No. 18

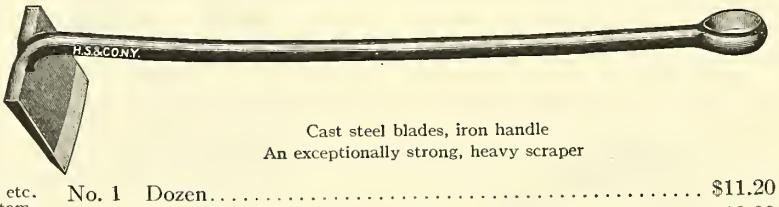
Solid forged-steel, dozen 7.70



No. 70 Adjustable

For removing stencils and other markings from the surfaces of boxes, floors, etc. It has a large maple handle, 13 inches in length, hinged to the malleable iron bottom, making it possible to work the tool from any position above the surface. The face of the bottom and the edge of the cutter are slightly curved away from the center, allowing the user to scrape clean any uneven surface.

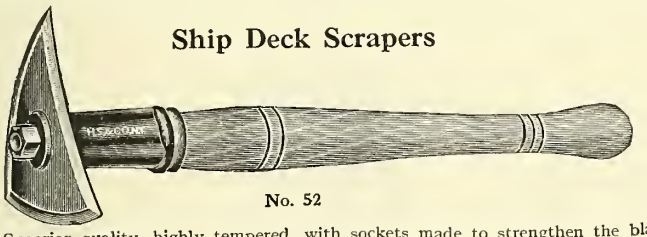
With 2-inch cutter, japanned finish, dozen $6.00
Extra blades, dozen 1.50
Extra set screws, dozen ..... .50



Cast steel blades, iron handle
An exceptionally strong, heavy scraper

No. 1 Dozen $11.20
No. 2 Extra heavy, dozen 12.80

Ship Deck Scrapers

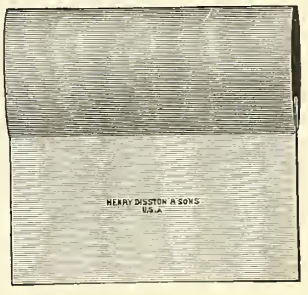


No. 52

Superior quality, highly tempered, with sockets made to strengthen the blade and prevent cracking.

Length overall 17 inches. Makes 5-inch cut. Complete, dozen $12.00
Extra handles and sockets, dozen 7.50
Extra blades, dozen 4.50

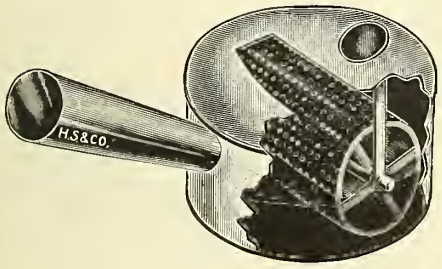
Butcher Block Scrapers



Plain beech handle, 6-inch blade, 5 inches wide, dozen $3.75

Marking or Stencil Pots

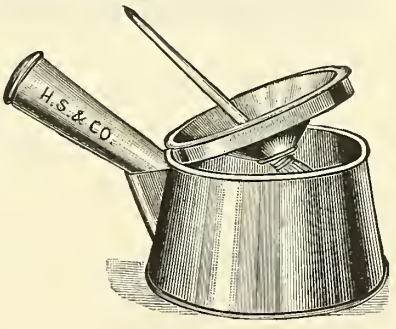
Cylindo



A quick daub of the stencil brush across the cylinder churns the ink, carrying sufficient full bodied ink right to the surface to properly load and prime the brush. Strongest construction. Solid brass cylinder. Other parts terne plate, thus resisting all corrosive action of the liquid ink.

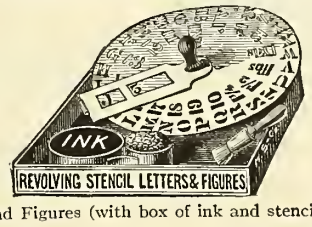
Based on the principle of the paddle-wheel.

Dozen $12.00



No. 1 Tin, 5½ inches diameter, without brush, dozen $3.00

Stencil Plates



Revolving Alphabet and Figures (with box of ink and stencil brush)

Size of letters, inches	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼
Per set	$1.25	1.25	1.25	1.25	1.50	1.50	2.00	2.00	2.50

Revolving Alphabet only, with box of ink and stencil brush.

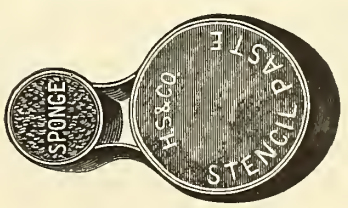
Size of letters, inches	1½	2
Per set	$2.00	2.50

Revolving Figures only, in box, without ink or brush.

Per set	$ .60	.60	.60	.70	.70	.80	.80	.80	1.00	1.00	1.20

Special Stencils for all purposes made to order from sketch

Stencil Ink

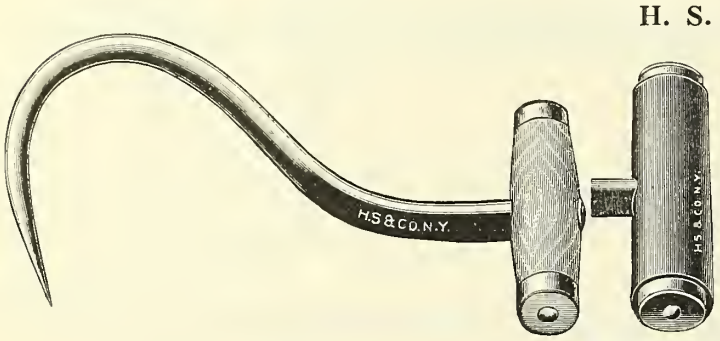


In dry cake form in cans, with sponge cup attached. It will not evaporate or lose color. It works freely and does not gum the brush or stencil.

Number	0	1	4
Diameter, inches	5¼	4¼	3¼
Per can	$ .45	.30	.15
Extra cakes	.32	.20	.08

Box Hooks

H. S. & Co.



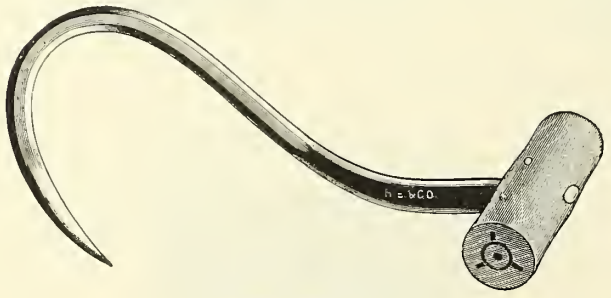
No. 340

Showing Fibre Handle on No. 350

No. 340. Heavy round tool steel, polished. Long tapered points, hickory handles, steel ferrules held by rivet running through handle and hook making it impossible for hook to get loose or pull out. The heavy steel ferrules prevent handles from splitting and can be used as a hammer to drive nails without injury to the handles.

10 inches long under handle, dozen..... $12.00
12 inches long under handle, dozen..... 14.00

No. 350 As No. 340, but with a fibre tube or covering encircling the handle, leaving heavy ferrules on ends exposed. 12 inches under handle, dozen..... 18.00



Butler Improved

No. 330. Similar to illustration but made of heavy black finish octagon steel $\frac{9}{16}$-inch thick. The hook runs through the handle and is firmly riveted.

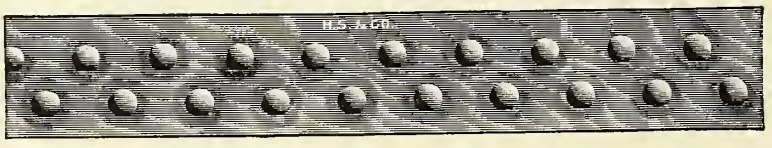
10 inches long under handle, dozen..... $8.00
12 inches long under handle, dozen..... 10.00

Butler Improved. Made from ½-inch octagon steel, finely tempered. The shank of the hook is threaded and forced firmly into the handle and has a steel pin riveted in the center, making it impossible to loosen or pull out the hook.

9 inches long overall, dozen..... $5.00
12 inches long overall, dozen..... 6.50

Box Strapping

Improved



In 3,000 Foot Coils

This is the most economical method of packing the embossed box strapping for users who have the space to give to it. It makes a very convenient package, and is furnished with wooden reel and stand complete with first order, but no allowance is made if stand is not taken.

Each reel contains 3,000 measured feet, except in the 1-inch width, which is wound in reels of 1,500 feet each to reduce the bulk.

Width, inch	½	⅝	¾	⅞	1
Per 3,000 feet	$10.00	12.50	15.00	17.50	20.00

In 300 Foot Coils

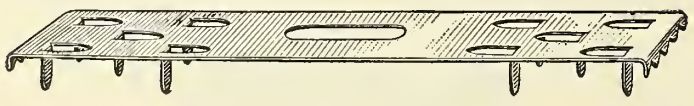
Each coil contains a single continuous strip 300 feet long. Individual hangers on each coil. The stock is soft and ductile, easily penetrated by a nail at any point.

Attention is called to the manner of embossing, which is the only form that really prevents the nail from slipping.

Width, inch	½	⅝	¾	⅞	1
Per coil of 300 feet	$1.00	1.25	1.50	1.75	2.00

Slotted Clutch Nails

De Haven



These Nails are slotted at the point where they bend, which overcomes the "spring back" feature, which was the fault of the old style.

The slot is located so that it comes directly over the corner, allowing the nails to lie close to the wood, and securing full value of the tensile strength of the iron. Can be driven either in the centers or on the ends of cases, and bend easily over the corners.

Size, inches	3½x¾	4x¾	6x⅞
Per 1,000	$3.25	3.50	5.00

Packed in boxes of 1,000 and 2,500, and barrels of 5,000 each.

Self Drawing



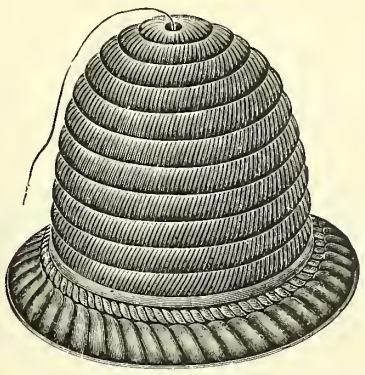
Put up in coils of 1,500 feet and reels of 5,000 to 6,000 feet, on wooden reel frames ready for use.

The strap is manufactured from soft annealed, flat Bessemer stock, bright finish, having nail holes every three inches. The holes are split and spread, and the nail being driven opens the walls of the holes, thus contracting the length of the strap and automatically tightening it about the case to a high degree. The only strap that allows the nail to be driven flush with the wood.

Number	1	2	3
Width, inch	$\frac{3}{16}$	$\frac{7}{32}$	¼
Per 100 feet	$ .25	.27½	.30

Cast Iron Twine Boxes

Bee Hive Pattern



Nos. 31, 33 and 51

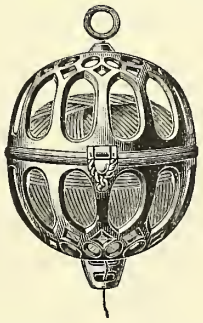
Size of twine chamber 4x4½ inches.

No. 31 Japanned, dozen $6.80
No. 33 Copper bronzed, dozen 7.90

Size of twine chamber 5x5½ inches.

No. 51 Japanned, dozen $12.00

Hanging Type

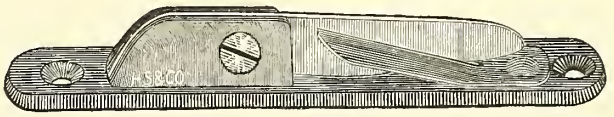


Drop Catch, Hinged Nos. 21 and 23

Size of twine chamber 4x4½ inches.

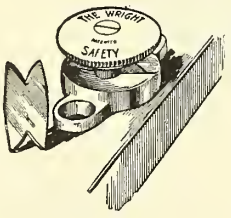
No. 21 Japanned, dozen $3.40
No. 23 Copper bronzed, dozen 3.40

Twine Cutters



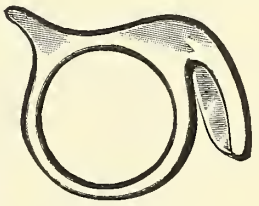
For counter use. The blades are of an extra quality and are made to stand heavy work, dozen $3.00

Safety



For bench or counter use. Screws down solid. Cuts two ways. Blades are removable, dozen.. $3.00

Magic



Pat. Sept. 3, 1901.

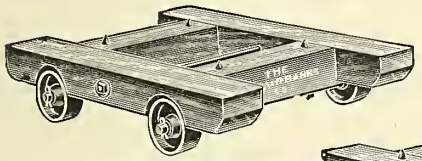
Wear it on the little finger

Nickel-plated with hand ground steel blade of proper temper. Ring is made in seven sizes.

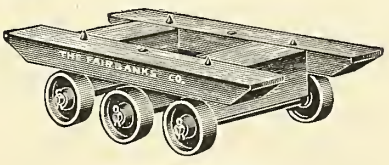
Sizes	3	4	5	6	7	8	9	10
Diameter, inch	17/32	9/16	19/32	5/8	11/16	23/32	3/4	25/32

Dozen $2.75

Box or Case Trucks



No. 223 Four Wheels



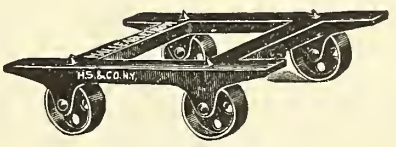
No. 224 Six Wheels

Designed for handling heavy, bulky cases and bales of goods. Low and strong construction. Wheels are set flush with sides of truck and in No. 223 are set into routings in the side rails. This materially reduces the over-all height.

Tops of frames are equipped with spurs to prevent load from slipping. No. 224 balance on center wheels.

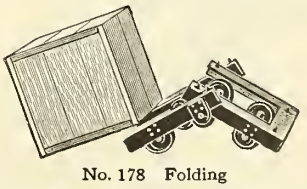
Number	Length Inches	Width Inches	Height Inches	Approximate Weight Pounds	Each
223–1	18	18	5	30	$4.50
2	26	18	5	35	5.50
224–3	24	16	6½	35	7.50
4	36	22	6½	45	10.00

Iron



No. L1191 Malleable

Weight ..... 26 pounds
Capacity ..... 1 ton
Dimensions ..... 22x15½ inches
Each $5.00

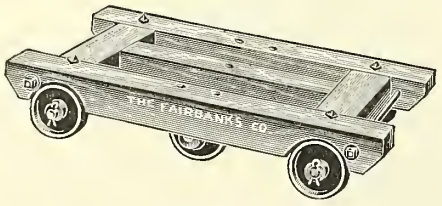


No. 178 Folding

This truck cannot run away when box is being loaded. It is easy to carry from place to place. The wheels are locked when truck is being loaded and automatically release themselves when box is on the truck. Frame made of 1⅛x2-inch angle iron. Weight 35 pounds.

Each $6.00

Piano or Machinery Trucks



No. Y1112

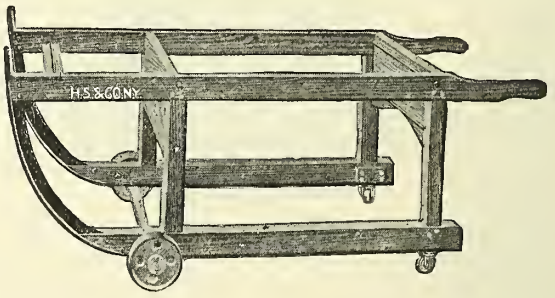
Designed for handling heavy machinery, engines, pumps, pianos, etc.; in fact anything of a heavy, bulky nature can be handled on this truck with the greatest facility.

Construction is extremely strong and compact. Framing is securely mortised together, and reinforced by one-inch tie-rods at either end. Truck balances on the two center wheels, which are of larger diameter and broader face than the outside wheels, and operates easily in any direction under load.

Made specially in sizes up to six tons capacity. Prices quoted on receipt of specifications.

No. Y1112 Length 36 inches, width 22 inches, height 7¼ inches. Approximate weight 100 pounds, each..... $15.75

Piano Repair Truck



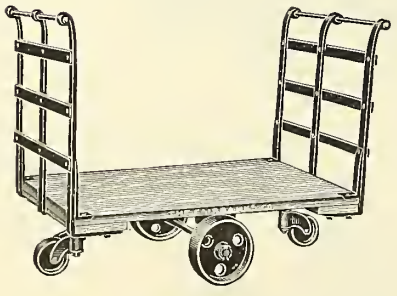
This truck was designed for the quick and convenient handling of pianos.

It is made of selected kiln-dried heavy oak in skeleton form and is extremely light, while powerful braces and cross-braces insure the fullest measure of strength.

The rocker and all metal parts are of Bessemer steel. Wide-tired stationary front wheels make it possible to truck a piano from place to place without tilting or swinging out of line. Casters are used on the rear and the truck may be swung around by the handles in any direction desired and in a very small space. The capacity is 1,200 pounds.

No. 5081 Knocked down and crated. Shipping weight 75 pounds, each..... $12.00

Dry Goods or Leather Trucks



No. 244

Designed for handling all kinds of dry goods, leather, etc. Very popular as a "piece goods" truck. Platform of good, clear-grained wood. Racks well riveted together, and are reinforced by iron angles, set flush into top of platform and securely bolted into place.

Trucks balance on center wheels, and turn readily in their own length. Are furnished with swivel casters.

Number	Length Over All Inches	Platform Length Inches	Platform Width Inches	Platform Height Inches	Wheels Center Inches	Wheels Ends Inches	Height of Racks	Approximate Weight Pounds	Each
244-1	49	42	24	9½	7½x2	4¾x1¼	27	175	$22.50
244-2	52	45	27	11½	9 x2½	4¾x1¼	27	210	35.50

Hand Trucks

Single Handle



No. 227

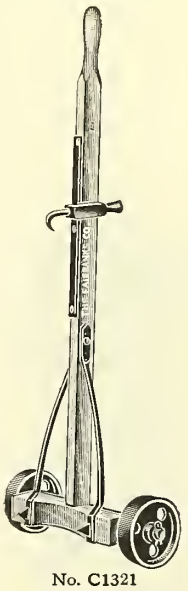
Designed for handling light boxes and packages in narrow aisles.

No. 227 Length of handles 56 inches, width at nose 10¼ inches, width overall 13¼ inches, approximate weight 10 pounds, each $3.00

Of light, strong construction for quick and careful handling of barrels and kegs.

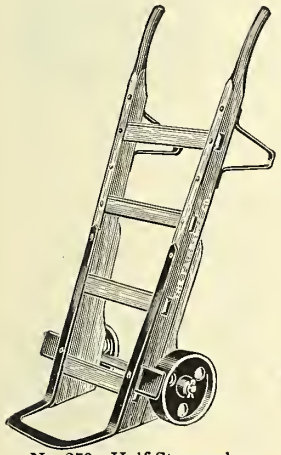
Hook slides down and catches on chine of barrel—load cannot roll off.

No. C1321 Length of handles 60 inches, width inside wheels 16½ inches, width over all 23 inches, approximate weight 45 pounds, each $8.75



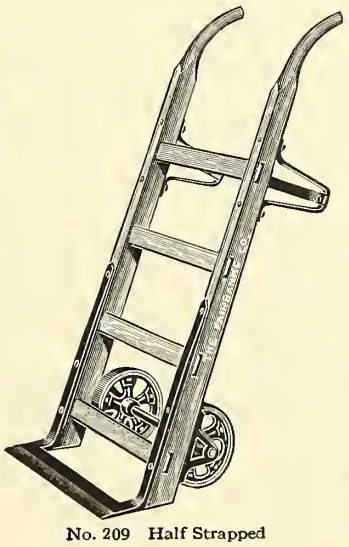
No. C1321

Warehouse
New York Pattern



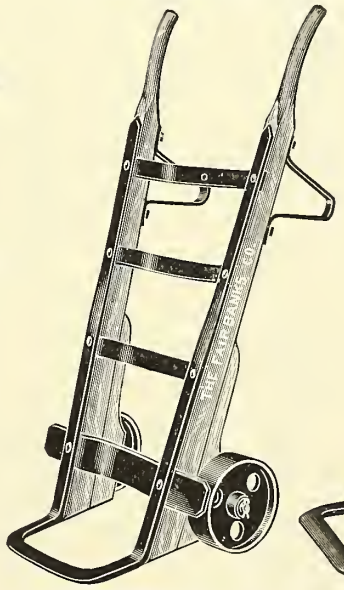
No. 272 Half Strapped

Hotel or Carpet



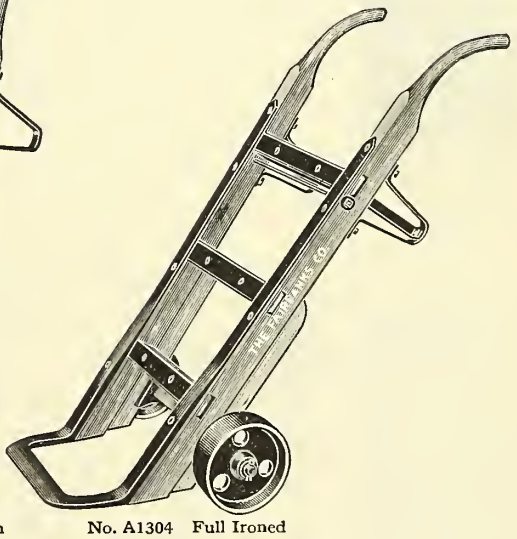
No. 209 Half Strapped

Barrel
New York Pattern



No. 301A Full Strapped All Iron Cross Bars

Dry Goods



No. A1304 Full Ironed

Warehouse
New York Pattern
No. 272

Designed for general store and warehouse use, with handles and bolsters constructed of two pieces of wood.

Size	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
1	48	18	13	5½	40	$5.00
2	51	19½	14	6½	58	7.50
3	54	21	15	7¼	72	8.75
4	60	22¾	16	7¼	91	12.25
5	66	24¼	17	7½	109	15.50

Barrel
New York Pattern
No. 301A

Designed for general store and warehouse use, having handles made with bolsters separate.

Size	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
1	48	18	13	5½	44	$8.50
2	51	19½	14	6½	65	11.50
3	54	21	15	7¼	78	13.50
4	60	22¾	16	7¼	98	16.50
5	66	24¼	17	7½	122	20.00

Hotel or Carpet
No. 209

The most popular hotel truck on the market. Constructed of the best materials, and combines strength with light weight. Steam-bent handles. Reinforced legs. Rubber tired wheels.

Size	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
1	48	19	19	4¾	42	$12.00
2	50	21	21	4¾	66	16.60

Dry Goods
No. A1304

Designed for handling dry goods cases. Very popular with the wholesale trade. Constructed on long, sloping lines to admit of "breaking" load easily, and on that account this truck will not stand alone.

Materials are carefully selected. Handles are steam-bent. Axles are equipped with cast iron axle boxes or bolsters. Legs reinforced. All wood parts iron strapped.

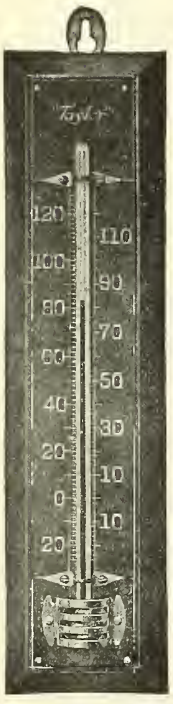
No. A1305 is the same as No. A1304, except equipped with attachment on axle which prevents wheels coming off until removed by operator.

Number	Length of Handles Inches	Width at Top Bar Inches	Width at Nose Inches	Length of Nose Inches	Approximate Weight Pounds	Each
A1304	52	19¼	15⅛	6⅜	70	$14.25
A1305	52	19¼	15⅛	6⅜	75	15.50

Thermometers

Tycos

Cabinet



No. 5120

Medium Grade

Magnifying Mercury or Spirit Tubes, black oxidized brass scales, white filled figures and graduations, brass screw clasps and guards, wood back in weathered oak finish. Range 10° to 40° below zero to 120° F. above.

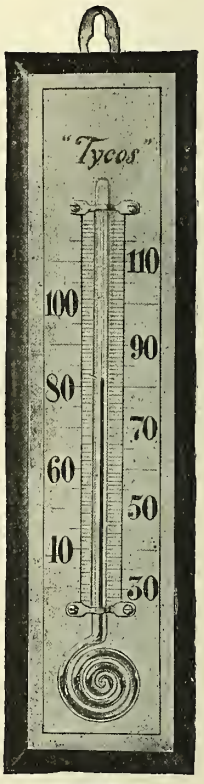
Size, inches	6	8
No. 5120 Mercury, dozen	$6.00	6.50
No. 5120S Spirit, dozen	6.00	6.50

Common Grade

Same general style as above, except not so well finished and wood back is finished in birch.

Size, inches	8
No. 5140 Mercury, dozen	$3.25

Porcelain Scale, Wood Back



No. 5224S

Standard Grade

Magnifying tubes, porcelain bevel edge scales, annealed black figures, gold-plated screw clasps, special hand rub piano finish, thin square walnut back. Approximate scale range, 20° to 100° F.

Spiral bulb.

Size, inches	6	8
No. 5224S Dozen	$20.00	24.00

Medium Grade

Magnifying mercury or spirit tubes, porcelain bevel edge scales, annealed black figures, oak back, rounded top, polished all sides. Approximate scale range, 10° to 40° below zero to 120° F. above.

Round bulb.

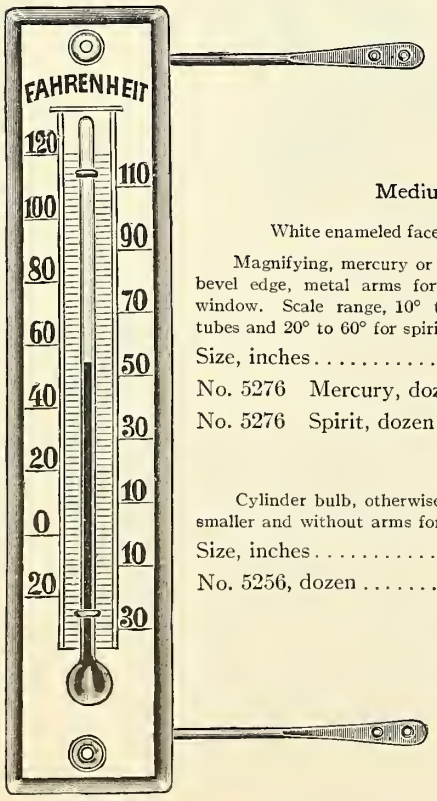
Size, inches	6	8	10
No. 5232 Mercury, dozen	$8.00	12.00	16.00
No. 5232S Spirit, dozen	8.00	12.00	16.00

Common Grade

Same general style as No. 5232, except porcelain square edge scale, square cornered wood back, polished one side. Scale range, 20° to 40° below zero to 120° F. above.

Length, inches	6	8
No. 5244 Mercury, dozen	$5.00	8.00
No. 5244S Spirit, dozen	5.00	8.00

Glass Window



No. 5276

Medium Grade

White enameled face, annealed black figures.

Magnifying, mercury or spirit tubes, plate glass, polished bevel edge, metal arms for attaching to outside frame of window. Scale range, 10° to 40° below zero for mercury tubes and 20° to 60° for spirit tubes to 120° F. above.

Size, inches	6	8
No. 5276 Mercury, dozen	$9.00	10.00
No. 5276 Spirit, dozen	9.00	10.00

Cylinder bulb, otherwise same general style as 5276, but smaller and without arms for attaching to window.

Size, inches	4
No. 5256, dozen	$6.00

Distance Reading

Selected Common Grade

Magnifying Mercury or Spirit Tubes.

Coppered metal case, black oxidized brass scales, white filled figures and graduations. Scale range, 10° to 40° below zero for mercury tubes and 20° to 60° below for spirit tubes to 120° F. above.

Size, inches	8
No. 5154 Mercury, dozen	$5.00
No. 5154S Spirit, dozen	5.00

Japanned Tin

Selected Common Grade

("Air" Temperatures)

Magnifying mercury or spirit tubes, black oxidized brass scales, white filled figures.

Scale range, 10° to 40° below zero for mercury tubes and 20° to 60° below for spirit tubes to 120° F. above.

Size, inches	8
No. 5420 Mercury	$3.25
No. 5420S Spirit	3.25

("Water-Boil" Temperatures)

Approximate scale range, 0° to 220° F. (mercury tubes), silvered brass scales, black filled figures.

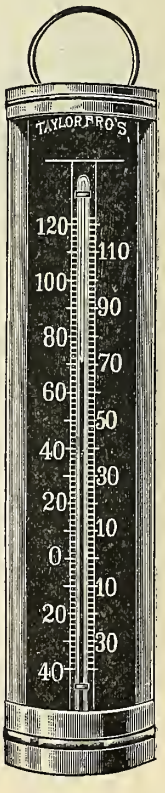
Size, inches	8
No. 5421 Mercury	$3.25

Brewers or Mash Tub

Standard Grade

Selected large magnifying seasoned mercury tubes. Silvered heavy brass scales. Black filled figures and graduations. Approximate scale range 0° to 220° F. and R.

Size, inches	12
No. 5800 Japanned tin case, dozen	$16.00
No. 5804 Copper case, dozen	19.50



No. 5154

Illustrations of Wood Screws

The diameter of cut thread wood screws is measured by a screw gauge (see Index). The length of flat-head screws is measured overall; length of round-head screws includes about one-half the head; fillister-head screws are measured from the rim of the head, and the length of the oval-head screw includes the countersink.



Flat Head



Round Head



Oval Head



Fillister Head



Pinched Head



Headless



Bung Head



Winged



Dowel
In the larger sizes a blank space is left in the center



Rogers Flat Head Drive



Diamond Point Flat Head Drive



Diamond Point Oval Head Drive

For listings and weights, see next three pages

Iron Wood Screws

The diameter of wood screws is measured with a screw gauge (see index). Length of flat-head screws is measured overall; length of round-head screws includes about one-half the head; fillister-head screws are measured from the rim of the head, and the length of the oval-head screws includes the countersink.

List of July 22, 1903.

List Per Gross

¼-Inch

No.	
0 at	$ .72
1 at	.72
2 at	.72
3 at	.72
4 at	.72

1¼-Inch

No.	
3 at	$ .88
4 at	.92
5 at	.98
6 at	1.05
7 at	1.10
8 at	1.15
9 at	1.20
10 at	1.30
11 at	1.40
12 at	1.55
13 at	1.70
*14 at	1.90
15 at	2.15
16 at	2.50
17 at	2.75
18 at	3.30
20 at	4.00
22 at	4.80
24 at	5.40

3-Inch

No.	
6 at	$2.95
7 at	3.00
8 at	3.05
9 at	3.10
10 at	3.15
11 at	3.20
12 at	3.30
13 at	3.40
14 at	3.50
15 at	3.80
*16 at	4.20
17 at	4.80
*18 at	5.50
20 at	6.50
22 at	7.50
24 at	8.70
26 at	10.50

⅜-Inch

No.	
0 at	$ .72
1 at	.72
2 at	.72
3 at	.72
4 at	.72
5 at	.75
6 at	.78
7 at	.82
8 at	.88
9 at	.94

1½-Inch

No.	
3 at	$ .98
4 at	1.05
5 at	1.10
6 at	1.15
7 at	1.20
8 at	1.30
9 at	1.35
*10 at	1.40
*11 at	1.50
12 at	1.65
13 at	1.80
14 at	2.00
15 at	2.35
16 at	2.80
17 at	3.20
18 at	3.80
20 at	4.30
22 at	5.10
24 at	5.90

3½-Inch

No.	
8 at	$3.90
9 at	4.00
10 at	4.10
11 at	4.20
12 at	4.30
13 at	4.40
14 at	4.50
15 at	4.75
16 at	4.95
17 at	5.40
18 at	6.15
*20 at	7.30
*22 at	8.70
24 at	10.20
26 at	12.00

½-Inch

No.	
1 at	$ .72
2 at	.72
3 at	.72
4 at	.75
5 at	.78
6 at	.80
7 at	.84
8 at	.90
9 at	.96
10 at	1.05
11 at	1.10
12 at	1.20

1¾-Inch

No.	
5 at	$1.30
6 at	1.35
7 at	1.45
*8 at	1.50
9 at	1.55
10 at	1.60
11 at	1.70
12 at	1.80
13 at	2.00
14 at	2.25
15 at	2.60
16 at	2.90
17 at	3.50
18 at	4.00
20 at	4.50
22 at	5.20
24 at	6.00

4-Inch

No.	
8 at	$4.90
9 at	5.10
10 at	5.20
11 at	5.30
12 at	5.40
13 at	5.60
14 at	5.90
15 at	6.20
16 at	6.50
17 at	7.00
*18 at	7.60
*20 at	8.60
22 at	9.70
24 at	11.20
26 at	14.00
28 at	16.00
30 at	18.50

⅝-Inch

No.	
1 at	$ .72
2 at	.72
3 at	.72
4 at	.75
5 at	.78
6 at	.82
7 at	.86
8 at	.92
9 at	.98
10 at	1.07
11 at	1.12
12 at	1.20
13 at	1.25
14 at	1.30

2-Inch

No.	
5 at	$1.45
6 at	1.50
7 at	1.55
8 at	1.60
9 at	1.65
10 at	1.75
11 at	1.85
12 at	2.00
13 at	2.20
14 at	2.45
15 at	2.75
16 at	3.10
17 at	3.70
*18 at	4.20
*20 at	4.80
22 at	5.50
24 at	6.40

4½-Inch

No.	
12 at	$7.00
13 at	7.20
14 at	7.60
15 at	7.85
*16 at	8.15
*17 at	8.60
18 at	9.15
20 at	9.85
22 at	11.20
24 at	13.50
26 at	16.00
28 at	18.50
30 at	21.50

¾-Inch

No.	
2 at	$ .72
3 at	.75
4 at	.78
5 at	.82
6 at	.85
7 at	.90
8 at	.95
9 at	1.00
10 at	1.10
11 at	1.15
12 at	1.25
13 at	1.35
14 at	1.50
15 at	1.65
16 at	1.80

2¼-Inch

No.	
5 at	$1.55
6 at	1.60
7 at	1.65
8 at	1.75
9 at	1.85
10 at	1.95
11 at	2.05
12 at	2.20
13 at	2.35
14 at	2.65
15 at	3.10
*16 at	3.50
*17 at	3.85
18 at	4.55
20 at	5.30
22 at	6.10
24 at	6.90

5-Inch

No.	
12 at	$8.10
13 at	8.30
14 at	8.60
15 at	9.10
16 at	9.70
17 at	10.10
18 at	11.00
20 at	11.50
22 at	13.00
24 at	15.00
26 at	18.00
28 at	21.00
30 at	24.00

⅞-Inch

No.	
2 at	$ .74
3 at	.78
4 at	.82
5 at	.85
6 at	.90
7 at	.94
8 at	1.00
9 at	1.05
10 at	1.15
11 at	1.25
12 at	1.35
13 at	1.45
14 at	1.55
15 at	1.75
16 at	2.00

2½-Inch

No.	
5 at	$1.90
6 at	2.00
7 at	2.10
8 at	2.20
9 at	2.30
10 at	2.40
11 at	2.50
12 at	2.60
13 at	2.70
14 at	2.90
15 at	3.30
16 at	3.65
*17 at	4.20
*18 at	4.70
20 at	5.80
22 at	6.70
24 at	7.50

6-Inch

No.	
12 at	$10.00
13 at	10.30
14 at	11.00
15 at	11.60
16 at	12.40
17 at	13.00
18 at	14.50
20 at	16.00
22 at	18.00
24 at	20.00
26 at	23.00
28 at	27.00
30 at	30.50

1-Inch

No.	
3 at	$ .80
4 at	.84
5 at	.87
6 at	.92
7 at	.98
8 at	1.05
9 at	1.10
10 at	1.20
11 at	1.30
12 at	1.40
13 at	1.60
14 at	1.70
15 at	2.00
*16 at	2.50
*17 at	2.70
18 at	2.80
20 at	3.50

2¾-Inch

No.	
6 at	$2.40
7 at	2.60
8 at	2.70
9 at	2.80
10 at	2.90
11 at	3.00
12 at	3.10
13 at	3.20
14 at	3.30
15 at	3.60
*16 at	3.90
*17 at	4.50
18 at	5.00
*20 at	6.10
22 at	7.20
24 at	8.50

*The number of Gross in a Bundle is indicated by small figures on the side, divided by a star (*).

The following shapes of Iron Screws are invoiced from the above list at varying discounts: Flat, Round, Fillister and Oval-Head Screws, Dowel, Winged, Headless, Pinched and Bung-Head Screws. Also Drive Screws. See preceding page for illustrations of above-mentioned shapes. They can be supplied in following finishes: Bright or blued, nickel, brass or silver-plated, silver or copper oxidized, various bronzes, japanned, lacquered, coppered, tinned, galvanized, bower barffed and gun metaled.

Special attention is given to quantity orders for fancy finishes. Correspondence invited. State sizes and quantities.

SEE DISCOUNT SHEET

Iron Wood Screws

Column No. 1 shows number of gross in full case.
Column No. 2 shows approximate weight of full case.
Column No. 3 shows approximate weight of one gross.

¼-Inch

No.	1	2	3
0			.0260
1			.0391
2	360	28	.0562
3	360	36	.0764
4	360	45	.0992

1¼-Inch

No.	1	2	3
4	200	96	.3684
5	200	115	.4649
6	200	140	.5734
7	200	165	.6942
8	200	200	.8275
9	200	225	.9734
10	200	265	1.1324
11	200	300	1.3046
12	120	210	1.4902
13	120	235	1.6895
14	100	220	1.9027
15	100	250	2.1300
16	100	275	2.3720
17	100	300	2.6282
18	100	325	2.8994
20	90	350	3.4875
22			4.1378
24			4.8524

3-Inch

No.	1	2	3
10	90	265	2.5527
11	90	300	2.9291
12	60	235	3.3326
13	60	260	3.7636
14	60	290	4.2220
15	60	320	4.7084
16	48	285	5.2230
17	48	310	5.7656
18	30	225	6.3370
20	30	260	7.5665
22	30	305	8.9131
24	30	350	10.3787
26			13.7745

⅜-Inch

No.	1	2	3
0			.0366
1			.0545
2	360	36	.0773
3	360	47	.1039
4	360	58	.1331
5	360	75	.1677
6	300	74	.2031
7	200	61	.2492
8	200	71	.3009
9			.3585

1½-Inch

No.	1	2	3
4	200	110	.4374
5	200	135	.5514
6	200	170	.6792
7	200	200	.8213
8	200	230	.9779
9	180	245	1.1491
10	180	280	1.3353
11	100	185	1.5367
12	100	205	1.7534
13	100	235	1.9858
14	100	260	2.2340
15	90	260	2.4984
16	90	285	2.7793
17	60	215	3.0764
18	60	235	3.3905
20	60	280	4.0702
22			4.8200
24			5.6419

3½-Inch

No.	1	2	3
10	50	175	2.9585
11	50	200	3.3932
12	50	230	3.8590
13	50	255	4.3561
14	45	255	4.8846
15	45	280	5.4450
16	45	310	6.0376
17	30	235	6.6620
18	30	255	7.3192
20	30	295	8.7319
22	20	240	10.2774
24	20	270	11.9577
26	20	310	13.7745

½-Inch

No.	1	2	3
1			.0694
2	360	48	.0978
3	360	59	.1303
4	360	74	.1654
5	300	75	.2056
6	200	64	.2560
7	200	75	.3128
8	200	91	.3762
9	200	105	.4464
10	200	120	.5237
11	200	145	.6084
12	200	160	.7006

1¾-Inch

No.	1	2	3
6	200	190	.7850
7	180	210	.9485
8	180	240	1.1283
9	100	160	1.3248
10	100	185	1.5382
11	100	215	1.7687
12	100	240	2.0166
13	90	240	2.2821
14	90	265	2.5653
15	60	205	2.8667
16	60	220	3.1865
17	60	250	3.5246
18	60	265	3.8816
20	60	315	4.6529
22			5.5022
24			6.4313

4-Inch

No	1	2	3
12	45	235	4.3854
14	30	200	5.5473
16	30	240	6.8522
18	30	290	8.3014
20	20	235	9.8973
22	20	270	11.6418
24	20	305	13.5366
26	15	265	15.5837

⅝-Inch

No.	1	2	3
1			.0840
2			.1177
3	360	70	.1557
4	300	72	.1959
5	200	62	.2489
6	200	74	.3089
7	200	93	.3763
8	200	110	.4514
9	200	125	.5342
10	200	135	.6252
11	200	165	.7244
12	200	190	.8322
13			.9488
14			1.0744

2-Inch

No.	1	2	3
6	180	200	.8908
7	180	230	1.0756
8	100	160	1.2788
9	100	185	1.5005
10	100	210	1.7411
11	100	235	2.0008
12	90	240	2.2798
13	90	270	2.5784
14	60	205	2.8966
15	60	230	3.2350
16	60	250	3.5938
17	60	275	3.9728
18	60	300	4.3727
20	40	240	5.2356
22	40	280	6.1843
24	40	320	7.2208

¾-Inch

No.	1	2	3
2			.1369
3	300	67	.1801
4	200	59	.2304
5	200	72	.2921
6	200	86	.3618
7	200	105	.4399
8	200	120	.5266
9	200	150	.6221
10	200	170	.7266
11	200	190	.8404
12	200	215	.9638
13	200	250	1.0969
14	200	280	1.2400
15	200	315	1.3934
16	200	345	1.5574

2¼-Inch

No.	1	2	3
8	100	180	1.4292
9	100	205	1.6762
10	90	210	1.9440
11	90	235	2.2329
12	60	185	2.5430
13	60	205	2.8747
14	60	230	3.2280
15	60	255	3.6034
16	60	280	4.0011
17	48	245	4.4210
18	48	270	4.8638
20	40	270	5.8183
22	40	310	6.8665
24	30	270	8.0103

4½-Inch

No.	1	2	3
16	30	265	7.6667
18	20	220	9.2836
20	20	255	11.0628
22			13.0061
24			15.1156
26			17.3929

7⅛-Inch

No.	1	2	3
2			.1554
3			.2034
4	200	65	.2649
5	200	83	.3353
6	200	100	.4147
7	200	125	.5035
8	200	140	.6018
9	200	165	.7099
10	200	190	.8281
11	200	225	.9565
12	200	250	1.0954
13	200	280	1.2451
14	180	290	1.4057
15	180	325	1.5776
16	180	355	1.7610

2½-Inch

No.	1	2	3
8	90	180	1.5796
9	90	200	1.8519
10	90	230	2.1469
11	60	180	2.4649
12	60	205	2.8062
13	60	230	3.1710
14	60	250	3.5593
15	60	275	3.9717
16	60	300	4.4084
17	60	330	4.8692
18	40	250	5.3549
20	40	290	6.4010
22	30	255	7.5487
24	30	295	8.7998

5-Inch

No.	1	2	3
18	20	240	10.2657
20	20	275	12.2282
22	15	245	14.3705
24			16.6945
26			19.2021
28			21.8952

1-Inch

No.	1	2	3
3			.2302
4	200	73	.2994
5	200	98	.3785
6	200	115	.4676
7	200	135	.5671
8	200	160	.6770
9	200	185	.7978
10	200	220	.9295
11	200	250	1.0725
12	200	280	1.2270
13	200	320	1.3932
14	200	355	1.5714
15	120	245	1.7617
16	120	270	1.9647
17	100	250	2.1800
18	100	280	2.4084
20	100	325	2.9047

2¾-Inch

No.	1	2	3
10	90	245	2.3498
11	90	275	2.6970
12	60	215	3.0694
13	60	240	3.4673
14	60	270	3.8906
15	60	295	4.3400
16	60	330	4.8157
17	40	250	5.3052
18	40	270	5.8460
20	40	310	6.9838
22	30	285	8.2309
24	30	325	9.5893
26			11.0607

6-Inch

No.	1	2	3
20			14.5590
22			17.0992
24			19.8525
26			22.8205
28			26.0054
30			29.4091

See two preceding pages for illustrations and listings

Brass Wood Screws

The diameter of wood screws is measured with a screw gauge (see Index). Length of flat head screws is measured overall; length of round head screws includes about one-half the head; fillister head screws are measured from the rim of the head, and the length of the oval-head screw includes the countersink.

List of July 22, 1903

List Per Gross

¼-Inch No.	⅜-Inch No.	½-Inch No.	⅝-Inch No.	¾-Inch No.	⅞-Inch No.	1-Inch No.
0 at $ .84	0 at $ .84	1 at $ .92	1 at $ .96	2 at $1.12	2 at $1.40	3 at $1.65
1 at .84	1 at .87	2 at .96	2 at 1.00	3 at 1.18	3 at 1.50	4 at 1.70
10 2 at .88	2 at .92	3 at 1.02	3 at 1.08	4 at 1.25	4 at 1.55	5 at 1.75
10 3 at .92	10 3 at .97	4 at 1.08	4 at 1.15	5 at 1.40	5 at 1.60	6 at 1.80
4 at .97	4 at 1.04	10 5 at 1.20	5 at 1.30	6 at 1.55	6 at 1.65	7 at 2.10
	5 at 1.12	6 at 1.30	6 at 1.40	7 at 1.75	7 at 1.90	8 at 2.45
	6 at 1.20	7 at 1.45	7 at 1.60	8 at 2.00	8 at 2.20	9 at 2.80
	7 at 1.35	8 at 1.65	10 8 at 1.85	10 9 at 2.30	10 9 at 2.50	10 10 at 3.15
	8 at 1.50	9 at 1.90	9 at 2.10	10 at 2.65	10 at 2.90	11 at 3.65
		10 at 2.15	10 at 2.40	11 at 3.00	11 at 3.35	12 at 4.10
			11 at 2.65	12 at 3.35	12 at 3.70	13 at 4.55
			12 at 3.00	13 at 3.70	13 at 4.10	14 at 5.05
			13 at 3.35	14 at 4.10	14 at 4.55	15 at 5.60
			14 at 3.70	15 at 4.55	15 at 5.05	16 at 6.65
			15 at 4.10	16 at 5.05	16 at 5.60	5* 18 at 7.40
			16 at 4.55			

1¼-Inch No.	1½-Inch No.	1¾-Inch No.	2-Inch No.	2¼-Inch No.	2½-Inch No.	2¾-Inch No.
3 at $2.10	4 at $2.95	10 6 at $3.95	6 at $5.15	8 at $6.85	9 at $9.40	9 at $11.50
4 at 2.20	5 at 3.05	7 at 4.00	7 at 5.20	9 at 6.95	10 at 9.50	10 at 11.65
5 at 2.25	6 at 3.10	* 8 at 4.10	8 at 5.25	10 at 7.05	5 11 at 9.60	11 at 11.80
6 at 2.35	10 7 at 3.20	9 at 4.20	9 at 5.30	5 11 at 7.25	12 at 9.70	5 12 at 11.95
7 at 2.45	8 at 3.30	10 at 4.70	10 at 5.40	12 at 7.90	13 at 9.85	13 at 12.10
10 8 at 2.85	9 at 3.65	11 at 5.35	11 at 6.15	13 at 8.80	14 at 10.75	14 at 12.25
9 at 3.20	* 10 at 4.25	12 at 6.05	5 12 at 6.85	14 at 9.80	15 at 11.85	15 at 13.00
10 at 3.50	11 at 4.65	13 at 6.70	13 at 7.55	15 at 10.75	16 at 13.00	16 at 14.20
11 at 4.10	12 at 5.35	14 at 7.35	14 at 8.45	16 at 11.90	* 17 at 14.30	* 17 at 15.65
12 at 4.65	13 at 5.95	5 15 at 8.65	15 at 9.75	* 17 at 13.00	* 18 at 16.95	1 18 at 18.40
* 13 at 5.35	14 at 6.65	16 at 9.50	16 at 10.70	18 at 15.40	1 20 at 19.85	* 20 at 21.60
14 at 5.85	5 15 at 7.60	17 at 10.45	17 at 11.70	1 20 at 18.00	22 at 23.00	2½ * 22 at 25.00
15 at 6.55	16 at 8.35	18 at 12.40	* 18 at 13.90	22 at 20.95	24 at 25.50	24 at 28.00
16 at 7.20	17 at 9.15	20 at 14.50	* 20 at 16.30	24 at 23.30		
5 17 at 7.85	18 at 10.85	22 at 16.85	1 22 at 18.90			
18 at 9.35	20 at 12.65	24 at 18.90	24 at 21.00			
20 at 10.45	22 at 14.50					

3-Inch No.	3½-Inch No.	4-Inch No.	4½-Inch No.	5-Inch No.	6-Inch No.
10 at $13.70	10 at $15.85	12 at $18.60	2½ 14 at $22.60	16 at $26.90	16 at $31.00
11 at 13.85	11 at 16.00	13 at 18.80	15 at 22.80	17 at 29.60	17 at 34.05
5 12 at 14.00	12 at 16.15	14 at 19.00	16 at 23.40	18 at 35.50	18 at 40.80
13 at 14.10	13 at 16.30	2½ 15 at 19.25	* 17 at 25.75	½ 20 at 40.70	½ 20 at 46.80
14 at 14.30	2½ 14 at 16.45	16 at 20.35	18 at 30.90	22 at 47.60	22 at 54.75
15 at 14.60	15 at 16.60	17 at 22.30	20 at 35.40	24 at 53.80	24 at 61.90
1 * 16 at 15.40	16 at 17.70	* 18 at 26.90	½ 22 at 41.40	26 at 62.60	26 at 72.95
* 17 at 16.80	17 at 19.40	* 20 at 30.80	24 at 46.80	28 at 72.15	28 at 82.95
* 18 at 19.95	18 at 22.75	22 at 36.00	26 at 54.40	30 at 82.95	30 at 93.35
2½ 20 at 23.40	* 20 at 26.90	½ 24 at 40.70	28 at 62.70		
22 at 27.10	* 22 at 31.20	26 at 47.35	30 at 72.15		
* 24 at 31.15	24 at 35.80	28 at 54.55			
* 26 at 35.85	½ 26 at 41.20	30 at 62.70			
½ 28 at 41.15	28 at 47.45				
30 at 47.45	30 at 54.55				

*The number of Gross in a Bundle is indicated by small figures on the side, divided by a star (*).

The following shapes of screws are invoiced from this list at varying discounts: Flat, Round, Oval and Fillister Head. See page 659 for illustrations of these shapes. Any of the above shapes may be secured in brass, bronze, bronzed or lacquered, nickel or silver-plated.

Special attention given to quantity orders for fancy finishes.

Correspondence invited. State sizes and quantities.

Iron Machine Screws

The diameter of Machine Screws is measured by a screw gauge (see Index). The length of flat head machine screws is measured overall; the length of round head machine screws includes about one-half the head; fillister head machine screws are measured from the rim of the head; the length of oval head machine screws includes the countersink.



Flat Head



Round Head



Oval Head



Fillister Head

List of November 18, 1912

List Per Gross

	Standard Threads per Inch																
	48 56 64	48 56	32, 36, 40		30 32 36	30 32	30 32 36	24, 30, 32		20 24	18 20 24	16, 18, 20		16 18	14 16 18	14 16	13
Number	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24	30	34
Length, Inches																	
1/8	$ .30	$ .30	$ .30	$ .35	$ .35	$ .40	.40										
3/16	.30	.30	.30	.35	.35	.40	.40	$ .60	$ .60								
1/4	.30	.30	.30	.35	.35	.40	.40	.60	.60	$ .70	$ .85						
5/16	.32	.32	.32	.37	.37	.44	.44	.65	.65	.75	.90	$1.15					
3/8	.32	.32	.32	.37	.37	.44	.44	.65	.65	.75	.90	1.15	$1.50	$1.90	$2.30		
7/16	.34	.34	.34	.39	.39	.48	.48	.70	.70	.80	.95	1.20	1.60	2.00	2.40		
1/2	.34	.34	.34	.39	.39	.48	.48	.70	.70	.80	.95	1.20	1.60	2.00	2.40		
9/16	.37	.37	.37	.42	.42	.52	.52	.75	.75	.85	1.00	1.25	1.70	2.10	2.50		
5/8	.37	.37	.37	.42	.42	.52	.52	.75	.75	.85	1.00	1.25	1.70	2.10	2.50		
11/16	.41	.41	.41	.46	.46												
3/4	.41	.41	.41	.46	.46	.56	.56	.80	.80	.90	1.05	1.30	1.80	2.20	2.60	$4.00	$5.10
13/16	.45	.45	.45	.50	.50												
7/8	.45	.45	.45	.50	.50	.60	.60	.85	.85	.95	1.15	1.40	1.90	2.30	2.70	4.25	5.85
15/16	...	...	.50	.55	.55												
1	...	...	.50	.55	.55	.65	.65	.90	.90	1.00	1.25	1.50	2.00	2.40	2.80	4.50	6.60
1 1/8	...	...	.55	.60	.60	.70	.70	1.00	1.00	1.10	1.35	1.60	2.20	2.60	3.00	5.00	7.00
1 1/4	...	...	.60	.65	.65	.75	.75	1.10	1.10	1.20	1.45	1.75	2.40	2.80	3.20	5.25	7.35
1 3/8	...	...	.65	.70	.70	.80	.80	1.20	1.20	1.30	1.55	1.90	2.60	3.00	3.40	5.75	8.00
1 1/2	...	...	.70	.75	.75	.85	.85	1.30	1.30	1.40	1.65	2.10	2.80	3.20	3.60	6.00	8.00
1 5/8	...	...	.80	.85	.85	.95	.95	1.40	1.40	1.50	.175	2.30	3.00	3.40	3.80	6.35	
1 3/4	...	...	.90	.95	.95	1.05	1.05	1.50	1.50	1.60	1.85	2.50	3.20	3.60	4.20	6.65	8.60
1 7/8	...	...	1.00	1.05	1.05	1.15	1.15	1.60	1.60	1.70	2.00	2.70	3.40	3.80	4.40	7.00	
2	...	...	1.10	1.15	1.15	1.25	1.25	1.70	1.70	1.80	2.20	2.90	3.60	4.00	4.60	7.35	9.40
2 1/4	...	...	...	1.25	1.25	1.45	1.45	1.90	1.90	2.20	2.60	3.30	4.00	4.40	4.80	8.00	10.30
2 1/2	...	...	...	...	....	1.65	1.65	2.20	2.20	2.50	2.80	3.50	4.40	4.90	5.30	8.90	11.50
2 3/4	...	...	...	...	....	1.90	1.90	2.50	2.50	2.90	3.20	4.00	4.90	5.40	5.90	9.85	
3	...	...	...	...	....	2.30	2.30	2.90	2.90	3.50	3.80	4.50	5.60	6.00	7.40	11.00	
3 1/4	...	...	...	...	....	....	....	3.30	3.30	4.25	4.50	5.50	6.50	7.00	8.80	13.00	
3 1/2	...	...	...	...	....	....	....	3.75	3.75	5.00	5.25	6.50	7.50	8.50	10.10	15.00	
3 3/4	...	...	...	...	....	....	....	....	....	....	6.00	7.50	8.50	9.25	12.20	17.50	
4	...	...	...	...	....	....	....	....	....	....	6.75	8.50	9.60	10.25	13.50	20.50	

The various kinds and finishes of iron machine screws are all invoiced from above lists and at varying discounts. They can be supplied in the following finishes: Bright or blued, nickel, brass or silver-plated, silver or copper oxidized, various bronzes, japanned, lacquered, coppered, tinned, galvanized, bower-barffed or gun metaled.

Special attention is given to quantity orders for fancy finishes. Correspondence invited. State sizes and quantities.

Brass Machine Screws

The diameter of machine screws is measured by a screw gauge (see index). The length of flat head machine screws is measured over all; round and fillister head from under the head to the end; the length of oval head machine screws includes the countersink.



Flat Head



Round Head



Oval Countersunk or French Head



Fillister Head

List of November 18, 1912

List Per Gross

	Standard Threads per Inch																
	48				30		30				18				14		
	56	48	32, 36,		32	30	32	24, 30,		20	20	16, 18,		16	16	14	
	64	56	40		36	32	36	32		24	24	20		18	18	16	13
Number	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24	30	34
Length Inches																	
1/8	$ .32	$ .32	$ .36	$ .46	$ .46	$ .70	$ .70										
3/16	.32	.32	.36	.46	.46	.70	.70	$1.00	$1.00								
1/4	.32	.32	.36	.46	.46	.70	.70	1.00	1.00	$1.25	$1.65						
5/16	.34	.34	.38	.49	.49	.75	.75	1.05	1.05	1.35	1.75						
3/8	.36	.36	.40	.52	.52	.80	.80	1.10	1.10	1.45	1.85	$2.90	$3.70	$4.60	$5.50		
7/16	.38	.38	.42	.55	.55	.85	.85	1.15	1.15	1.55	2.00	3.05	3.90	4.80	5.60		
1/2	.40	.40	.44	.58	.58	.90	.90	1.25	1.25	1.65	2.15	3.20	4.10	5.00	5.75		
9/16	.43	.43	.47	.62	.62	.95	.95	1.35	1.35	1.75	2.30	3.35	4.30	5.25	6.30		
5/8	.46	.46	.50	.66	.66	1.00	1.00	1.45	1.45	1.85	2.45	3.50	4.50	5.50	6.50		
11/16	.49	.49	.53	.70	.70												
3/4	.52	.52	.56	.74	.74	1.10	1.10	1.65	1.65	2.05	2.75	3.80	4.90	6.00	6.70		$15.75
13/16	.55	.55	.59	.78	.78												
7/8	.58	.58	.62	.82	.82	1.20	1.20	1.85	1.85	2.25	3.05	4.10	5.30	6.50	7.40	....	17.10
15/16	...	...	.65	.86	.86												
1	...	...	.70	.90	.90	1.30	1.30	2.05	2.05	2.45	3.35	4.40	5.70	7.00	8.50	$15.75	18.50
1 1/8	...	...	.80	1.05	1.05	1.45	1.45	2.20	2.20	2.65	3.55	4.65	6.00	7.50	9.00		
1 1/4	...	...	.90	1.20	1.20	1.60	1.60	2.35	2.35	2.85	3.75	4.90	6.30	8.00	9.90	18.75	22.10
1 3/8	...	...	1.00	1.35	1.35	1.75	1.75	2.50	2.50	3.05	3.95	5.20	6.60	8.50	11.50		
1 1/2	...	...	1.10	1.50	1.50	1.90	1.90	2.65	2.65	3.25	4.15	5.50	6.90	9.00	12.00	22.50	26.65
1 5/8	...	...	1.25	1.70	1.70	2.10	2.10	2.85	2.85	3.50	4.40	5.85	7.30	9.50			
1 3/4	...	...	1.40	1.90	1.90	2.30	2.30	3.05	3.05	3.75	4.65	6.20	7.70	10.00	12.70	24.25	28.10
1 7/8	...	...	1.55	2.10	2.10	2.50	2.50	3.25	3.25	4.00	4.90	6.60	8.10	10.50			
2	...	...	1.70	2.30	2.30	2.70	2.70	3.45	3.45	4.25	5.15	7.00	8.60	11.00	13.50	26.00	30.20
2 1/4	...	...	...	2.70	2.70	3.10	3.10	3.85	3.85	4.75	5.65	8.00	9.75	12.00	14.90	28.00	32.95
2 1/2	...	...	...	...	....	....	....	4.65	4.65	5.80	6.80	9.00	10.50	13.50	15.50	30.50	35.65
2 3/4	...	...	...	...	....	....	....	6.00	6.00	7.00	8.00	10.00	12.50	15.00	17.00	33.00	
3	...	...	...	...	....	....	....	7.50	7.50	8.50	9.50	11.00	15.00	16.50	19.00	36.00	
3 1/4	...	...	...	...	....	....	....	9.00	9.00	10.50	11.50	15.00	17.50	18.50	22.50	39.50	
3 1/2	...	...	...	...	....	....	....	11.00	11.00	12.50	15.00	18.00	19.50	22.00	25.50	42.75	
3 3/4	...	...	...	...	....	....	....	13.50	13.50	15.00	18.50	20.00	22.50	25.00	28.00	46.60	
4	...	...	...	...	....	....	....	16.50	16.50	18.00	22.00	25.00	26.50	28.00	32.00	49.50	

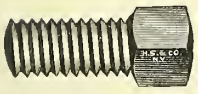
The various kinds and finishes are all invoiced from above list and at varying discounts. Any of the above shapes may be secured in brass, bronze, bronzed or lacquered, nickel or silver-plated.

Special attention given to quantity orders for fancy finishes. Correspondence invited. State sizes and quantities.

SEE DISCOUNT SHEET

Iron Set Screws

Square Head


Round Point


Cup Point


Flat Point


Cone Point

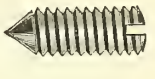

Hanger Point


Flat Pivot Point


Round Pivot Point


Headless Round Point


Headless Cup Point


Headless Cone Point

Square Head Cup and Round Point Set Screws are regular; all others are special. Prices upon application.

Set Screw prices shall apply to Headless Set Screws, threaded overall or nearly so, slotted, and burrs removed from head and slot.

No Screw which has a head more than $\frac{1}{16}$ inch larger in diameter than the body is classed as a Set Screw.

Set Screws are supplied case hardened unless ordered "soft."

Length of Iron Set Screws with heads is measured from under the head to extreme point; headless is measured overall.

List Per 100

Diameter of Screw Inches	¼	5/16	⅜	7/16	*½	9/16	⅝	¾	⅞	1	1⅛	1¼
Threads to Inch	20	18	16	14	*12 and 13	12	11	10	9	8	7	7
Length Inches												
½	$1.80	$2.00	$2.35									
⅝	1.90	2.10	2.45	$2.80	$3.30							
¾	2.00	2.20	2.50	2.90	3.40	$5.00	$5.00					
⅞	2.10	2.30	2.60	3.00	3.60	5.50	5.50					
1	2.15	2.35	2.65	3.10	3.80	5.75	5.75	$10.00				
1¼	2.30	2.50	2.85	3.50	4.30	6.50	6.50	11.00	$15.50			
1½	2.50	2.70	3.10	4.00	4.80	7.25	7.25	12.00	16.20	$22.00		
1¾	2.75	3.00	3.50	4.50	5.40	8.00	8.00	12.80	17.70	24.00	$41.70	
2	3.25	3.50	4.00	5.15	6.00	8.80	8.80	13.60	19.20	26.00	45.00	$54.00
2¼	3.75	4.00	4.50	5.75	6.75	9.60	9.60	14.50	20.70	28.00	48.30	58.30
2½	4.25	4.50	5.00	6.35	7.50	10.40	10.40	15.40	22.20	30.00	51.60	62.60
2¾	4.75	5.00	5.50	6.75	8.25	11.20	11.20	16.30	23.70	32.00	54.90	66.90
3	5.25	5.50	6.00	7.20	9.00	12.00	12.00	17.30	25.20	34.00	58.20	71.20
3¼	....	....	....	7.60	9.75	12.75	12.75	18.40	26.70	36.00	61.50	75.50
3½	....	....	....	8.00	10.50	13.50	13.50	19.50	28.20	38.00	64.80	79.80
3¾	....	....	....	8.50	11.25	14.30	14.30	20.75	29.70	40.00	68.10	84.10
4	....	....	....	9.00	12.00	15.10	15.10	22.00	31.20	42.00	71.40	88.40
4¼	....	....	....	....	.....	.....	15.90	23.50	32.70	44.00	74.70	92.70
4½	....	....	....	....	.....	.....	16.70	25.00	34.20	46.00	78.00	97.00
4¾	....	....	....	....	.....	.....	.....	26.50	35.70	48.00	81.30	101.30
5	....	....	....	....	.....	.....	.....	.....	37.20	50.00	84.60	105.00
Add for each ¼ Inch	$ .50	.60	.70	.80	.90	1.10	1.10	1.50	1.70	2.25	3.30	4.30

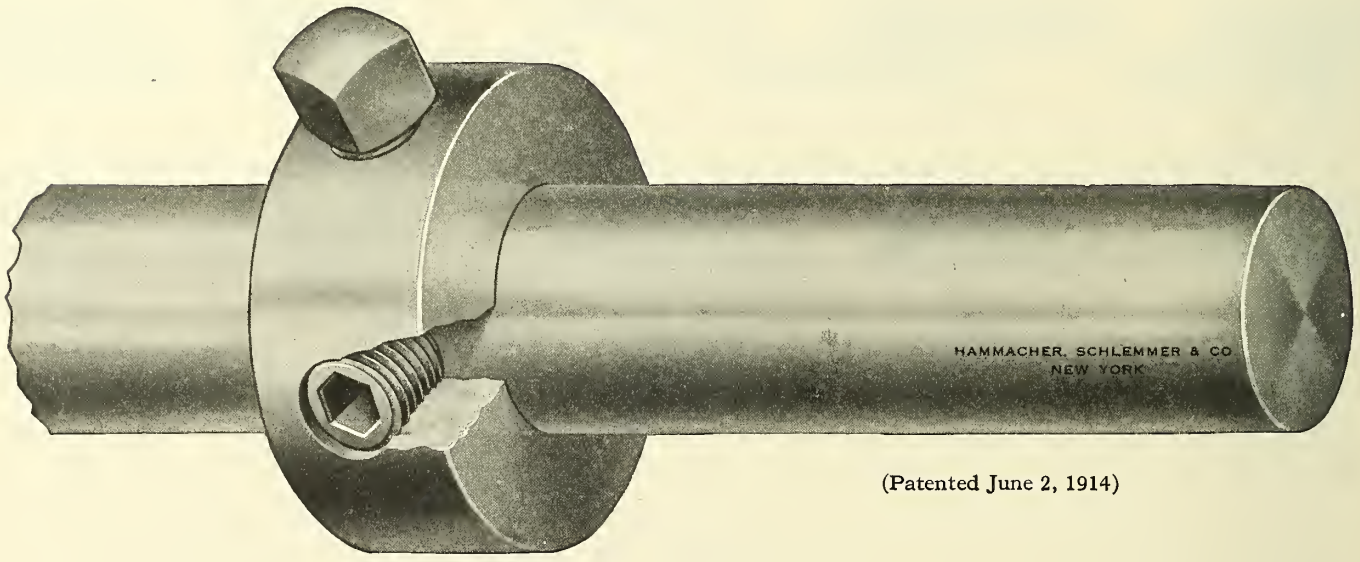
For Steel Set Screws add 25 per cent. to above list.

State whether V or U. S. Standard threads are wanted; also style of point. When not specified, we send cup point (U. S. Standard).

* On ½-inch screws state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).

The H. S. & Co.

Improved Hollow Set Screws



(Patented June 2, 1914)

The illustration shows at a glance the advantage of the Improved H. S. & Co. Hollow Set Screw over the old style projecting head. Liability insurance companies and state laws everywhere are demanding that projecting heads be eliminated or capped, to prevent accidents.

The Improved H. S. & Co. Screw is made from drawn steel, thoroughly case-hardened. Proper tests prove that screws stamped or "drawn up" from sheet steel are much stronger than those milled from solid bar, owing to the position of the fibres of the steel. Well-known proof of this is found in the comparative values of semi-finished nuts, those milled from solid bar not proving as strong as the stamped goods.

Hollow Set Screws are more economical for general use, as one length does for any depth of hole; they may be locked by using two screws. Deep holes need to be threaded only at the bottom, balance being counterbored.

Made Cup and Round Points and U. S. Standard Thread only, no V Thread. Illustrations below show full-size screws and full-size $\frac{5}{8}$-inch wrench.

Cup Point Screws always sent unless otherwise ordered.









List Prices For Screws

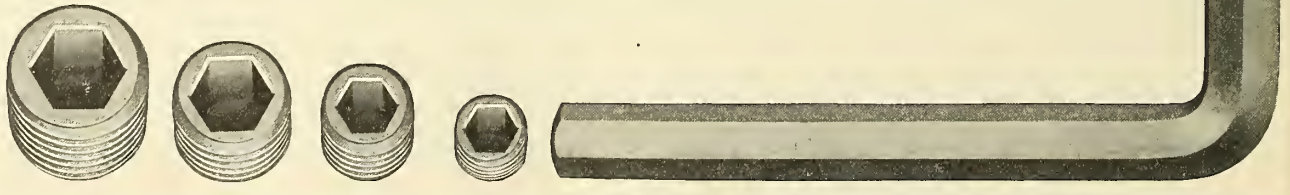
One key is packed with each box of screws

Diameter	Thread	Length	Packed	List Prices per 100
$\frac{3}{8}$ inch	16	$\frac{3}{8}$ inch	100 in box	$3.30
*$\frac{1}{2}$ inch	12 and 13	$\frac{9}{16}$ inch	100 in box	3.90
$\frac{5}{8}$ inch	11	$\frac{11}{16}$ inch	50 in box	5.40
$\frac{3}{4}$ inch	10	$\frac{7}{8}$ inch	50 in box	8.40

List Prices For Extra Wrenches or Keys

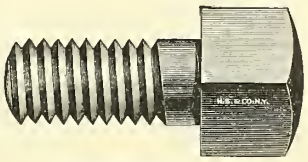
For $\frac{3}{8}$-inch screws, per 100	$1.15
For $\frac{1}{2}$-inch screws, per 100	1.75
For $\frac{5}{8}$-inch screws, per 100	2.30
For $\frac{3}{4}$-inch screws, per 100	3.50

*We make $\frac{1}{2}$-inch screws with 12 and 13 threads, and unless otherwise specified always send 13.

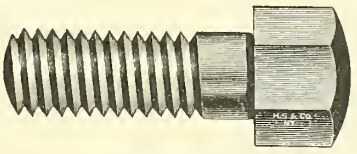


SEE DISCOUNT SHEET

Iron Cap Screws



Square Head



Hexagon Head

On all Cap Screws of one inch and less in diameter, and less than four inches long, threads are cut three-quarters of the length. Beyond four inches threads are cut half the length. Regular Cap Screws are soft and have ground heads. Length of Cap Screws is measured under head to end.

List Per 100

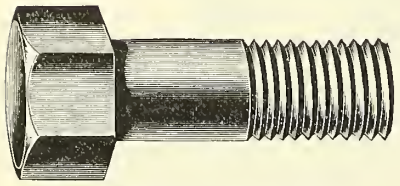
Diameter of screw, inch	1/4	5/16	3/8	7/16	*1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4
Threads to inch	20	18	16	14	*12 & 13	12	11	10	9	8	7	7
Hexagon, diameter of head, inch	7/16	1/2	9/16	5/8	3/4	13/16	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
Square, diameter of head, inch	3/8	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1 1/8	1 1/4	1 3/8	1 1/2
Length of head, inch	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4
Length, Inches												
3/4	$3.00	$3.25	$3.75	$4.50	$5.70							
7/8	3.15	3.40	3.90	4.70	5.80							
1	3.25	3.50	4.00	4.90	5.90	$9.25	$9.25					
1 1/4	3.50	3.75	4.25	5.30	6.50	9.50	9.50	$12.50				
1 1/2	3.75	4.00	4.50	5.70	7.10	10.00	10.00	13.50	$18.40			
1 3/4	4.00	4.25	4.85	6.10	7.70	10.75	10.75	14.50	19.70	$22.75		
2	4.25	4.85	5.20	6.50	8.30	11.50	11.50	15.50	21.00	25.00	$34.00	$38.50
2 1/4	4.70	5.35	5.55	7.15	8.90	12.60	12.60	16.50	22.40	27.25	36.75	42.00
2 1/2	5.25	5.80	6.00	7.50	9.50	13.60	13.60	17.50	23.70	29.50	39.50	45.50
2 3/4	5.75	6.30	6.65	7.90	10.10	14.40	14.40	19.00	25.00	31.75	42.25	49.00
3	6.25	6.80	7.20	8.40	10.70	15.20	15.20	20.60	26.40	34.00	45.00	52.50
3 1/4	....	....	....	9.15	11.50	16.00	16.00	22.10	28.20	36.25	47.75	56.00
3 1/2	....	....	....	9.75	12.30	17.30	17.30	23.70	30.00	38.50	50.50	59.50
3 3/4	....	....	....	10.50	13.10	18.60	18.60	25.30	31.80	40.75	53.25	63.00
4	....	....	....	11.10	13.90	19.90	19.90	26.90	33.60	43.00	56.00	66.50
4 1/4	....	....	....	....	....	....	21.20	28.50	35.40	45.25	58.75	70.00
4 1/2	....	....	....	....	....	....	22.50	30.10	37.20	47.50	61.50	73.50
4 3/4	....	....	....	....	....	....	....	31.70	39.00	49.75	64.25	77.00
5	....	....	....	....	....	....	....	....	40.80	52.00	67.00	80.50
Add for each 1/4 inch	$ .40	.50	.60	.70	.80	1.30	1.30	1.60	1.80	2.25	2.75	3.50

For Steel Cap Screws add 25% to above list.

Special prices on Black Heads, extra finished and case-hardened screws. Cap Screws with over-sized heads take the list of regular Cap Screws of the same sized heads. State whether V or U. S. Standard threads are wanted.

* On 1/2-inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).

S. A. E. or A. L. A. M. Standard Hexagon Head Cap Screws



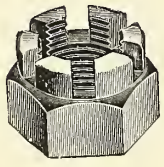
Length of cap screw is measured from under head to end

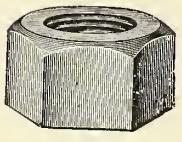
List Per 100

Dia. Head	3/8	1/2	9/16	11/16	3/4	7/8	15/16	1	1 1/8	1 1/4
Length Head	3/16	15/64	9/32	21/64	3/8	27/64	15/32	33/64	9/16	21/32
Dia. Screw	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	7/8
Threads to Inch	28	24	24	20	20	18	18	16	16	14
Length of Screw Inches										
3/4	$3.45	$4.10	$4.70							
7/8	3.65	4.30	4.90	$6.60						
1	3.85	4.50	5.10	6.80	$7.40					
1 1/4	4.10	4.80	5.35	7.35	8.15	$11.90				
1 1/2	4.40	5.10	5.65	8.00	8.90	12.50	$14.70	$16.90		
1 3/4	4.70	5.45	6.05	8.65	9.65	13.45	15.80	18.15	$24.65	$28.45
2	5.00	6.05	6.50	9.25	10.40	14.40	16.90	19.40	26.25	31.25
2 1/4	5.90	6.70	6.95	10.05	11.15	15.75	18.20	20.65	28.00	34.10
2 1/2	6.55	7.25	7.50	10.65	11.90	17.00	19.45	21.90	29.65	36.90
2 3/4	7.20	7.90	8.30	11.25	12.60	18.00	20.90	23.80	31.25	39.70
3	7.80	8.50	9.00	11.95	13.40	19.00	22.40	25.75	33.00	42.50
3 1/4	....	....	....	12.90	14.40	20.00	23.90	27.65	35.25	45.35
3 1/2	....	....	....	13.80	15.40	21.65	25.65	29.65	37.50	48.15
3 3/4	....	....	....	14.75	16.40	23.25	27.45	31.65	39.75	50.95
4	....	....	....	15.65	17.40	24.90	29.25	33.65	42.00	53.75
4 1/4	....	....	....	.....	18.40	26.50	31.10	35.65	44.25	56.55
4 1/2	....	....	....	.....	19.40	28.15	33.90	37.65	46.50	59.40
4 3/4	....	....	....	.....	.....	.....	36.70	39.65	48.75	62.20
5	....	....	....	.....	.....	.....	39.50	41.65	51.00	65.00

See discount sheet

S. A. E. or A. L. A. M. Standard Castellated and Plain Nuts



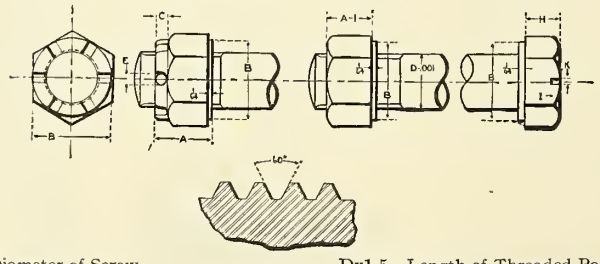


Milled from Hexagon Bars

Size Bolt	Thread	Outside Diameter	Height Castellated Nut	Depth of Slot	Height Plain Nut
1/4	28	3/8	9/32	3/32	7/32
5/16	24	1/2	21/64	3/32	17/64
3/8	24	9/16	13/32	1/8	21/64
7/16	20	11/16	29/64	1/8	3/8
1/2	20	3/4	9/16	3/16	7/16
9/16	18	7/8	39/64	3/16	31/64
5/8	18	15/16	23/32	1/4	35/64
11/16	16	1	49/64	1/4	19/32
3/4	16	1 1/8	13/16	1/4	21/32
7/8	14	1 1/4	29/32	1/4	49/64
1	14	1 7/16	1	1/4	7/8

Prices on application

Data of S. A. E. or A. L. A. M. Standard Bolt and Nut

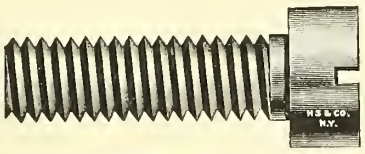


D—Diameter of Screw
P—Pitch of Thread
B—Refers to all Nuts and Screw Heads
Dx1.5—Length of Threaded Portion
P-8—Flat Top
d—Dia. of Cotterpin

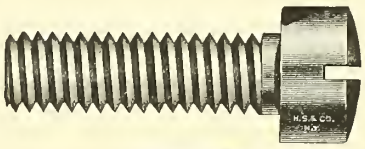
D diam.	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1
P threads	28	24	24	20	20	18	18	16	16	14	14
A	9/32	21/64	13/32	29/64	9/16	39/64	23/32	49/64	13/16	29/32	1
A-1	7/32	17/64	21/64	3/8	7/16	31/64	35/64	19/32	21/32	49/64	7/8
B	*7/16	1/2	9/16	¶5/8	3/4	7/8	15/16	1	‡1 1/16	1 1/4	1 7/16
C	3/32	3/32	1/8	1/8	3/16	3/16	1/4	1/4	1/4	1/4	1/4
E	5/64	5/64	1/8	1/8	1/8	5/32	5/32	5/32	5/32	5/32	5/32
H	3/16	15/64	9/32	21/64	3/8	27/64	15/32	33/64	9/16	21/32	3/4
I	3/32	7/64	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
K	1/16	1/16	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32
d	1/16	1/16	3/32	3/32	3/32	1/8	1/8	1/8	1/8	1/8	1/8

*This dimension applies to new S. A. E. list only; should be 3/8 inch for old A. L. A. M.
¶This dimension applies to new S. A. E. list only; should be 11/16 inch for old A. L. A. M.
‡This dimension applies to new S. A. E. list only; should be 1 1/8 inch for old A. L. A. M.

Iron Cap Screws



Round Head



Fillister Head

Length of Cap Screws is measured from under head to end

List Per 100

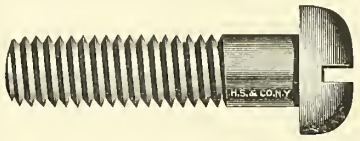
Diameter of screw, inch	1/8	3/16	1/4	5/16	3/8	7/16	*1/2	9/16	5/8	3/4	7/8	1
Threads per inch	40	24	20	18	16	14	*12 & 13	12	11	10	9	8
Diameter of head, inches	3/16	1/4	3/8	7/16	9/16	5/8	3/4	13/16	7/8	1	1 1/8	1 1/4
Length of head, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1
Length, Inches												
3/4	$2.00	$2.25	$2.50	$3.00	$3.50	$4.00	$5.00					
1	2.25	2.50	2.75	3.25	3.75	4.25	5.30	$6.60				
1 1/4	2.50	2.75	3.00	3.50	4.00	4.50	5.60	6.90	$9.00			
1 1/2	2.75	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	$12.00		
1 3/4	3.00	3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50	$15.25	
2	3.25	3.50	3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00	16.00	$19.20
2 1/4	3.50	3.75	4.00	4.75	5.50	6.00	7.25	8.50	11.50	13.75	16.75	20.20
2 1/2	3.75	4.00	4.25	5.15	6.00	6.50	7.75	9.00	12.00	14.50	17.50	21.25
2 3/4	....	4.25	4.50	5.55	6.50	7.00	8.25	9.50	12.75	15.25	18.30	22.40
3	....	....	4.75	5.95	7.00	7.50	8.75	10.00	13.50	16.00	19.10	23.60
3 1/4	....	....	....	6.35	7.50	8.00	9.25	10.50	14.25	16.75	20.00	24.85
3 1/2	.....	....	....	....	8.00	8.50	9.75	11.00	15.00	17.50	21.00	26.10
3 3/4	....	....	....	....	....	9.00	10.25	11.50	15.75	18.25	22.00	27.35
4	....	....	....	....	....	....	10.75	12.00	16.50	19.00	23.00	28.60
4 1/4	....	....	....	....	....	....	....	12.50	17.25	19.75	24.00	29.85
4 1/2	....	....	....	....	....	....	....	....	18.00	20.50	25.00	31.10
4 3/4	....	....	....	....	....	....	....	....	....	21.25	26.00	32.35
5	....	....	....	....	....	....	....	....	....	....	27.00	33.60
Add for each 1/4 inch	$ .25	.25	.25	.40	.50	.50	.50	.50	.75	.75	1.00	1.25

For Steel Set Screws add 25 per cent. to above list.

State whether V or U. S. Standard threads are wanted.

* On 1/2-inch screws state whether 12 or 13 threads are wanted. When not specified we send 13 threads (U. S. Standard).

Button Head, Iron Cap Screws



Length of Cap Screws is measured from under head to end

List Per 100

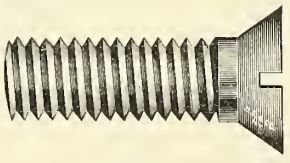
Diameter of screw, inch.....	1/8	3/16	1/4	5/16	3/8	7/16	*1/2	9/16	5/8	3/4
Threads per inch.....	40	24	20	18	16	14	*12 and 13	12	11	10
Diameter of head, inches....	7/32 full	5/16	7/16	9/16	5/8	3/4	13/16	15/16	1	1 1/4
Length, Inches										
3/4	$2.25	$2.50	$3.00	$3.50	$4.00	$5.00				
1	2.50	2.75	3.25	3.75	4.25	5.30	$6.60			
1 1/4	2.75	3.00	3.50	4.00	4.50	5.60	6.90	$9.00		
1 1/2	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	$12.00	
1 3/4	3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50	$18.20
2	....	3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00	19.20
2 1/4	....	....	4.75	5.50	6.00	7.25	8.50	11.50	13.75	20.20
2 1/2	....	....	....	6.00	6.50	7.75	9.00	12.00	14.50	21.25
2 3/4	....	....	....	....	7.00	8.25	9.50	12.75	15.25	22.40
3	....	....	....	....	....	8.75	10.00	13.50	16.00	23.60
Add for each 1/4 inch.....	$ .25	.25	.40	.50	.50	.50	.50	.75	.75	1.15

For Steel Cap Screws add 25 per cent to above list

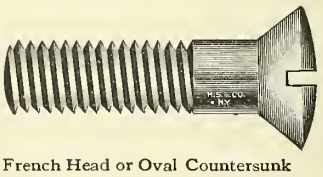
State whether V or U. S. Standard threads are wanted.

* On 1/2-inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard)

Flat and French Head Iron Cap Screws



Flat Head



French Head or Oval Countersunk

Length of Flat Head Cap Screws is measured over all. French Head or Oval Countersunk from top of countersink to end.

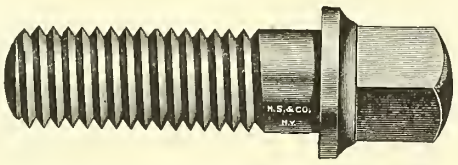
Diameter of screw, inch.....	1/8	3/16	1/4	5/16	3/8	7/16	*1/2	9/16	5/8	3/4
Threads per inch.....	40	24	20	18	16	14	*12 and 13	12	11	10
Diameter of head, inches....	1/4	3/8	15/32	5/8	3/4	13/16	7/8	1	1 1/8	1 3/8
Length, Inches										
3/4	$2.25	$2.50	$3.10	$4.00	$5.00					
1	2.50	2.75	3.35	4.25	5.30	$6.60				
1 1/4	2.75	3.00	3.60	4.50	5.60	6.90	$9.00			
1 1/2	3.00	3.25	3.85	4.75	5.90	7.20	9.50	$12.00		
1 3/4	3.25	3.50	4.10	5.00	6.20	7.50	10.00	12.50	$14.50	
2	....	3.75	4.35	5.50	6.75	8.00	10.75	13.00	15.25	$19.20
2 1/4	....	....	4.75	6.00	7.25	8.50	11.50	13.75	16.00	20.20
2 1/2	....	....	....	6.50	7.75	9.00	12.00	14.50	16.75	21.25
2 3/4	....	....	....	7.00	8.25	9.50	12.75	15.25	17.50	22.40
3	....	....	....	....	8.75	10.00	13.50	16.00	18.30	23.60
Add for each 1/4 inch.....	$ .25	.25	.40	.50	.50	.50	.50	.75	1.00	1.25

For Steel Cap Screws, add 25 per cent. to above list

State whether V or U. S. Standard threads are wanted

*On 1/2-inch screws state whether 12 or 13 threads are wanted. When not specified we send 13 threads (U. S. Standard)

Collar Screws



Made to order only. Prices are per 100 for not less than 100 of one size. When collars are wider than standard, price will be according to size of collar. Length is measured from under head to extreme point.

Diameter of Screw, Inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
Length Inches										
3/4	$2.50	$2.80	$3.10	$3.75	$4.40	$5.00	$6.25			
1	2.80	3.10	3.40	4.05	4.70	5.30	6.60	$8.25		
1 1/4	3.10	3.40	3.70	4.35	5.00	5.60	7.00	8.60	$11.25	
1 1/2	3.40	3.70	4.00	4.70	5.30	5.95	7.40	9.00	11.90	$15.00
1 3/4	3.70	4.05	4.35	5.05	5.65	6.35	7.80	9.45	12.60	15.60
2	....	4.40	4.70	5.45	6.25	6.85	8.40	10.00	13.35	16.25
2 1/4	....	....	5.05	5.95	6.85	7.40	9.00	10.60	14.15	17.10
2 1/2	....	....	5.45	6.45	7.55	8.05	9.60	11.25	15.00	18.00
2 3/4	....	....	....	6.95	8.20	8.75	10.30	11.90	15.90	19.00
3	....	....	....	7.50	8.85	9.50	11.00	12.60	16.85	20.00
3 1/4	....	....	....	....	9.50	10.30	11.80	13.40	17.95	21.20
3 1/2	....	....	....	....	10.20	11.10	12.60	14.30	19.10	22.60
3 3/4	....	....	....	....	....	11.95	13.50	15.30	20.40	24.20
4	....	....	....	....	....	12.80	14.40	16.30	21.70	25.80
4 1/4	....	....	....	....	....	....	15.40	17.50	23.20	27.70
4 1/2	....	....	....	....	....	....	16.40	18.70	24.70	29.60
4 3/4	....	....	....	....	....	....	....	20.10	26.50	31.80
5	....	....	....	....	....	....	....	21.50	28.30	34.00

Philadelphia Eagle Carriage Bolts

The length of Turned, Bastard and Bevel Head Philadelphia Eagle Bolts is measured from under head to end; those with countersunk heads are measured overall.



Turned Oval Head



Bastard Head



Bevel Head



Countersunk Head

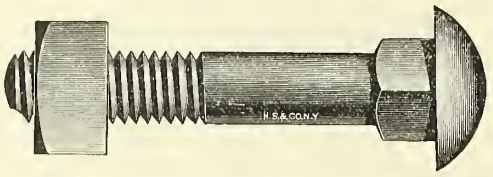
List per 100

List of May 24, 1899

Length Inches	Diameter Inch 3/16 and 1/4	5/16	3/8	7/16	1/2	9/16 and 5/8	3/4
1	$3.00	$4.00	$5.40	$7.30	$9.50		
1 1/4	3.10	4.00	5.40	7.30	9.50		
1 1/2	3.20	4.00	5.40	7.30	9.50		
1 3/4	3.30	4.00	5.40	7.50	9.80		
2	3.40	4.10	5.40	7.70	10.10	$16.75	
2 1/4	3.50	4.20	5.60	7.90	10.35	17.25	
2 1/2	3.60	4.40	5.80	8.15	10.65	17.75	
2 3/4	3.70	4.50	6.00	8.35	10.90	18.25	
3	3.80	4.70	6.20	8.55	11.20	18.75	$21.50
3 1/4	3.90	4.90	6.50	8.75	11.50	19.25	22.35
3 1/2	4.00	5.00	6.70	8.95	11.75	19.75	23.25
3 3/4	4.10	5.20	6.90	9.15	12.00	20.25	24.50
4	4.20	5.30	7.10	9.40	12.30	20.75	25.00
4 1/4	4.35	5.50	7.30	9.60	12.60	21.25	26.85
4 1/2	4.50	5.70	7.50	9.80	12.90	21.75	27.80
4 3/4	4.65	5.85	7.70	10.00	13.15	22.25	28.30
5	4.80	6.00	7.90	10.25	13.45	22.75	28.75
5 1/2	5.10	6.30	8.40	10.65	14.00	23.75	30.50
6	5.40	6.60	8.80	11.05	14.55	24.75	32.50
6 1/2	....	7.00	9.30	11.50	15.10	25.75	33.50
7	....	7.30	9.70	11.85	15.70	26.75	36.25
7 1/2	....	7.60	10.10	12.35	16.25	27.75	38.00
8	....	7.90	10.50	12.75	16.80	28.75	40.00
8 1/2	....	8.20	10.90	13.15	17.35	29.75	42.00
9	....	8.50	11.40	13.60	17.90	30.75	43.75
9 1/2	....	....	11.90	14.00	18.50	31.75	45.75
10	....	....	12.40	14.45	19.00	32.75	47.50
10 1/2	....	....	.....	14.85	19.60	33.75	49.30
11	....	....	.....	15.25	20.15	34.75	51.25
11 1/2	....	....	.....	15.70	20.70	35.75	53.00
12	....	....	.....	16.15	21.30	36.75	55.00

For common Carriage Bolts, see next page

Common Carriage Bolts



The length of common Carriage Bolts is measured from under head to end

List of November 1, 1912

List Per 100

Length Inches	Diameter, Inch 1/4	5/16	3/8	7/16	1/2	9/16 & 5/8	3/4
1½	$1.00	$1.40	$1.90	$2.20			
2	1.10	1.52	2.06	2.40			
2½	1.20	1.64	2.22	2.60	$3.25	$5.75	$8.50
3	1.30	1.76	2.38	2.80	3.53	6.13	9.00
3½	1.40	1.88	2.54	3.00	3.81	6.51	9.50
4	1.50	2.00	2.70	3.20	4.09	6.89	10.00
4½	1.60	2.12	2.86	3.40	4.37	7.27	10.50
5	1.70	2.24	3.02	3.60	4.65	7.65	11.00
5½	1.80	2.36	3.18	3.80	4.93	8.03	11.50
6	1.90	2.48	3.34	4.00	5.21	8.41	12.00
6½	2.00	2.60	3.50	4.20	5.49	8.79	12.50
7	2.10	2.72	3.66	4.40	5.77	9.17	13.00
7½	2.20	2.84	3.82	4.60	6.05	9.55	13.50
8	2.30	2.96	3.98	4.80	6.33	9.93	14.00

Length Inches	Diameter, Inch 1/4	5/16	3/8	7/16	1/2	9/16 & 5/8	3/4
8½	$2.40	$3.08	$4.14	$5.00	$6.61	$10.31	$14.50
9	2.50	3.20	4.30	5.20	6.89	10.69	15.00
9½	2.60	3.32	4.46	5.40	7.17	11.07	15.50
10	2.70	3.44	4.62	5.60	7.45	11.45	16.00
11	2.90	3.68	4.94	6.00	8.01	12.21	17.00
12	3.10	3.92	5.26	6.40	8.57	12.97	18.00
13	3.30	4.16	5.58	6.80	9.13	13.73	19.00
14	3.50	4.40	5.90	7.20	9.69	14.49	20.00
15	3.70	4.64	6.22	7.60	10.25	15.25	21.00
16	3.90	4.88	6.54	8.00	10.81	16.01	22.00
17	4.10	5.12	6.86	8.40	11.37	16.77	23.00
18	4.30	5.36	7.18	8.80	11.93	17.53	24.00
19	4.50	5.60	7.50	9.20	12.49	18.29	25.00
20	4.70	5.84	7.82	9.60	13.05	19.05	26.00

For Bolts with hexagon nuts, add 15 per cent. to above list

Common Carriage

Approximate Contents of Full Cases

Length Inches	Diameter, Inch 1/4	5/16	3/8	7/16	1/2
1½	10000	5000	4000	2500	2000
1¾	10000	5000	3300	2500	2000
2	10000	5000	3300	2500	1800
2¼	9600	5000	3300	2500	1800
2½	9000	5000	3000	2500	1800
2¾	8000	4000	3000	2000	1800
3	7500	4000	3000	2000	1600
3¼	7200	4000	3000	2000	1400
3½	6400	4000	2400	1800	1200
3¾	6400	3800	2800	2100	1200
4	6600	3300	2500	1800	1200
4¼	6000	3300	2500	1500	1200
4½	5400	3600	2000	1400	1200
4¾	5200	3000	2000	1600	1200
5	5000	3000	2200	1500	1200
5½	4000	3000	2000	1300	1000
6	4000	2100	2000	1500	1000

Length Inches	Diameter, Inch 5/16	3/8	7/16	1/2
6½	2400	1600	1000	800
7	2400	1250	1100	800
7½	1700	1500	1000	800
8	2000	1500	1000	800
8½	....	1250	800	500
9	....	1100	1000	500
9½	....	1100	800	500
10	....	1000	800	500
11	....	1000	600	500
12	....	1000	700	400
13	....	....	....	400
14	....	....	....	400
15	....	....	....	400
16	....	....	....	400
17	....	....	....	400
18	....	....	....	400

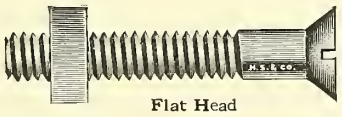
Approximate Weights

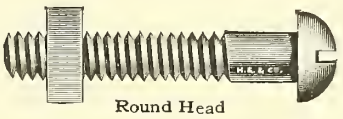
Pounds Per 100 Bolts

Length Inches	Diameter, Inch 3/16	1/4	5/16	3/8	7/16	1/2	5/8
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1	1.6	2.6	5.0	7.1	10.5		
1½	2.0	3.2	6.0	8.6	12.5	17.5	
2	2.4	3.9	7.0	10.1	14.4	20.1	36.6
2½	2.8	4.5	8.00	11.6	16.4	22.7	40.6
3	3.2	5.1	9.00	13.1	18.3	25.2	44.6
3½	3.6	5.7	10.00	14.6	20.3	27.7	48.6
4	4.0	6.4	11.0	16.1	22.2	30.1	52.6
4½	...	7.0	12.0	17.6	24.2	32.8	56.6
5	...	7.7	13.0	19.1	26.1	35.4	60.6
5½	...	8.3	13.9	20.5	28.0	37.9	64.6
6	...	9.0	14.9	21.9	30.0	40.4	68.6
6½	...	9.6	15.8	23.3	32.0	42.9	72.6
7	...	10.2	16.8	24.7	33.9	45.4	76.6

Length Inches	Diameter, Inch 1/4	5/16	3/8	7/16	1/2	5/8
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
7½	10.8	17.7	26.1	35.9	47.9	80.6
8	11.5	18.7	27.5	37.8	50.4	84.6
9	....	....	30.3	41.7	55.6	92.6
10	....	....	33.1	45.6	61.	101.0
11	....	....	....	....	66.2	109.0
12	....	....	....	....	71.4	117.0
13	....	....	....	....	76.6	125.0
14	....	....	....	....	81.8	133.0
15	....	....	....	....	87.	141.0
16	....	....	....	....	92.2	149.0
17	....	....	....	....	97.4	157.0
18	....	....	....	....	102.6	165.0
19	....	....	....	....	107.8	173.0
20	....	....	....	....	113.0	181.0

Stove Bolts


Flat Head


Round Head

Length of round head Stove Bolt is measured from under the head to end; flat head overall

List of June 1, 1908

List Per 100

Length Inches	Diameter, Inch								
	1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2
3/8	$ .85	$ .85	$ .85						
1/2	.85	.85	.85	$1.20	$1.20				
5/8	.85	.85	.85	1.20	1.20				
3/4	.85	.85	.85	1.20	1.20	$1.75	$2.65		
7/8	.90	.90	.90	1.25	1.25	1.80	2.70		
1	.90	.90	.90	1.30	1.30	1.85	2.75	$ 7.30	$9.50
1 1/8	.95	.95	.95	1.35	1.35	1.90	2.85	7.30	9.50
1 1/4	1.00	1.00	1.00	1.40	1.40	1.95	2.90	7.30	9.50
1 3/8	1.05	1.05	1.05	1.45	1.45	2.00	3.00	7.30	9.50
1 1/2	1.10	1.10	1.10	1.50	1.50	2.05	3.10	7.30	9.50
1 3/4	1.15	1.15	1.15	1.55	1.55	2.15	3.20	7.50	9.80
2	1.20	1.20	1.20	1.60	1.60	2.30	3.40	7.70	10.10
2 1/4	....	....	1.25	1.70	1.70	2.40	3.60	7.90	10.35
2 1/2	....	....	1.30	1.80	1.80	2.50	3.80	8.15	10.65
2 3/4	....	....	1.40	1.90	1.90	2.60	4.00	8.35	10.90
3	....	....	1.50	2.00	2.00	2.70	4.20	8.55	11.20
3 1/4	....	....	1.60	2.10	2.10	2.85	4.40	8.75	11.50
3 1/2	....	....	1.70	2.20	2.20	3.00	4.60	8.95	11.75
3 3/4	....	....	1.80	2.30	2.30	3.15	4.80	9.15	12.00
4	....	....	1.90	2.40	2.40	3.30	5.00	9.40	12.30
4 1/4	....	....	2.00	2.50	2.50	3.45	5.20	9.60	12.60
4 1/2	....	....	2.10	2.60	2.60	3.60	5.40	9.80	12.90
4 3/4	....	....	2.20	2.70	2.70	3.75	5.60	10.00	13.15
5	....	....	2.30	2.85	2.85	3.90	5.80	10.25	13.45
5 1/4	....	....	2.40	3.00	3.00	4.10	6.00		
5 1/2	....	....	2.50	3.15	3.15	4.30	6.20	10.65	14.00
5 3/4	....	....	2.60	3.30	3.30	4.50	6.40		
6	....	....	2.75	3.45	3.45	4.70	6.60	11.05	14.55
6 1/4	....	....	2.90	3.60	3.60	4.90	6.80		
6 1/2	....	....	3.05	3.75	3.75	5.10	7.00	11.50	15.10
7	....	....	....	....	....	....	....	11.85	15.70

Nickel-plating, $1.00 extra per 100 added to List Price

Approximate Number of Bolts in a Keg

Length Inches	5/32	3/16	7/32	1/4	5/16	3/8
3/8	13000	12000				
1/2	12000	10000	9500	9000		
5/8	11000	9000	8500	8000		
3/4	10000	8000	7500	7000	4800	3500
7/8	9000	7500	7000	6500	4500	3200
1	8000	7000	6500	6000	4000	3000
1 1/8	7500	6500	6000	5500	3800	2700
1 1/4	7000	6000	5500	5000	3500	2500
1 3/8	6500	5500	5000	4800	3200	2200
1 1/2	6000	5000	4800	4500	3000	2100
1 3/4	5000	4000	4500	4000	2700	2000
2	4000	3000	4000	3500	2300	1700
2 1/4	3500	3000	3500	3000	2000	1500
2 1/2	....	2800	3000	2800	1800	1400
2 3/4	....	2500	2800	2500	1600	1200
3	....	2000	2500	2000	1300	1000

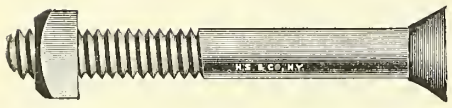
Length Inches	1/4	5/16	3/8
3 1/4	2000	1300	1000
3 1/2	1800	1200	900
3 3/4	1800	1100	900
4	1500	900	750
4 1/4	1200	800	650
4 1/2	1200	800	600
4 3/4	1200	800	550
5	1000	700	500
5 1/4	1000	700	470
5 1/2	1000	660	450
5 3/4	1000	600	420
6	800	530	400
6 1/4	800	500	370
6 1/2	800	500	350

SEE DISCOUNT SHEET

Common Tire Bolts

With Chamfered and Trimmed Nuts

The length of these Bolts is measured overall



The length of these bolts is measured overall

List of December 28, 1899 — List Per 100

Length Inches	Diameter, Inch 1/8	3/16	1/4	5/16	3/8
1	$ .60	$ .60	$ .95	$1.40	$2.20
1 1/4	.60	.60	.95	1.40	2.20
1 1/2	.60	.60	.95	1.40	2.20
1 3/4	.65	.65	1.00	1.40	2.20
2	.70	.70	1.05	1.47	2.20
2 1/4	....	.75	1.10	1.54	2.30
2 1/2	....	.80	1.15	1.61	2.40
2 3/4	....	.85	1.20	1.68	2.50
3	....	.90	1.25	1.75	2.60
3 1/4	....	.95	1.30	1.82	2.70
3 1/2	....	1.00	1.35	1.89	2.80
3 3/4	....	1.05	1.40	1.96	2.90
4	....	1.10	1.45	2.03	3.00
4 1/4	....	....	1.50	2.10	3.10
4 1/2	....	....	1.55	2.17	3.20
4 3/4	....	....	1.60	2.24	3.30
5	....	....	1.65	2.31	3.40
5 1/4	....	....	....	2.38	3.50
5 1/2	....	....	....	2.45	3.60
5 3/4	....	....	....	2.52	3.70
6	....	....	....	2.59	3.80

Blank Bolts

With Square, Round or Hexagon Heads. Finished Points

The length of these bolts is measured from under head to end



Square Head



Hexagon Head



Round Head

List of August 1, 1912 — List Per 100

Length Inches	Diameter, Inches 1/4	5/16	3/8	7/16	1/2	9/16 and 5/8	3/4	7/8	1	1 1/8	1 1/4
1 1/2	$1.20	$1.40	$1.60	$2.00	$2.50	$4.00	$6.10	$7.80	$10.40	$16.00	$21.60
2	1.30	1.52	1.74	2.18	2.74	4.36	6.65	8.50	11.30	17.20	23.10
2 1/2	1.40	1.64	1.88	2.36	2.98	4.72	7.20	9.20	12.20	18.40	24.60
3	1.50	1.76	2.02	2.54	3.22	5.08	7.75	9.90	13.10	19.60	26.10
3 1/2	1.60	1.88	2.16	2.72	3.46	5.44	8.30	10.60	14.00	20.80	27.60
4	1.70	2.00	2.30	2.90	3.70	5.80	8.85	11.30	14.90	22.00	29.10
4 1/2	1.80	2.12	2.44	3.08	3.94	6.16	9.40	12.00	15.80	23.20	30.60
5	1.90	2.24	2.58	3.26	4.18	6.52	9.95	12.70	16.70	24.40	32.10
5 1/2	2.00	2.36	2.72	3.44	4.42	6.88	10.50	13.40	17.60	25.60	33.60
6	2.10	2.48	2.86	3.62	4.66	7.24	11.05	14.10	18.50	26.80	35.10
6 1/2	2.20	2.60	3.00	3.80	4.90	7.60	11.60	14.80	19.40	28.00	36.60
7	2.30	2.72	3.14	3.98	5.14	7.96	12.15	15.50	20.30	29.20	38.10
7 1/2	2.40	2.84	3.28	4.16	5.38	8.32	12.70	16.20	21.20	30.40	39.60
8	2.50	2.96	3.42	4.34	5.62	8.68	13.25	16.90	22.10	31.60	41.10
9	2.70	3.20	3.70	4.70	6.10	9.40	14.35	18.30	23.90	34.00	44.10
10	2.90	3.44	3.98	5.06	6.58	10.12	15.45	19.70	25.70	36.40	47.10
11	3.10	3.68	4.26	5.42	7.06	10.84	16.55	21.10	27.50	38.80	50.10
12	3.30	3.92	4.54	5.78	7.54	11.56	17.65	22.50	29.30	41.20	53.10
13	....	....	4.82	6.14	8.02	12.28	18.75	23.90	31.10	43.60	56.10
14	....	....	5.10	6.50	8.50	13.00	19.85	25.30	32.90	46.00	59.10
15	....	....	5.38	6.86	8.98	13.72	20.95	26.70	34.70	48.40	62.10
16	....	....	5.66	7.22	9.46	14.44	22.05	28.10	36.50	50.80	65.10
17	....	....	....	....	9.94	15.16	23.15	29.50	38.30	53.20	68.10
18	....	....	....	....	10.42	15.88	24.25	30.90	40.10	55.60	71.10
19	....	....	....	....	10.90	16.60	25.35	32.30	41.90	58.00	74.10
20	....	....	....	....	11.38	17.32	26.45	33.70	43.70	60.40	77.10

The following extras are understood as a part of this list:
Blank Bolts with Hexagon Heads, 10 per cent. extra.
Blank Bolts with Tee, Askew, or Eccentric Heads, 20 per cent. extra.
Intermediate lengths take next higher list.

Machine Bolts

With Square Heads and Square Nuts. Finished Points



Square Head and Square Nut



Hexagon Head and Hexagon Nut



Button Head and Square Nut

Length of these machine bolts is measured under head to end

List of August 1, 1912

List Per 100

Length Inches	Diameter, Inches										
	1/4	5/16	3/8	7/16	1/2	9/16 and 5/8	3/4	7/8	1	1 1/8	1 1/4
1 1/2	$1.70	$2.00	$2.40	$2.80	$3.60	$5.20	$7.70	$10.50	$15.10	$22.50	$30.00
2	1.78	2.12	2.56	3.00	3.86	5.58	8.25	11.20	16.00	23.70	31.50
2 1/2	1.86	2.24	2.72	3.20	4.12	5.96	8.80	11.90	16.90	24.90	33.00
3	1.94	2.36	2.88	3.40	4.38	6.34	9.35	12.60	17.80	26.10	34.50
3 1/2	2.02	2.48	3.04	3.60	4.64	6.72	9.90	13.30	18.70	27.30	36.00
4	2.10	2.60	3.20	3.80	4.90	7.10	10.45	14.00	19.60	28.50	37.50
4 1/2	2.18	2.72	3.36	4.00	5.16	7.48	11.00	14.70	20.50	29.70	39.00
5	2.26	2.84	3.52	4.20	5.42	7.86	11.55	15.40	21.40	30.90	40.50
5 1/2	2.34	2.96	3.68	4.40	5.68	8.24	12.10	16.10	22.30	32.10	42.00
6	2.42	3.08	3.84	4.60	5.94	8.62	12.65	16.80	23.20	33.30	43.50
6 1/2	2.50	3.20	4.00	4.80	6.20	9.00	13.20	17.50	24.10	34.50	45.00
7	2.58	3.32	4.16	5.00	6.46	9.38	13.75	18.20	25.00	35.70	46.50
7 1/2	2.66	3.44	4.32	5.20	6.72	9.76	14.30	18.90	25.90	36.90	48.00
8	2.74	3.56	4.48	5.40	6.98	10.14	14.85	19.60	26.80	38.10	49.50
9	2.90	3.80	4.80	5.80	7.50	10.90	15.95	21.00	28.60	40.50	52.50
10	3.06	4.04	5.12	6.20	8.02	11.66	17.05	22.40	30.40	42.90	55.50
11	3.22	4.28	5.44	6.60	8.54	12.42	18.15	23.80	32.20	45.30	58.50
12	3.38	4.52	5.76	7.00	9.06	13.18	19.25	25.20	34.00	47.70	61.50
13	....	....	6.08	7.40	9.58	13.94	20.35	26.60	35.80	50.10	64.50
14	....	....	6.40	7.80	10.10	14.70	21.45	28.00	37.60	52.50	67.50
15	....	....	6.72	8.20	10.62	15.46	22.55	29.40	39.40	54.90	70.50
16	....	....	7.04	8.60	11.14	16.22	23.65	30.80	41.20	57.30	73.50
17	....	....	7.36	9.00	11.66	16.98	24.75	32.20	43.00	59.70	76.50
18	....	....	7.68	9.40	12.18	17.74	25.85	33.60	44.80	62.10	79.50
19	....	....	8.00	9.80	12.70	18.50	26.95	35.00	46.60	64.50	82.50
20	....	....	8.32	10.20	13.22	19.26	28.05	36.40	48.40	66.90	85.50
21	....	....	....	....	13.74	20.02	29.15	37.80	50.20	69.30	88.50
22	....	....	....	....	14.26	20.78	30.25	39.20	52.00	71.70	91.50
23	....	....	....	....	14.78	21.54	31.35	40.60	53.80	74.10	94.50
24	....	....	....	....	15.30	22.30	32.45	42.00	55.60	76.50	97.50
25	....	....	....	....	15.82	23.06	33.55	43.40	57.40	78.90	100.50
26	....	....	....	....	....	....	34.65	44.80	59.20	81.30	103.50
27	....	....	....	....	....	....	35.75	46.20	61.00	83.70	106.50
28	....	....	....	....	....	....	36.85	47.60	62.80	86.10	109.50
29	....	....	....	....	....	....	37.95	49.00	64.60	88.50	112.50
30	....	....	....	....	....	....	39.05	50.40	66.40	90.90	115.50

The following extras are understood as a part of this list:

Bolts with Hexagon Heads or Hexagon Nuts, 10 per cent. extra.
If both Hexagon Heads and Hexagon Nuts, 20 per cent. extra.
Joint Bolts with Oblong Nuts, 10 per cent. extra.
Bolts with Tee Heads, Askew Heads, and Eccentric Heads, 20 per cent. extra.
Bolts with Cube Heads, 20 per cent. extra.
Bolts requiring extra upsets to form the head, 20 per cent. extra for each upset.
Button Heads, round neck, take above list.
Bolts without nuts, 6 inches and shorter, 10 per cent. additional discount.
Longer than 6 inches, 5 per cent. additional discount.

For approximate weights and contents of full packages, see next page

Machine Bolts

With Square Heads and Nuts

Approximate Weight, Pounds Per 100 Bolts

Length Inches	Diameter, Inch									
	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1
1	2.7	4.9	8.3	10.9	15.2	23.1	30.5			
1 1/4	3.0	5.5	9.0	11.9	16.5	24.8	32.5			
1 1/2	3.4	6.0	9.7	12.9	17.8	26.5	34.5	53.2		
1 3/4	3.7	6.5	10.4	13.8	19.1	28.1	36.5	56.0		
2	4.0	7.0	11.1	14.8	20.4	29.8	38.5	59.0	87	127
2 1/4	4.3	7.4	11.8	15.8	21.7	31.5	40.5	62.0	91	132
2 1/2	4.6	7.9	12.5	16.8	23.0	33.2	42.5	64.8	95	137
2 3/4	5.0	8.4	13.2	17.7	24.3	34.9	44.5	67.7	99	142
3	5.3	8.9	13.9	18.7	25.5	36.5	46.5	70.6	103	147
3 1/2	5.9	9.9	15.2	20.6	28.1	39.9	50.5	76.4	111	158
4	6.5	10.9	16.6	22.6	30.7	43.3	54.5	82.2	119	169
4 1/2	7.2	11.8	18.0	24.5	33.3	46.6	58.5	88.0	127	180
5	7.8	12.8	19.4	26.5	35.9	50.0	62.5	93.8	135	190
5 1/2	8.5	13.8	20.9	28.4	38.4	53.3	66.5	99.6	143	200
6	9.1	14.8	22.3	30.3	41.0	56.7	70.5	105.4	151	211
6 1/2	...	15.8	23.7	32.3	43.6	60.1	74.5	111.2	159	222
7	...	16.7	25.1	34.2	46.2	63.4	78.5	117.0	167	232
7 1/2	...	17.7	26.5	36.2	48.8	66.8	82.5	122.8	175	243
8	...	18.7	27.8	38.0	51.4	70.1	86.5	128.6	183	253
9	...	....	30.6	42.0	56.5	76.9	94.5	140.2	200	274
10	...	....	33.4	45.9	61.7	83.6	102.5	151.8	216	295
11	...	....	36.1	49.7	66.9	90.3	110.5	163.4	232	316
12	...	....	38.9	53.6	72.0	97.0	118.5	175.0	248	338
13	...	....	....	....	77.2	103.7	126.0	187.0	264	359
14	...	....	....	....	82.3	110.5	134.0	198.0	280	380
15	...	....	....	....	87.5	117.2	142.0	210.0	296	401
16	...	....	....	....	92.7	123.9	150.0	221.0	312	422
17	...	....	....	....	97.8	130.6	158.0	233.0	328	443
18	...	....	....	....	103.0	137.3	166.0	245.0	344	464
19	...	....	....	....	108.1	144.1	174.0	256.0	360	485
20	...	....	....	....	113.3	150.8	182.0	268.0	376	506

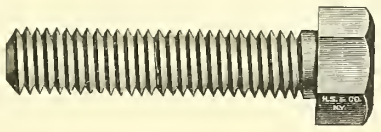
Approximate Contents of Full Cases and Kegs

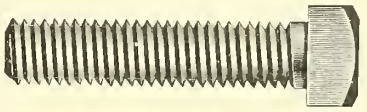
Length Inches	Diameter, Inch											
	1/4		5/16		3/8		1/2		5/8		3/4	
	Case	Keg	Case	Keg	Case	Keg	Case	Keg	Case	Keg	Case	Keg
1	1000	7500	800	4600	500	3000	300	1600	200			
1 1/4	1000	6800	900	4100	600	2800	300	1500	200	750		
1 1/2	1000	6000	800	3400	600	2500	500	1300	400	700	250	450
1 3/4	900	5000	700	3100	550	2200	500	1200	500	650	200	425
2	1000	4000	800	2800	650	2000	450	1100	500	600	200	400
2 1/4	1000	...	700	2400	550	1900	400	1000	450	550	250	375
2 1/2	900	...	600	2200	500	1700	400	950	400	500	300	350
2 3/4	800	...	500	2000	450	1600	350	...	350	475	250	
3	700	...	500	1900	400	1500	300	750	350	450	250	300
3 1/4	...	...	500	1800	350	1400	300	...	300	...	250	
3 1/2	600	...	450	1700	350	1300	300	700	300	400	200	275
3 3/4	...	...	400	1500	300	1200	300	...	250	...	200	
4	500	...	400	1300	300	1100	250	600	250	350	200	250
4 1/4	...	...	350	...	250	...	250	...	250	...	200	
4 1/2	500	...	350	...	250	900	250	550	250	325	200	225
4 3/4	...	...	...	...	250	...	200	...	250	...	200	
5	400	...	350	...	250	800	200	500	250	300	200	200
5 1/2	...	...	350	...	200	750	200	450	200	275	150	175
6	...	...	300	...	200	750	200	400	200	250	150	175
6 1/2	...	...	...	...	200	...	200	350	200	250	150	150
7	...	...	...	...	200	...	200	350	200	225	150	150
7 1/2	...	...	...	...	...	...	150	350	200	200	150	150
8	...	...	...	...	...	...	150	300	150	200	150	125
8 1/2	...	...	...	...	...	...	150	...	150	...	150	125
9	...	...	...	...	...	...	150	300	150	175	150	125
9 1/2	...	...	...	...	...	...	150	...	150		150	125
10	...	...	...	...	...	...	100	250	150	150	150	110
10 1/2	...	...	...	...	...	...	100	...	150	...	150	...
11	...	...	...	...	...	...	100	250	150	125	100	100
11 1/2	...	...	...	...	...	...	100	...	100	...	100	
12	...	...	...	...	...	...	100	200	100	125	100	100
14	...	...	...	...	...	...	...	...	...	...	100	
16	...	...	...	...	...	...	...	...	...	...	100	

SEE DISCOUNT SHEET

Forged Tap Bolts

With Square Heads





The length of Forged Tap Bolts is measured from under head to end

List of January 30, 1895

List Per 100

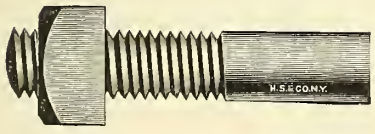
Length Inches	Diameter Inch								
	¼	5/16	⅜	7/16	½	9/16 and ⅝	¾	⅞	1
1½	$1.00	$1.15	$1.35	$1.60	$2.00	$3.00	$4.20	$6.00	$8.00
1¾	1.05	1.21	1.42	1.69	2.10	3.12	4.35	6.20	8.25
2	1.10	1.27	1.49	1.78	2.20	3.24	4.50	6.40	8.50
2¼	1.15	1.33	1.56	1.87	2.30	3.36	4.65	6.60	8.75
2½	1.20	1.39	1.63	1.96	2.40	3.48	4.80	6.80	9.00
2¾	1.25	1.45	1.70	2.05	2.50	3.60	4.95	7.00	9.25
3	1.30	1.51	1.77	2.14	2.60	3.72	5.10	7.20	9.50
3¼	....	1.57	1.84	2.23	2.70	3.84	5.25	7.40	9.75
3½	....	....	1.91	2.32	2.80	3.96	5.40	7.60	10.00
3¾	....	....	....	2.41	2.90	4.08	5.55	7.80	10.25
4	....	....	....	....	3.00	4.20	5.70	8.00	10.50

For Hexagon Heads, add 10 per cent. to above list.

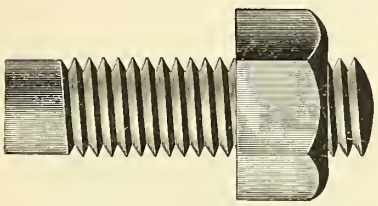


Railroad Track Bolts

We are in position to furnish cut-thread Track Bolts made of iron or steel of quality specially suitable for the purpose. Rolled thread Track Bolts are made of steel and are undoubtedly superior to all others both in strength and durability. Prices on receipt of quantity specifications



With Square Nut



With Hexagon Nut

Bolt Ends

With Square Nuts

List of February 14, 1895

Size of Iron Inch	Length Inches	Length of Thread Inches	List Per Pound	Size of Iron Inches	Length Inches	Length of Thread Inches	List Per Pound
5/16	6	1	$ .20	1⅛	13	4½	$ .10
⅜	7	1¼	.18	1¼	14	5	.11
7/16	7	1½	.16	1⅜	15	5½	.11
½	8	2½	.14	1½	16	6	.11
⅝	9	3	.12	1⅝	17	6½	.12
¾	10	3½	.10	1¾	18	7	.12
⅞	11	3½	.10	1⅞	19	7½	.12
1	12	4	.10	2	20	8	.12

For Hexagon Nuts, add 10 per cent. to above list
Prices of Bolt Ends shorter than above standard lengths will be quoted upon application

Milled Iron Studs



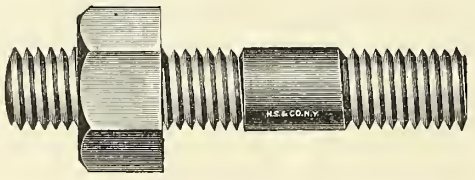
When ordering Studs, give length of thread wanted on each end, and length of body. Unless otherwise ordered, the shorter threaded end will be a tight fit and the longer end regular. The length is measured overall.

List Per 100

	Diameter, Inches									
	3/8	7/16	*1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4
Length Inches	Threads per Inch									
	16	14	*12 & 13	12	11	10	9	8	7	7
1 1/4	$3.35	$ 4.05	$4.40	$5.10						
1 1/2	3.50	4.20	4.60	5.30	$6.10					
1 3/4	3.65	4.35	4.80	5.50	6.30					
2	3.80	4.50	5.00	5.70	6.50	$8.80				
2 1/4	3.95	4.65	5.20	5.90	6.70	9.10				
2 1/2	4.10	4.80	5.40	6.10	6.90	9.40	$12.00			
2 3/4	4.25	4.95	5.60	6.30	7.10	9.70	12.50			
3	4.40	5.10	5.80	6.50	7.30	10.00	13.00	$17.00	$21.00	
3 1/4	.....	5.25	6.00	6.70	7.50	10.30	13.50	17.75	22.00	
3 1/2	.....	5.40	6.20	6.90	7.70	10.60	14.00	18.50	23.00	$27 00
3 3/4	.....	5.55	6.40	7.10	7.90	10.90	14.50	19.25	24.00	28.00
4	.....	.....	6.60	7.30	8.10	11.20	15.00	20.00	25.00	29.00
4 1/4	.....	.....	6.70	7.40	8.25	11.45	15.40	20.50	25.75	29.75
4 1/2	.....	.....	6.80	7.50	8.40	11.65	15.75	21.00	26.50	30.50
4 3/4	.....	.....	.....	7.60	8.55	11.90	16.15	21.50	27.25	31.25
5	.....	.....	.....	7.70	8.70	12.10	16.50	22.00	28.00	32.00
5 1/4	.....	.....	.....	7.80	8.85	12.35	16.90	22.50	28.75	32.75
5 1/2	.....	.....	.....	.....	9.00	12.55	17.25	23.00	29.50	33.50
5 3/4	.....	.....	.....	.....	9.15	12.80	17.65	23.50	30.25	34.25
6	.....	.....	.....	.....	9.30	13.00	18.00	24.00	31.00	35.00
Add for each 1/4 inch	$ .15	.20	.20	.20	.25	.30	.40	.60	.75	1.00

State whether V or U. S. Standard threads are wanted.
*On 1/2-inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).

Rough Stud Bolts



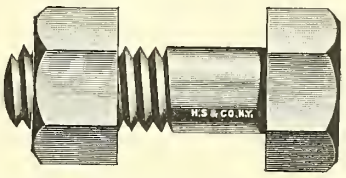
When ordering Stud Bolts give length of thread wanted at each end, and length of body. Unless otherwise ordered the shorter threaded end will be a tight fit and the longer end regular. The length is measured overall. With U. S. Standard Chamfered and Trimmed Hexagon Nuts

List Per 100

	Diameter, Inches									
	3/8	7/16	*1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4
Length Inches	Threads to Inch									
	16	14	*12 or 13	12	11	10	9	8	7	7
1 1/2	$4.00	$5.10	$5.50							
1 3/4	4.10	5.25	5.65							
2	4.20	5.40	5.80	$8.50	$8.50	$12.40				
2 1/4	4.30	5.55	5.95	8.75	8.75	12.70				
2 1/2	4.40	5.70	6.10	9.00	9.00	13.00	$18.00			
2 3/4	4.50	5.85	6.25	9.25	9.25	13.30	18.50			
3	4.60	6.00	6.40	9.50	9.50	13.60	19.00	$27.80		
3 1/4	4.70	6.15	6.55	9.75	9.75	13.90	19.50	28.40		
3 1/2	4.80	6.30	6.70	10.00	10.00	14.20	20.00	29.00		
3 3/4	4.90	6.45	6.85	10.25	10.25	14.50	20.50	29.60		
4	5.00	6.60	7.00	10.50	10.50	14.80	21.00	30.20	$45.00	$64.00
4 1/2	5.25	6.90	7.30	11.00	11.00	15.40	22.00	31.40	46.50	66.50
5	.....	.....	7.60	11.50	11.50	16.00	23.00	32.60	48.00	69.00
5 1/2	.....	.....	8.00	12.00	12.00	16.60	24.00	33.80	49.50	71.50
6	.....	.....	8.45	12.50	12.50	17.20	25.00	35.00	51.00	74.00

State whether V or U. S. Standard threads are wanted.
*On 1/2-inch screws, state whether 12 or 13 threads are wanted. When not specified, we send 13 threads (U. S. Standard).
Stud Bolts without nuts, 15 per cent. reduction from list prices.

Coupling Bolts



Length is measured from under head to end. Milled to size and under head

List Per 100

Diameter of head, inches	⅞	1 1/16	1¼	1 7/16	1⅝	1 13/16	2
Length of head, inches	½	⅝	¾	⅞	1	1⅛	1¼
Diameter of bolt, inches	½	⅝	¾	⅞	1	1⅛	1¼
Length, Inches							
2	$20.00	$25.00					
2¼	20.50	25.75	$32.00				
2½	21.00	26.50	32.00	$38.75			
2¾	21.50	27.25	33.00	39.75	$56.00		
3	22.00	28.00	34.00	40.75	56.00	$70.00	
3¼	22.50	28.75	35.00	41.75	57.00	71.50	$100.00
3½	23.00	29.50	36.00	42.75	58.00	73.00	100.00
3¾	23.50	30.25	37.00	43.75	59.00	74.50	102.50
4	24.00	31.00	38.00	44.75	60.00	76.00	105.00
4¼	24.50	31.75	39.00	45.75	61.00	77.50	107.50
4½	25.00	32.50	40.00	46.75	62.00	79.00	110.00
4¾	25.50	33.25	41.00	47.75	63.00	80.50	112.50
5	.....	34.00	42.00	48.75	64.00	82.00	115.00
5¼	.....	.....	43.00	49.75	65.00	83.50	117.50
5½	.....	.....	.....	50.75	66.00	85.00	120.00
5¾	.....	.....	.....	.....	67.00	86.50	122.50
6	.....	.....	.....	.....	.....	88.00	125.00
Thickness of nut, inches	½	⅝	¾	⅞	1	1⅛	1¼
Short diameter of nut, inches	⅞	1 1/16	1¼	1 7/16	1⅝	1 13/16	2

Intermediate lengths take next higher list

Hanger Bolts or Screws

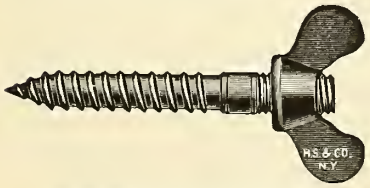
Up to 7/16 inch diameter have rolled threads. 7/16 inch diameter and over have cut thread. The length of all Hanger Bolts on this page is measured overall



With Square Nut



With Pressed Steel Wing Nut



With Malleable Iron Wing Nut

List of May 21, 1912

List Per 100

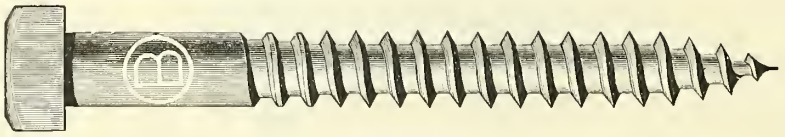
Length Overall, Inch	Diameter, Inch ¼ and 5/16	3/8	7/16	½	9/16 and ⅝	¾	⅞	1
2	$3.00	$3.60	$4.24	$5.06	$6.19			
2½	3.19	3.83	4.54	5.44	6.75	$9.90		
3	3.38	4.05	4.84	5.81	7.31	10.73		
3½	3.57	4.28	5.14	6.19	7.88	11.55	$15.00	
4	3.75	4.50	5.44	6.56	8.44	12.38	16.00	
4½	3.94	4.73	5.74	6.94	9.00	13.20	17.00	
5	4.13	4.95	6.04	7.31	9.56	14.03	18.00	$26.25
5½	4.32	5.18	6.34	7.69	10.13	14.85	19.00	27.50
6	4.50	5.40	6.64	8.06	10.69	15.68	20.00	28.75
6½	....	5.62	6.94	8.43	11.25	16.50	21.00	30.00
7	....	5.84	7.24	8.80	11.82	17.33	22.50	31.25
7½	....	6.06	7.54	9.17	12.38	18.15	23.44	32.50
8	....	6.28	7.84	9.55	12.95	19.03	24.37	33.75
9	....	....	8.14	9.92	13.51	19.85	26.25	35.62
10	....	....	....	10.30	14.08	20.68	27.50	37.50
11	....	....	....	....	14.64	21.50	28.75	39.38
12	....	....	....	....	15.21	22.32	30.00	41.25

For Hexagon Nuts, add 10 per cent. to above list
For Wing Nuts, net prices will be quoted on application

Coach or Lag Screws

Square Head. Gimlet Point

The length of these screws is measured from under head to end



Square Head

List Per 100

List of November 12, 1908

Length Inches	Diameter, Inches							
	¼ and 5/16	3/8	7/16	½	9/16 and 5/8	¾	⅞	1
1½	$2.25	$2.70	$3.15	$3.75				
2	2.45	2.96	3.47	4.11	$6.00			
2½	2.65	3.22	3.79	4.47	6.50	$9.20		
3	2.85	3.48	4.11	4.83	7.00	9.90	$15.00	
3½	3.05	3.74	4.43	5.19	7.50	10.60	16.00	$22.00
4	3.25	4.00	4.75	5.55	8.00	11.30	17.00	23.30
4½	3.45	4.26	5.07	5.91	8.50	12.00	18.00	24.60
5	3.65	4.52	5.39	6.27	9.00	12.70	19.00	25.90
5½	3.85	4.78	5.71	6.63	9.50	13.40	20.00	27.20
6	4.05	5.04	6.03	6.99	10.00	14.10	21.00	28.50
6½	.....	.....	6.35	7.35	10.50	14.80	22.00	29.80
7	.....	.....	6.67	7.71	11.00	15.50	23.00	31.10
7½	.....	.....	6.99	8.07	11.50	16.20	24.00	32.40
8	.....	.....	7.31	8.43	12.00	16.90	25.00	33.70
9	.....	.....	7.95	9.15	13.00	18.30	27.00	36.30
10	.....	.....	.....	9.87	14.00	19.70	29.00	38.90
11	.....	.....	.....	10.59	15.00	21.10	31.00	41.50
12	.....	.....	.....	11.31	16.00	22.50	33.00	44.10

Coach Screws with Hexagon Heads 10 per cent. advance

Approximate Weight Pounds Per 100 Screws

Length Inches	Diameter, Inch								
	¼	5/16	3/8	7/16	½	5/8	¾	⅞	1
1½	2.4	3.5	5.7	8.2	10.9				
1¾	2.6	3.9	6.3	9.0	12.0				
2	2.9	4.4	6.9	9.8	13.1	21.8			
2¼	3.1	4.8	7.5	10.7	14.3	23.6			
2½	3.4	5.2	8.1	11.5	15.4	25.4	40		
3	3.9	6.1	9.3	13.2	17.6	28.9	45	65	
3½	...	6.9	10.5	14.9	19.9	32.5	50	72	98
4	...	7.8	11.7	16.6	22.1	36.0	55	79	107

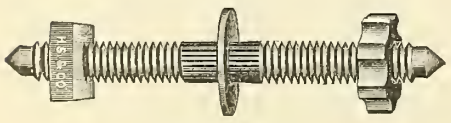
Length Inches	Diameter, Inch							
	5/16	3/8	7/16	½	5/8	¾	⅞	1
4½	8.7	12.9	18.2	24.3	39.6	60	86	116
5	9.5	14.1	19.9	26.6	43.2	65	93	125
5½	10.4	15.3	21.6	28.8	46.7	70	100	134
6	11.2	16.5	23.3	31.1	50.3	75	107	143
7	....	....	....	35.5	57.4	85	121	161
8	....	....	....	40.0	64.5	95	135	179
9	....	....	....	44.5	71.6	105	148	197
10	....	....	....	49.0	78.8	115	162	215
11	....	....	....	53.5	85.9	125	175	233
12	....	....	....	58.0	93.0	135	189	251

Hand Rail Screws

The length of these screws is measured overall



With One Nut



With Two Nuts

List of January 1, 1881

List Per Gross

One Nut			Two Nuts		
Length Inches	Diameter, Inch		Length Inches	Diameter, Inch	
	5/16	3/8		5/16	3/8
4	$9.00		4	$10.25	
4½	10.00	$11.25	4½	11.25	$13.50
5	11.25	12.50	5	12.50	14.50
5½	12.25	13.50	5½	13.50	15.75
6	13.25	14.50	6	14.50	16.75

Hand Rail Screws with Wood Screw Thread on both ends are invoiced from the One Nut List

Bed Screws



Square Head

Length is measured overall

Length Inches	Diameter 3/8 Inch Gross	Diameter 7/16 Inch Gross
4	$4.00	
4½	4.25	
5	4.50	$5.70
5½	4.75	6.05
6	5.00	6.40
6½	5.25	6.75
7	5.50	7.10
7½	5.75	7.45
8	6.00	7.80



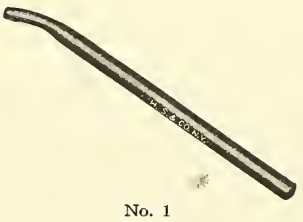
Plain Cabinet Head

Length is measured from under the head to the end. 3/8-inch in diameter.

Length, inches	4	4½	5	5½	6	6½	7	7½	8
Gross	$5.50	5.75	6.00	6.25	6.50	6.75	7.00	7.25	7.50

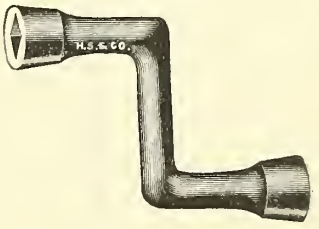
Two steel pin wrenches are furnished with each gross of these screws.

Extra Wrenches



No. 1

For cabinet head screws, dozen $1.00



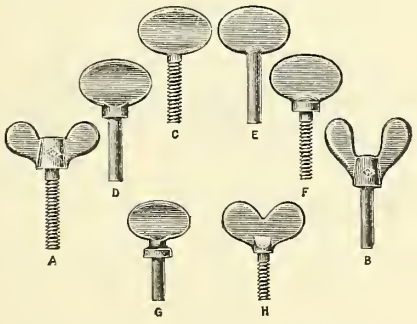
No. 2

For square head screws, dozen ..... $ .72

Thumb Screws

Drop-Forged from Steel

Blank or Threaded

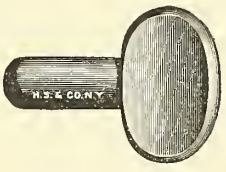


Blanks per 100, of any type
Threaded Screws, double following list prices

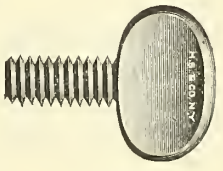
Length Under Head Inches	Diameter and U. S. Standard Threads per Inch 1/8 32	3/16 24	1/4 20	5/16 18	3/8 16	7/16 14	1/2 13 & 12	9/16 12	5/8 11	3/4 10
1/4	$1.60	$1.80	$2.05	$2.40	$2.95					
1/2	1.70	1.90	2 15	2.50	3.05	$3.80	$4 75	$5.85		
3/4	1.80	2.00	2.25	2.60	3.20	4.00	5.00	6.20		
1	1.90	2.10	2.35	2.75	3.40	4.25	5.30	6.55	$8.00	$11.55
1¼	2.00	2.20	2.45	2.90	3.60	4.50	5.60	6.90	8.40	12.20
1½	2.10	2.30	2.55	3 10	3.80	4.75	5.95	7.30	8.90	12.90
1¾	....	2.40	2.70	3.30	4.05	5.05	6.30	7.75	9.40	13.60
2	....	2.50	2.85	3.50	4.30	5.35	6.65	8.20	9.95	14.30
2¼	....	....	3.05	3.70	4.60	5.70	7.05	8.65	10.50	15.05
2½	....	....	3.25	3 95	4.90	6.05	7.45	9.15	11.05	15.80
2¾	....	....	3.45	4.20	5.20	6.40	7.90	9.65	11.65	16.55
3	....	....	3.70	4.45	5.50	6.75	8.35	10.15	12.25	17.35
3½	....	....	....	5.00	6.15	7.55	9.25	11.25	13.50	19.05
4	....	....	....	5.60	6.90	8.45	10.25	12.40	14.85	20.75
4½	....	....	....	....	7.70	9.35	11.35	13.70	16.35	22.60
5	....	....	....	....	8.50	10.35	12 60	15.15	18 00	24.80
5½	....	....	....	....	9.40	11.45	13.90	16.65	19.80	27.15
6	....	....	....	....	....	....	15.20	18.30	21.80	30.00

Style C will be sent unless otherwise ordered.

Malleable Iron



Blank



Threaded

Length Under Head Inches	Diameter of Screw, Inch 1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
	Width of Head, Inch 5/8	11/16	7/8	1	1 1/16	1¼	1 1/16	1 9/16	1½
	Threads per Inch 40	24	20	18	16	14	13	11	10
	Threaded, List per 100								
3/8	....	$1.10	$1.40						
1/2	$2.10	1.20	1.50	$2.00	$2.70				
5/8	....	....	1.65						
3/4	2.60	1.45	1.80	2.35	3.00				
7/8	....	....	1.95						
1	3.10	1.70	2.10	2.70	3.40	$4.60	$5.80	$9.00	
1¼	....	1.95	2.40	3.05	3.80	5.20	6.50	10.00	
1½	....	2.20	2.70	3.40	4.20	5.80	7.20	11.00	
1¾	....	2.55	3.00	3.75	4.60	6.40	7.90	12.00	
2	....	2.80	3 30	4.10	5.00	7.00	8.60	13.00	$22.00
2¼	....	....	3.80	4.65	5.60	7.80	9.50	14.25	23.50
2½	....	....	4.30	5.20	6.20	8.60	10.40	15.50	25.00
2¾	....	....	4.80	5.75	6.80	9.40	11.30	16.75	26.50
3	....	....	5.30	6.30	7.40	10.20	12.20	18.00	28.00
3½	....	....	6.50	7.70	9.00	11.60	14.00	20.50	31.00
4	....	....	7.70	9.10	10.60	13.40	15.80	23.00	34.00
4½	....	....	....	....	....	....	17.60	25.50	37.00
5	....	....	....	....	....	....	....	28.00	40.00
	Blank								
Pound,	.25	.15	.12	.10	.10	.10	.10	.10	.10

Expansion Bolts

Star

Machine Bolt Type

Double



List Per Hundred, with Square Head Bolts

Length Inches	Diameter of Bolt, Inches ¼	5/16	3/8	7/16	½	5/8	¾	⅞	1
1¾	$8.95								
2	9.00	$10.00							
2½	9.05	10.05	$12.40						
3	9.10	10.10	12.50	$16.60	$20.00				
3½	9.15	10.15	13.00	16.80	20.15	$27.25			
4	9.20	10.20	13.70	17.00	20.30	27.50	$40.00		
4½	9.25	10.25	13.80	17.25	20.45	27.75	40.30		
5	9.30	10.30	13.90	17.50	20.60	28.00	40.60	$52.00	
5½	9.35	10.35	14.00	17.75	20.75	28.25	40.90	52.43	$74.45
6	9.40	10.40	14.10	18.00	20.90	28.50	41.20	52.86	75.00
6½	....	....	14.20	18.10	21.05	28.75	41.50	53.29	75.55
7	....	....	14.30	18.20	21.20	29.00	41.80	53.72	76.10
7½	....	....	14.40	18.30	21.35	29.25	42.10	54.15	76.65
8	....	....	14.50	18.40	21.50	29.50	42.40	54.58	77.20
9	....	....	....	....	21.65	29.75	42.70	55.01	77.75
10	....	....	....	....	21.80	30.00	43.00	55.44	78.30
11	....	....	....	....	22.00	30.50	43.50	56.00	79.00
12	....	....	....	....	23.50	31.00	44.00	57.00	80.00

List for Shields Only

	¼	5/16	3/8	7/16	½	5/8	¾	⅞	1
Diameter of bolt									
List per 100	$8.00	9.00	11.00	15.00	18.00	24.00	35.00	44.00	63.00
Length of shield	1½	1⅞	2⅜	2½	2⅝	3¼	4	4¾	5
Size of hole to receive expansion	½	9/16	11/16	⅞	⅞	1	1¼	1½	1⅝
Diameter of drill required	½	9/16	11/16	⅞	⅞	1	1¼	1½	1⅝

This style can also be furnished 1⅛, 1¼ and 1½ inch bolt diameter, any length.

Single



List Per Hundred, with Square Head Bolts

Length Inches	Diameter of Bolt, Inches ¼	5/16	3/8	7/16	½	5/8	¾	⅞	1
1½	$8.00	$9.50							
2	8.20	9.50	$11.80	$15.25	$18.00	$24.00			
2½	8.30	9.55	11.90	15.50	18.25	24.50			
3	8.40	9.60	12.00	16.00	18.50	25.00			
3½	8.50	9.65	12.50	16.25	18.75	25.50	$34.00		
4	8.60	9.70	13.00	16.50	19.00	26.00	34.50	$43.00	$54.00
4½	8.70	9.75	13.30	16.75	19.25	26.25	34.75	43.50	54.50
5	8.80	9.80	13.40	17.00	19.50	26.50	35.00	44.00	55.00
6	....	9.90	13.60	17.25	19.90	27.00	35.50	45.00	56.00
7	....	....	....	....	20.20	27.50	36.00	46.00	57.00
8	....	....	....	....	20.50	28.00	37.00	47.00	58.00
9	....	....	....	....	20.65	28.25	38.00	48.00	59.00
10	....	....	....	....	20.80	28.50	39.00	49.00	60.00
11	....	....	....	....	21.00	29.00	40.00	50.00	61.00
12	....	....	....	....	22.50	29.50	41.00	51.00	62.00

List for Shields Only

	¼	5/16	3/8	7/16	½	5/8	¾	⅞	1
Diameter of bolt									
List per 100	$7.50	8.50	10.50	14.00	16.00	21.00	29.00	36.00	44.00
Length of shield	1	1½	1¾	1¾	1¾	2	3	3¾	3¾
Size of hole to receive expansion	½	9/16	11/16	13/16	⅞	1	1 3/16	1⅜	1 7/16
Diameter of drill required	½	9/16	11/16	13/16	⅞	1	1 3/16	1⅜	1 7/16

Instructions for Ordering

The diameter of the expansion bolt is understood to be the size of the bolt itself and not the outside of the expansion parts. The length of the bolt is found by adding the thickness of material to length of the shield.

Instructions for Using

Use a drill same size as hole to receive the expansion; sizes are given in table above; insert shield in hole, run bolt through hole in object to be fastened, and on into shield and tighten.

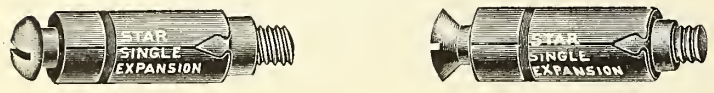
We furnish bolts with sleeves or collars, and all kinds of special heads. Prices on application.

Brass Expansion Bolts

Star

Machine Screw Type

Single



Double



List Per Hundred, with Screws

Length Inches	3/16-inch No. 10	¼-inch Nos. 12 or 14	5/16-inch No. 18	3/8-inch No. 24
¾	$8.50			
1	8.60	$11.00		
1¼	8.70	11.50		
1½	8.90	12.00	$13.50	$20.50
1¾	9.00	12.50	14.00	21.00
2	9.20	13.00	14.50	21.50
2½	....	14.00	15.50	22.50
3	....	15.00	16.50	24.00
3½	....	19.00	21.00	28.00
4	....	22.00	26.00	33.00
Length of expansion, inch	¾	1	1⅜	1¾
Size hole to receive expansion, inch	3/8	7/16	9/16	11/16
Shields only	7.75	9.50	$11.00	$13.00

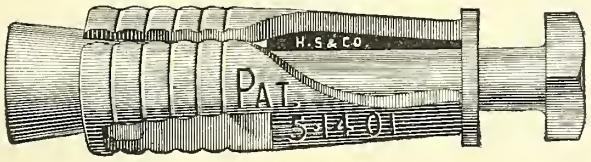
List Per Hundred, with Screws

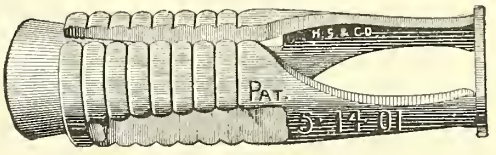
Length Inches	¼-inch No. 14	5/16-inch No. 18	3/8-inch No. 24
1½	$13.50		
1¾	14.00		
2	14.50	$16.50	
2½	15.50	17.50	$27.50
3	17.00	18.50	29.00
3½	21.00	25.00	32.00
4	24.00	30.00	37.00
Length of expansion, inch	1½	1⅞	2⅜
Size hole to receive expansion, inch	½	5/8	11/16
Shields only	11.00	13.00	16.00

Expansion Bolts

Brohard

Machine Bolt Type





List Per 100 With Square Head Bolt

Length Inches	Diameter, Inch ¼	5/16	3/8	7/16	½	5/8	¾	7/8	1
1¾	$8.95								
2	9.00	$ 10.00							
2½	9.05	10.05	$12.40						
3	9.10	10.10	12.50	$16.60	$20.00				
3½	9.15	10.15	13.00	16.80	20.15	$27.25			
4	9.20	10.20	13.70	17.00	20.30	27.50	$40.00		
4½	9.25	10.25	13.80	17.25	20.45	27.75	40.30		
5	9.30	10.30	13.90	17.50	20.60	28.00	40.60	$52.00	
5½	9.35	10.35	14.00	17.75	20.75	28.25	40.90	52.43	$74.45
6	9.40	10.40	14.10	18.00	20.90	28.50	41.20	52.86	75.00
6½	...	....	14.20	18.10	21.05	28.75	41.50	53.29	75.55
7	...	....	14.30	18.20	21.20	29.00	41.80	53.72	76.10
7½	...	....	14.40	18.30	21.35	29.25	42.10	54.15	76.65
8	...	....	14.50	18.40	21.50	29.50	42.40	54.58	72.20
9	...	....	....	....	21.65	29.75	42.70	55.01	77.75
10	...	....	....	....	21.80	30.00	43.00	55.44	78.30
11	...	....	....	....	22.00	30.50	43.50	56.00	79.00
12	...	....	....	....	23.50	31.00	44.00	57.00	80.00
Length of Expansion Case	1½	2¼	2¾	3½	3⅜	4	4½	4½	5⅛
Size of Hole to Receive Expansion Case	9/16	5/8	13/16	7/8	1	1⅛	1⅜	1½	1⅝

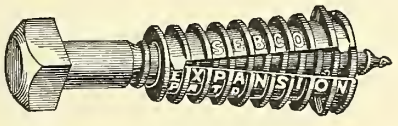
Shields Only

For Bolt Inches	Length of Case Inches	Size of Hole to Receive Case, Inches	List Per 100 Iron	Brass
¼	1½	5/16	$8.00	$15.00
5/16	2¼	5/8	9.00	17.00
3/8	2¾	13/16	11.00	21.00
7/16	3½	7/8	15.00	
½	3⅜	1	18.00	
5/8	4	1⅛	24.00	
¾	4½	1⅜	35.00	
7/8	4½	1½	44.00	
1	5⅛	1⅝	63.00	
1¼	6½	2⅛	150.00	
1½	7⅜	2⅜	220.00	

The ¼ to ½ inch expand two ways; the 5/8 inch and larger expand four ways, giving a firmer hold, and are especially adapted for heavy work.

Sebco

Lag or Coach Screw Type



List Per 100 With Lag Screws

Length Inches	Diameter of Bolt, Inches ¼	5/16	3/8	7/16	½	5/8	¾	7/8	1	1¼
1½	$10.13	$11.60								
2	10.85	11.65								
2½	11.00	11.85	$15.90	$20.30	$24.15	$31.70	$48.30			
3	11.25	12.00	16.10	20.50	24.45	32.10	48.85			
4	11.50	12.35	16.40	20.80	25.35	32.90	50.00			
5	11.85	12.65	16.90	21.15	25.90	33.75	51.05			
6	12.20	13.00	17.35	21.50	26.45	34.60	52.20	$68.90	$79.55	
7	....	13.30	17.65	21.80	27.00	35.40	53.30	70.00	81.65	
8	....		18.00	22.15	27.55	36.25	54.45	71.10	83.70	$174.45
9	....	....	....	22.50	28.10	37.10	55.55	72.20	85.75	181.10
10	....	....	....	....	....	37.95	56.65	73.30	87.75	187.75
11	....	....	....	....	....	38.80	57.75	74.40	89.90	194.45
12	....	....	....	....	....	39.60	58.90	75.55	92.00	201.10

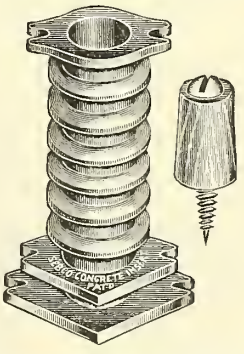
List Per 100 For Shields Only

Diam. of Lag Screw	¼	5/16	3/8	7/16	½	5/8	¾	7/8	1	1¼
Per 100	$9.40	10.50	13.35	17.75	22.00	27.80	39.95	53.30	66.60	100.00
Length of Shield Long Standard	1½	2	2¾	3	3½	3½	3½	5	5	8
Length of Shield Short Standard	...	1½	2	2	2	2	2			
Length of Shield Ex. short Stand.	...	...	1½	...	1½	1½				
Outside Diameter of Shield	7/16	½	5/8	13/16	¾	7/8	1	1¼	1½	1⅞
Diameter of Drill Required	7/16	½	5/8	11/16	¾	7/8	1	1¼	1½	1⅞

Concrete Inserts

Sebco

For Insertion in the Concrete Before It Sets



To use, fasten the wooden plug to the form with a nail or screw; press the insert over the plug. After concrete has been poured and the forms removed, the insert is ready for use. The wooden plug comes away with the form, leaving a neat finish and entrance to the insert clean.

List Per 100 With Square Head Screws or Bolts

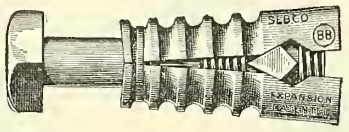
Length Inches	Diameter of Screw or Bolt ¼	5/16	3/8	7/16	½	9/16	5/8	¾
1¼	$11.00	$12.70						
2	11.10	12.90						
2½	11.20	13.10	$14.20	$17.00				
3	11.30	13.50	14.40	17.50	$20.20	$25.60	$26.60	$34.70
4	11.40	14.00	14.80	18.20	20.80	26.50	27.50	35.70
5	....	14.40	15.20	19.00	21.40	27.30	28.30	36.70
6	....	....	15.60	19.60	22.10	28.30	29.30	37.70
7	....	....	....	20.30	22.70	29.20	30.20	38.70
8	....	....	....	21.00	23.30	30.10	31.10	39.70
Inserts only	9.00	10.00	11.00	13.00	15.00	18.00	19.00	26.00
Length of Insert	1½	2	2	2	2½	2½	2½	3

Either machine bolts or machine screws, lag screws or wood screws may be used with the insert.

To order, state if bolts or screws are desired; if inserts only are wanted, state if they are to be threaded for screws or bolts.

Expansion Bolts

Sebco "B-B" (Bottom Bearing)



This type is of special value in fastening pipe hangers to ceilings, in elevator work and mine work, and wherever the use of a Stud or hanger bolt is required, or where the article to be attached does not bear directly against the wall or ceiling.

The shield may be placed as far back into the hole as desired, and as the expansion is always at the inner end the entire strain is well back from the surface of the wall The corrugated rings become firmly embedded in the walls of the hole, making a positive expansion that no strain can loosen.

The expansion is even and bears equally at all points of contact with the wall.

List Per 100 Shields Only

To fit bolt diameter, inch	1/4	3/8	7/16	1/2	9/16	5/8	3/4
Per 100	$9.00	12.00	16.00	19.00	22.00	25.00	35.00
Length of shield, inches	1	2	2	2 1/2	2 1/2	2 1/2	4
Diameter of shield, inches	7/16	11/16	13/16	7/8	1	1	1 1/4
Size drill, inches	7/16	11/16	13/16	7/8	1	1	1 1/4

List Per 100, with Square Head Bolts

Length Inches	Diameter of Bolt, Inch 1/4	3/8	7/16	1/2	9/16	5/8	3/4
1 1/2	$9.65						
2	9.70	$13.70	$18.80				
2 1/2	9.75	13.85	18.95	$22.95	$27.10	$30.10	
3	9.80	14.00	19.10	23.10	27.50	30.50	
4	9.90	14.20	19.40	23.55	27.90	30.90	$44.00
5	10.00	14.40	19.70	23.95	28.50	31.50	44.80
6	10.10	14.60	20.05	24.40	29.15	32.15	45.50
7	10.20	14.85	20.40	24.90	29.75	32.75	46.50
8	10.30	15.10	20.70	25.25	30.40	33.40	47.00
9	10.40	15.30	21.05	25.65	30.90	33.90	48.00
10	10.50	15.50	21.40	26.15	31.60	34.60	49.00
11	10.60	15.70	21.70	26.55	31.85	34.85	49.50
12	10.70	15.90	22.05	27.00	32.90	35.90	50.00

Screw Anchors

Sebco



Made of one piece of composition metal. Used with ordinary wood or machine screws. In ordering, state gauge of screw to be used.

List Per 100. Prices do not include screws

Size Inches	Screw Number	Outside Diameter Anchor and Diameter of Drill required	Per 100	Size Inches	Screw Number	Outside Diameter Anchor and Diameter of Drill required	Per 100
1/8 x 1/2	5—6—7—8	1/4	$4.40	1/4 x 3/4	13—14—15	3/8	$5.60
1/8 x 5/8	5—6—7—8	1/4	4.40	1/4 x 1	13—14—15	3/8	5.60
1/8 x 3/4	5—6—7—8	1/4	4.40	1/4 x 1 1/2	13—14—15	3/8	6.75
3/16 x 1/2	9—10—11—12	5/16	5.00	1/4 x 2	13—14—15	3/8	7.80
3/16 x 3/4	9—10—11—12	5/16	5.00	5/16 x 3/4	16—17—18	7/16	6.25
3/16 x 1	9—10—11—12	5/16	5.00	5/16 x 1	16—17—18	7/16	6.25
3/16 x 1 5/8	9—10—11—12	5/16	6.25	5/16 x 1 1/2	16—17—18	7/16	7.50
1/4 x 1/2	13—14—15	3/8	5.60	5/16 x 2	16—17—18	7/16	8.75

Twin Bolts

Sebco Duplex

For Use on Hollow Metal

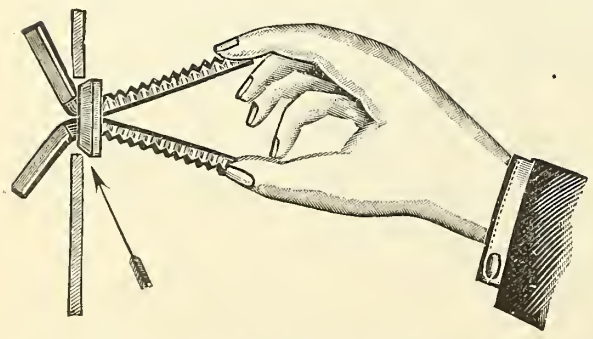


Figure 1

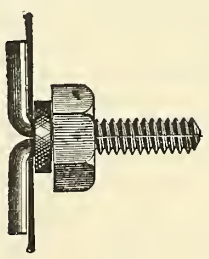


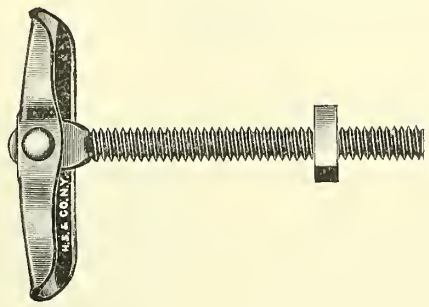
Figure 2

Diameter Inch	Length Inches	Per 100
3/16	3/4	$4.50
3/16	1	5.25
3/16	1 1/4	6.00
3/16	2	6.75
3/16	2 1/2	7.50
3/16	3	8.25
1/4	3/4	5.25
1/4	1	6.00
1/4	1 1/4	6.75
1/4	2	7.50
1/4	2 1/2	8.25
1/4	3	9.00

Figure 1 shows the twin bolt in position, ready to draw together, and attach fastening nut. Figure 2 shows the sections drawn together and clamped with fastening nut.

Toggle Bolts

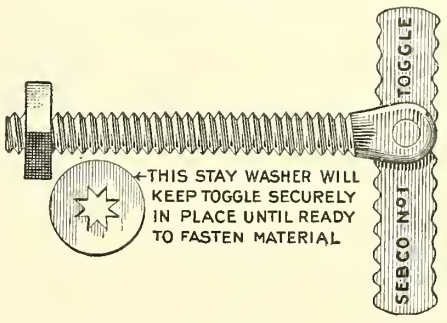
Philadelphia No. 1



List Per 100

Length Inches	Diameter Bolt, Inch 5/16	1/4	5/16	3/8	7/16	1/2
1½	$3.65					
2	3.75	$5.00				
2½	3.85	5.12	$7.75	$9.50		
3	4.00	5.25	8.00	10.00		
3½	4.15	5.50	8.50	10.25		
4	4.25	5.75	9.00	10.50	12.00	$14.00
5	4.40	6.00	9.50	11.50	12.50	14.50
6	4.50	6.50	10.00	12.00	13.00	15.00
Size of Round Hole to Pass Bolt	3/8	1/2	5/8	5/8	11/16	11/16

Sebco No. 1



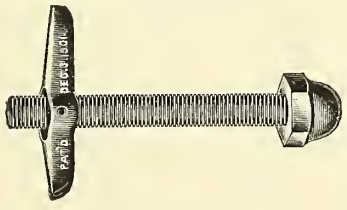
List Per 100

Length of Screw Inches	Diameter of Screw, Inch 1/8	3/16	1/4	5/16	3/8	1/2
3	$6.00	$7.50	$8.50	$12.25	$14.75	
3½	6.25	8.00	9.00	13.00	15.00	
4	6.75	8.50	9.50	14.00	15.50	$28.00
5	7.50	9.25	10.25	15.00	17.00	29.00
6	8.00	10.00	11.00	15.50	17.50	30.00
Size Drill Size Hole Inch	1/4	5/16	3/8	3/8	7/16	5/8

Directions for Use

Drill hole with drill, of size given in above table; insert the Toggle, putting in short end first—one end of the plate being longer, the Toggle automatically adjusts itself. Then press the stay-washer firmly against the wall; material may then be placed and fastened with a nut. The stay-washer permits placing the Toggles first and will hold them securely until ready to attach the moulding or whatever is being fastened.

Philadelphia No. 4



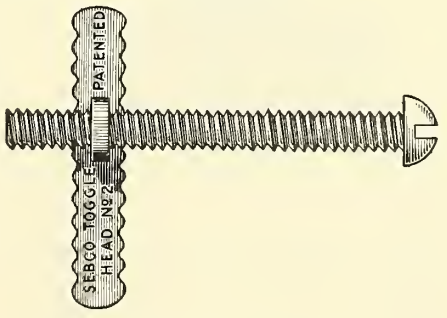
List Per 100

Length Inches	Diameter Inch	Per 100
4	3/16	$7.50
4	1/4	10.00
4	5/16	12.00

The Toggle Hood on No. 4 is not rivited on like No. 1 (shown above) but consists of the Steel Hood or Head, with a pivoted nut on an endless threaded bolt, on which can be fastened or screwed at will, a Brass Bonnet or Cap Nut (as shown), to take the place of the ordinary iron nut (like No. 1 style), when a finished appearance is required.

It can readily be seen that the bolt is intended to screw through the pivoted nut and pass through the hole in the head when screwed through the nut, thus locking the head. This insures the Toggle Bolt holding if either end should break out the tile or wall.

Sebco No. 2



List Per 100

With Round or Flat Head Iron Machine Screws

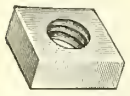
Length Inches	Diameter of Screws No. 6 (1/8 inch)	No. 10 (3/16 inch)	No. 14 (1/4 inch)
3	$4.20	$5.20	$5.90
3½	4.40	5.50	6.20
4	4.60	5.90	6.60
4½	4.85	6.10	6.85
5	5.10	6.40	7.10
6	5.60	6.90	7.60
Toggle Heads only	2.60	2.90	3.20
Size Hole Drill required Inch	5/16	3/8	3/8

No. 2 Toggle Heads fit all machine screws. Like No. 1, shown above, they are for making fastenings to Tile and Hollow Brick; and to those walls and places which do not afford sufficient hold for a screw or expansion bolt.

Miscellaneous Nuts

Tapped for Machine Screws

Cold Punched



Square



Hexagon

Size Number	Threads Per Inch	List Per Gross			
		Square		Hexagon	
		Iron	Brass	Iron	Brass
4	32, 36	$ .23	$ .72	$ .36	$1.08
6	30, 32	.23	.72	.36	1.08
8	30, 32	.26	.80	.40	1.22
10	24, 30, 32	.29	.87	.43	1.30
12	24	.32	.94	.48	1.44
14	20, 24	.36	1.08	.55	1.66
16	18, 20	.48	1.44	.72	2.16
18	16, 18	.62	1.88	.94	2.81
20	16, 18	.82	2.45	1.22	3.67
22	16, 18	.93	2.70	1.44	4.32
24	14, 16	1.06	3.17	1.58	4.75
26	14, 16	1.20	3.60	1.80	5.40
28	14, 16	1.35	4.10	2.02	6.05
30	14, 16	1.50	4.55	2.30	6.91

Tapped for Stove Bolts

Cold Pressed—Square

List Per 100

Size, inch	1/8	5/32	3/16	7/32	1/4	5/16	3/8
Thread	32	30	24	24	18	18	18
List	$ .18	.18	.20	.22	.28	.50	.64

Semi-Finish Brass Hexagon

Full and Jam



Milled from Hexagon Brass Rod

Size Bolt Inch	Threads Per Inch	Short Diameter Inches	Thickness Full Nut Inch	Thickness Jam Nut Inch	List Per 100
3/16	24	3/8	3/16	..	$1.40
1/4	20	1/2	1/4	3/16	2.40
5/16	18	19/32	5/16	7/32	3.20
3/8	16	11/16	3/8	1/4	5.20
7/16	14	3/4	7/16	9/32	7.20
1/2	13	7/8	1/2	5/16	9.60
1/2	12	7/8	1/2	5/16	9.60
5/8	11	1 1/16	5/8	3/8	17.00
3/4	10	1 1/4	3/4	7/16	27.00
7/8	9	1 7/16	7/8	1/2	45.00
1	8	1 5/8	1	9/16	68.00

Drop-Forged Thumb

Blank or Tapped



Style A



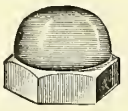
Style B

List Per 100

For bolt, size, inch	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
Diameter top, inch	1/4	5/16	3/8	7/16	17/32	5/8	21/32	3/4	13/16	15/16
U. S. Standard Threads	32	24	20	18	16	14	13 & 12	12	11	10
Blank	$1.75	2.00	2.25	2.60	3.25	4.00	5.00	6.00	7.25	10.50
Tapped	3.50	4.00	4.50	5.20	6.50	8.00	10.00	12.00	14.50	21.00

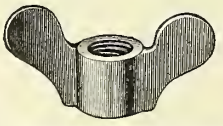
Style A will be sent unless otherwise ordered. Tapped Nuts have base faced at right angle to hole.

Hexagon Brass Cap



Size and Thread	Diameter of Hexagon Base Inch	Height Inch	List Per 100
6–32, 8–32	5/16	9/32	$ .80
10–24, 10–32, 12–24	3/8	11/32	1.00
14–20, 14–24, 1/4–20	7/16	3/8	1.25
1/4–20, 16–18, 18–18	1/2	13/32	1.45
5/16–18, 20–18	9/16	7/16	2.00
24–16, 3/8–16	5/8	1/2	2.80
7/16–14, 1/2–12, 1/2–13	3/4	9/16	4.50

Pressed Brass Wing



These Nuts are of smooth finish and uniform dimensions and present a far better appearance than cast brass. The smooth finish make them especially suitable for nickel plating.

Size	Width Across Wings Inches	Size and Thread	List Per 100
A	3/4	4–36, 6–32, 8–32	$1.50
B	15/16	10–32, 10–24	1.80
C	1 1/16	12–24, 14–20, 14–24, 1/4–20	2.25
E	1 1/2	16–18, 18–18, 5/16–18, 20–18	3.75
F	1 3/4	24–16, 3/8–16, 7/16–14	5.50

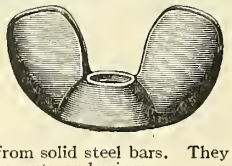
Nuts tapped with special threads will be supplied to order.

Malleable Iron Thumb



Size Inch	Threads Per Inch	List Per 100 Threaded	Blank List Per Pound
3/16	24	$1.45	$ .25
1/4	20	1.60	.15
5/16	18	1.80	.12
3/8	16	2.25	.12
7/16	14	2.80	.12
1/2	13	4.00	.10
5/8	11	6.00	.10
3/4	10	7.00	.10

Pressed Steel Wing Nuts



These nuts are forged from solid steel bars. They are well finished and have no rough edges or checks in the nuts and wings.

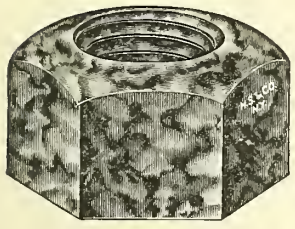
Size Inch	Threads Per Inch	Weight per 1,000 Tapped Pounds	List Per 100 Threaded
5/32 and 3/16	24	8	$1.50
7/32 and 1/4	20	13	1.65
5/16	18	21	1.95
3/8	16	37	2.70

Special Threads furnished when specially ordered.

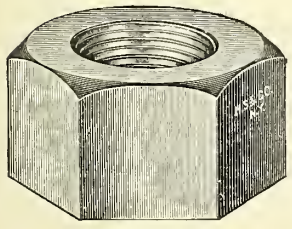
Hexagon Nuts

Finished, Case-Hardened and Semi-Finished

With United States Standard, Whitworth Standard or V-Threads



Finished



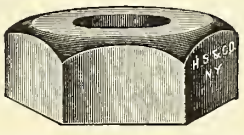
Semi-Finished

List of May 5, 1911

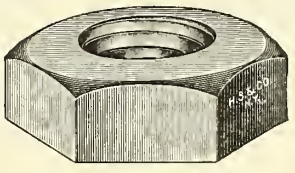
Size of Bolt Inches	Width Inches	Thickness Inches	Threads Per Inch	Finished Case-Hardened Each	With Double Chamfer Each	Semi-Finished Each	With Double Chamfer Each
1/4	1/2	1/4	20	$ .06	$ .065	$ .02	$ .025
5/16	19/32	5/16	18	.07	.075	.025	.0275
3/8	11/16	3/8	16	.08	.0875	.0325	.04
7/16	25/32	7/16	14	.09	.10	.0375	0475
1/2	7/8	1/2	13 or 12	.10	.11	.045	055
9/16	31/32	9/16	12	.12	.13	.055	065
5/8	1 1/16	5/8	11	.16	.175	.065	075
11/16	1 5/32	11/16	11	.22	.24	.085	105
3/4	1 1/4	3/4	10	.22	.24	.085	.105
7/8	1 7/16	7/8	9	.27	.295	.12	.145
1	1 5/8	1	8	.38	.415	.175	.21
1 1/8	1 13/16	1 1/8	7	.50	.545	.24	.285
1 1/4	2	1 1/4	7	.66	.72	.33	.39
1 3/8	2 3/16	1 3/8	6	.90	.97	.49	.57
1 1/2	2 3/8	1 1/2	6	1.20	1.30	.69	.78
1 5/8	2 9/16	1 5/8	5 1/2	1.45	1.58	.93	1.05
1 3/4	2 3/4	1 3/4	5	1.75	1.90	1.30	1.45
1 7/8	2 15/16	1 7/8	5	2.50	2.70	1.70	1.90
2	3 1/8	2	4 1/2	3.25	3.50	2.15	2.40
2 1/4	3 1/2	2 1/4	4 1/2	5.50	6.00	3.10	3.45
2 1/2	3 7/8	2 1/2	4	8.50	9.50	4.75	5.25
2 3/4	4 1/4	2 3/4	4	12.00	13.50	6.30	6.95
3	4 5/8	3	3 1/2	18.00	20.00	9.90	11.00

Finished Nuts not Case-Hardened.—Use regular list prices.
Nuts Polished after Case-Hardening.—Add 30 per cent. to list prices.
Semi-Finished Nuts, Case-Hardened.—Add 20 per cent. to list prices.
Semi-Finished Nuts, Rounded on Top.—Use the Double Chamfered List.
In ordering, always specify size of bolt, state style of thread, and on the ½-inch state whether 13 or 12 threads are wanted.
☞ When not specified, we send U. S. Standard, and 13 threads on ½ inch.

Hexagon Check or Jam Nuts



Cold Punched, Chamfered and Trimmed



Semi-Finished

List of March 20, 1907

Size of Bolt Inches	Size of Hole Inches	Width Inches	Thickness Inches	Blank 100 Pounds	Tapped 100 Pounds
1/4	13/64	1/2	3/16	$33.00	$37.50
5/16	1/4	19/32	7/32	28.00	32.50
3/8	19/64	11/16	1/4	24.00	27.00
7/16	11/32	25/32	5/16	20.00	22.50
1/2	13/32	7/8	5/16	17.00	18.50
9/16	29/64	31/32	11/32	17.00	18.50
5/8	33/64	1 1/16	3/8	15.00	16.30
3/4	5/8	1 1/4	7/16	13.50	14.60
7/8	47/64	1 7/16	1/2	13.00	14.10
-	27/32	1 5/8	9/16	13.00	14.10
1 1/8	15/16	1 13/16	5/8	13.00	14.10
1 1/4	1 1/16	2	3/4	13.00	14.10
1 3/8	1 5/32	2 3/16	13/16	14.00	15.30
1 1/2	1 9/32	2 3/8	7/8	14.50	16.00
1 5/8	1 25/64	2 9/16	15/16	15.00	16.70
1 3/4	1 1/2	2 3/4	1	16.00	17.70
1 7/8	1 5/8	2 15/16	1 1/16	16.00	18.00
2	1 23/32	3 1/8	1 1/8	16.00	18.10

List of May 5, 1911

Size of Bolt Inches	Width Inches	Thickness Inches	Threads Per Inch	Each	With Double Chamfer Each
1/4	1/2	3/16	20	$ .02	$ .025
5/16	19/32	7/32	18	.025	.0275
3/8	11/16	1/4	16	.0325	.04
7/16	25/32	5/16	14	.0375	.0475
1/2	7/8	5/16	13 or 12	.045	.055
9/16	31/32	11/32	12	.055	.065
5/8	1 1/16	3/8	11	.065	.075
11/16	1 5/32	13/32	11	.085	.105
3/4	1 1/4	7/16	10	.085	.105
7/8	1 7/16	1/2	9	.12	.145
1	1 5/8	9/16	8	1.75	.21
1 1/8	1 13/16	5/8	7	.24	.285
1 1/4	2	3/4	7	.33	.39
1 3/8	2 3/16	13/16	6	.49	.57
1 1/2	2 3/8	7/8	6	.69	.78
1 5/8	2 9/16	15/16	5 1/2	.93	1.05
1 3/4	2 3/4	1	5	1.30	1.45
1 7/8	2 15/16	1 1/16	5	1.70	1.90
2	3 1/8	1 1/8	4 1/2	2.15	2.40
2 1/4	3 1/2	1 1/4	4 1/2	3.10	3.45
2 1/2	3 7/8	1 1/2	4	4.75	5.25
2 3/4	4 1/4	1 3/4	4	6.30	6.95
3	4 5/8	2	3 1/2	9.90	11.00

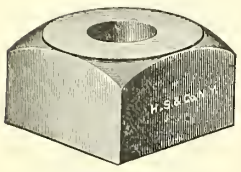
Nuts finished top and bottom use double chamfered list.

Hot Pressed Nuts

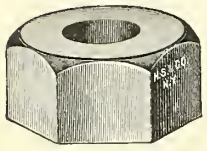
United States Standard Sizes

List of January 1, 1906

List Per 100 Pounds



Square



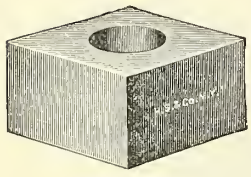
Hexagon

Short Diameter	Thickness	Hole	Size of Bolt	Square Blank	Square Tapped	Hexagon Blank	Hexagon Tapped
1/2	1/4	3/16 scant	1/4	$13.00	$15.00	$20.00	$22.50
19/32	5/16	1/4 scant	5/16	12.00	13.50	18.00	20.00
11/16	3/8	19/64 scant	3/8	10.50	11.60	14.00	15.60
25/32	7/16	11/32	7/16	10.00	10.90	13.00	14.30
7/8	1/2	13/32 scant	1/2	9.00	9.70	11.20	12.20
31/32	9/16	29/64	9/16	9.00	9.60	11.20	12.10
1 1/16	5/8	33/64	5/8	8.70	9.20	10.50	11.20
1 1/4	3/4	5/8 scant	3/4	8.50	8.90	10.00	10.60
1 7/16	7/8	47/64	7/8	8.40	8.80	9.90	10.50
1 5/8	1	27/32 scant	1	8.40	8.80	9.90	10.50
1 13/16	1 1/8	15/16 full	1 1/8	8.40	8.80	9.90	10.50
2	1 1/4	1 1/16 full	1 1/4	8.40	8.80	9.90	10.50
2 3/16	1 3/8	1 5/32 full	1 3/8	8.50	9.00	10.00	10.70
2 3/8	1 1/2	1 9/32 full	1 1/2	8.80	9.40	10.30	11.10
2 9/16	1 5/8	1 25/64 scant	1 5/8	9.00	9.70	10.50	11.40
2 3/4	1 3/4	1 1/2 scant	1 3/4	9.30	10.00	10.80	11.70
2 15/16	1 7/8	1 5/8 scant	1 7/8	9.50	10.30	11.00	12.00
3 1/8	2	1 23/32 scant	2	9.70	10.60	11.20	12.30
3 5/16	2 1/8	1 27/32 scant	2 1/8	10.00	11.00	11.70	12.90
3 1/2	2 1/4	1 31/32 scant	2 1/4	10.00	11.10	11.70	13.00
3 11/16	2 3/8	2 1/16	2 3/8	10.30	11.50	12.20	13.60
3 7/8	2 1/2	2 3/16	2 1/2	10.50	11.80	12.40	13.90
4 1/16	2 5/8	2 5/16	2 5/8	11.00	12.40	13.00	14.60
4 1/4	2 3/4	2 7/16	2 3/4	11.00	12.40	13.00	14.60
4 1/2	2 7/8	2 9/16	2 7/8	11.50	13.00	13.50	15.20
4 5/8	3	2 11/16	3	11.50	13.00	13.50	15.20

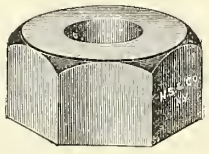
For less than keg lots (200 pounds), add 20 cents per cwt. list for 100 pounds or more; 50 cents per cwt. for less than 100 pounds.

Cold Punched Nuts

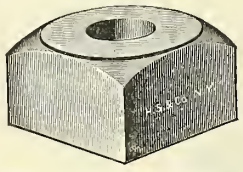
United States Standard Sizes



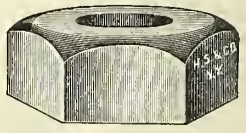
Square, Plain



Hexagon, Plain



Square, Chamfered, Trimmed and Reamed



Hexagon, Chamfered, Trimmed and Reamed

Revised List of January 1, 1906

List Per 100 Pounds

				Plain				Chamfered, Trimmed and Reamed			
				Square		Hexagon		Square		Hexagon	
Wide	Thick	Hole	Bolt	Blank	Tapped	Blank	Tapped	Blank	Tapped	Blank	Tapped
1/2	1/4	13/64	1/4	$13.80	$15.80	$21.00	$23.50	$20.00	$22.00	$27.00	$29.50
19/32	5/16	1/4	5/16	12.80	14.30	19.00	21.00	18.00	19.50	24.00	26.00
11/16	3/8	5/16	3/8	11.00	12.10	14.70	16.30	14.50	15.60	18.50	20.10
25/32	7/16	23/64	7/16	10.50	11.40	13.70	15.00	14.00	14.90	18.00	19.30
7/8	1/2	13/32	1/2	9.30	10.00	11.50	12.50	11.30	12.00	14.00	15.00
31/32	9/16	29/64	9/16	9.30	9.90	11.50	12.40	11.30	11.90	14.00	14.90
1 1/16	5/8	33/64	5/8	8.90	9.40	10.70	11.40	10.00	10.50	12.50	13.20
1 1/4	3/4	5/8	3/4	8.60	9.00	10.20	10.80	9.70	10.10	11.40	12.00
1 7/16	7/8	3/4	7/8	8.60	9.00	10.20	10.80	9.60	10.00	11.10	11.70
1 5/8	1	27/32	1	8.60	9.00	10.20	10.80	9.60	10.00	11.10	11.70
1 13/16	1 1/8	61/64	1 1/8	8.60	9.00	10.20	10.80	9.60	10.00	11.10	11.70
2	1 1/4	1 5/64	1 1/4	8.80	9.20	10.50	11.10	10.10	10.50	11.50	12.10
2 3/16	1 3/8	1 11/64	1 3/8	8.80	9.30	10.50	11.20	10.30	10.80	12.00	12.70
2 3/8	1 1/2	1 19/64	1 1/2	9.60	10.20	11.30	12.10	10.70	11.30	12.60	13.40
2 9/16	1 5/8	1 13/32	1 5/8	9.60	10.30	11.30	12.20	11.10	11.80	13.20	14.10
2 3/4	1 3/4	1 1/2	1 3/4	10.20	10.90	12.10	13.00	11.50	12.20	14.00	14.90
2 15/16	1 7/8	1 5/8	1 7/8	10.20	11.00	12.10	13.10	12.00	12.80	14.50	15.50
3 1/8	2	1 23/32	2	10.60	11.50	12.60	13.70	12.00	12.90	14.50	15.60
3 5/16	2 1/8	1 13/16	2 1/8	11.00	12.00	13.00	14.20	12.50	13.60	15.00	16.20
3 1/2	2 1/4	1 31/32	2 1/4	11.50	12.60	13.50	14.80	13.50	14.80	15.00	16.30
3 11/16	2 3/8	2 1/16	2 3/8					14.00	15.40	16.00	17.40
3 7/8	2 1/2	2 3/16	2 1/2					14.50	16.00	16.00	17.50
4 1/4	2 3/4	2 7/16	2 3/4					14.50	16.10	16.50	18.10
4 5/8	3	2 21/32	3					14.50	16.20	17.00	18.70
5	3 1/4	2 29/32	3 1/4					15.50	17.20	17.00	18.80
5 3/8	3 1/2	3 1/8	3 1/2					15.50	17.20	17.00	18.90
5 3/4	3 3/4	3 11/32	3 3/4							18.00	19.90
6 1/8	4	3 19/32	4							18.00	19.90

For less than keg lots (200 pounds) add 20 cents list for 100 pounds or over; 50 cents for less than 100 pounds. See page 689 for approximate number in 100 pounds.

United States Standard Nuts

Approximate Number in One Hundred Pounds

Size of Bolt Inches	Hot Pressed				Cold Punched—Plain			
	Blank		Tapped		Plain		Chamfered, Trimmed and Reamed	
	Square	Hexagon	Square	Hexagon	Square	Hexagon	Square	Hexagon
1/4	7200	8400	7632	8904	6530	7650	6710	7900
5/16	4300	5100	4558	5406	3790	4400	3880	4520
3/8	2550	3000	2703	3180	2450	2830	2500	2950
7/16	1770	2030	1876	2152	1590	1830	1650	1900
1/2	1180	1400	1250	1484	1110	1320	1180	1360
9/16	915	1065	970	1129	830	980	850	1025
5/8	655	780	694	827	600	710	625	750
3/4	385	475	408	504	365	440	380	460
7/8	260	308	276	326	235	290	250	305
1	172	212	182	225	160	200	170	212
1 1/8	130	150	138	159	118	145	125	151
1 1/4	96	111	102	118	92	105	96	111
1 3/8	70	85	74	90	68.5	82	73	88
1 1/2	59	69	63	73	54.7	65	58	68

Size of Bolt Inches	Hot Pressed				Cold Punched—Blank			
	Blank		Tapped		Plain		Chamfered, Trimmed and Reamed	
	Square	Hexagon	Square	Hexagon	Square	Hexagon	Square	Hexagon
1 5/8	46	54	49	57	42	51	45	53
1 3/4	35	41	37	43	32.5	40.5	35	42
1 7/8	29	35	31	37	27	33.5	29	35
2	24	29	25 1/2	30 3/4	22.5	28	24	29
2 1/8	21	25	22 3/4	26 1/2	19	23.8	...	24.8
2 1/4	17 1/2	21	18 1/2	22 1/4	16.2	20.5	17.4	21.5
2 3/8	14 3/4	18	15 3/4	19 1/4	...	...	...	18.3
2 1/2	12	15 1/2	12 3/4	16 1/2	...	...	12.7	15.6
2 3/4	9	11	9 1/2	11 3/4	...	...	9.6	12
3	7 1/3	8 1/2	7 3/4	9	...	...	7.5	9.4
3 1/4	...	...	...	...	...	...	6	7.4
3 1/2	...	...	...	...	...	...	4.82	5.9
3 3/4	...	...	...	...	...	...	3.93	4.8
4	...	...	...	...	...	...	3.23	4

Wrought Steel Washers—Round



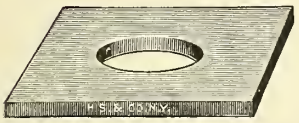
Add $.10 cwt. for 100 pound kegs; add .20 cwt. for 50 to 100 pound boxes; add .30 cwt. for 25 to 50 pound boxes; add .50 cwt. for 5-pound boxes; add 1.00 cwt. for 1-pound boxes.

U. S. Standard Sizes, in 200-pound kegs. Adopted January 20, 1910.

Size of Bolt Inch	Diameter Inches	Size of Hole Inch	Thickness English Standard Wire Gauge	Estimated Number in 100 Pounds	List 100 Pounds
3/16	9/16	1/4	18	44,075	$14.00
1/4	3/4	5/16	16	15,600	12.20
5/16	7/8	3/8	16	11,250	11.40
3/8	1	7/16	14	6,800	10.50
7/16	1 1/4	1/2	14	4,300	9.80

Size of Bolt Inches	Diameter Inches	Size of Hole Inches	Thickness English Standard Wire Gauge	Estimated Number in 100 Pounds	List 100 Pounds
1/2	1 3/8	9/16	12	2,600	$9.40
9/16	1 1/2	5/8	12	2,250	9.30
5/8	1 3/4	11/16	10	1,300	9.20
3/4	2	13/16	10	1,013	9.10
7/8	2 1/4	15/16	9	858	9.00
1	2 1/2	1 1/16	9	617	9.00
1 1/8	2 3/4	1 1/4	9	516	9.00
1 1/4	3	1 3/8	9	403	9.20
1 3/8	3 1/4	1 1/2	8	320	9.20
1 1/2	3 1/2	1 5/8	8	278	9.20
1 5/8	3 3/4	1 3/4	8	247	9.50
1 3/4	4	1 7/8	8	224	9.50
1 7/8	4 1/4	2	8	200	9.50
2	4 1/2	2 1/8	8	180	9.50
2 1/4	4 3/4	2 3/8	8	140	10.50
2 1/2	5	2 5/8	7	115	10.50

Wrought Iron Washers—Square



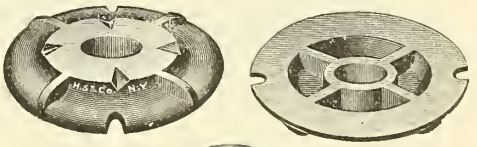
Size of Bolt Inches	Width Inches	Thickness Inch	Size of Hole Inches	Number in 100 Pounds	List 100 Pounds
3/8	1 1/2	1/8	7/16	1,300	$10.90
7/16	1 3/4	1/8	1/2	1,100	10.30
1/2	2	3/16	9/16	500	9.80
5/8	2 1/4	1/4	23/32	315	9.50
3/4	2 1/2	1/4	27/32	250	9.50
7/8	3	1/4	31/32	165	9.50
1	3 1/2	3/8	1 3/32	87	9.50
1 1/8	4	3/8	1 1/4	65	9.50
1 1/4	4 1/2	3/8	1 3/8	48	9.50
1 3/8	5	3/8	1 1/2	40	9.50
1 1/2	6	3/8	1 5/8	28	9.60
1 3/4	6 1/2	3/8	1 7/8	24	9.70
2	7	3/8	2 1/8	21	9.70

Malleable Iron Washers

With Nut-Locking Feature

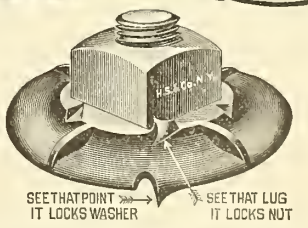
Eastern Pattern No. 44

Engineers Standard



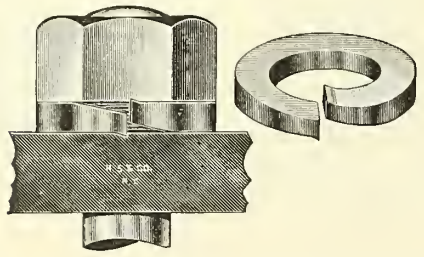
Hole, size of bolt, inches.....	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Diameter, inches.....	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	7 1/2
Thickness, inch.....	1/4	5/16	3/8	3/8	7/16	1/2	9/16	9/16	5/8	3/4	3/4
Weight per 100 washers, pounds	7	15	23	38	58	85	111	152	203	288	372

400 per cent. stronger than cast-iron washers. Weight is about one-third of cast iron. No loss in breakage, as they are indestructible. Standard diameter is the same; thickness about one-half that of cast-iron washers.



Lock Washers

Positive



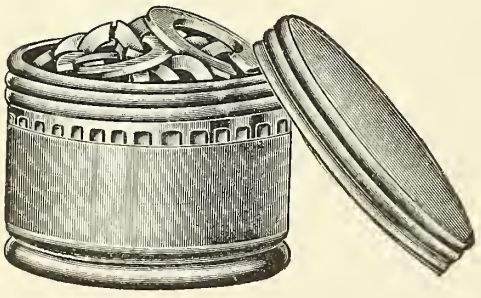
This washer is so constructed that the body of the washer carries the load of compression and the tapered ends are thus relieved, and the spring is constant. The barbs, being free to move when subjected to vibration, force themselves deeply into the nut and metal backing.

The washer is reversible and can be used many times. Does not injure the nut, its threads or the threads of the bolt.

Size Bolt Inches	Width Inch	Thickness Inch	Per 1000	Proper Size For
3/16	3/32	3/64	$1.90	Cap Screw Head
1/4	1/8	1/16	2.25	Cap Screw Head
5/16	1/8	1/16	2.35	Cap Screw Head
3/8	1/8	3/32	2.90	Cap Screw Head
3/8	3/16	1/8	4.10	Bolt Head or Nut
7/16	5/32	3/32	3.50	Cap Screw Head
7/16	3/16	1/8	4.45	Bolt Head or Nut
1/2	3/16	1/8	4.70	Cap Screw Head
1/2	1/4	3/16	6.20	Bolt Head or Nut
5/8	3/16	1/8	5.65	Cap Screw Head
5/8	1/4	3/16	6.85	Bolt Head or Nut
3/4	3/16	1/8	6.05	Cap Screw Head
3/4	1/4	3/16	7.80	Bolt Head or Nut
7/8	3/16	3/16	7.10	Cap Screw Head
7/8	1/4	3/16	8.80	Bolt Head or Nut
1	5/16	1/4	12.35	Cap Screw Head
1	3/8	1/4	16.20	Bolt Head or Nut
1 1/8	3/8	1/4	18.20	Bolt Head or Nut
1 1/4	3/8	1/4	20.20	Bolt Head or Nut
1 1/2	7/16	1/4	27.50	Bolt Head or Nut

Lock Washers

Assorted, Positive



Put up in round fibre boxes with metal bottom and metal screw top. Contains 45 washers, sizes ranging from 1/4 inch to 5/8 inch.

Assortment No. 6, per dozen boxes $2.00

Lock Washers

National



Showing Lock Washer on Bolt

When the nut is screwed upon the bolt it first strikes the rib on the Lock Washer which, being harder than the nut, progressively upsets and forces some of the metal of the nut into the thread of the bolt, thereby preventing the nut from backing off or loosening.

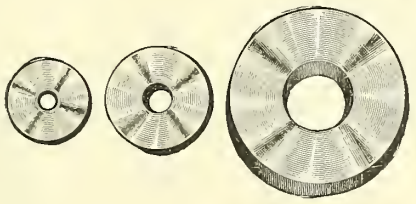
Can be used on any make of bolt or nut. The same bolt, nut and lock washer can be used as often as required.

Directions: Place National Lock Washer on bolt with rib next to nut and wrench nut home as usual. In the case of wood construction, place a flat plate washer under the National, so as to give a larger bearing surface.

Size Bolt Inches	Width Inch	Thickness Inch	Per 1000
1/4	1/8	5/64	$6.00
5/16	3/16	3/32	6.50
3/8	1/4	1/8	7.50
1/2	1/4	1/8	9.00
5/8	5/16	3/16	10.50
3/4	5/16	7/32	12.50
7/8	5/16	1/4	14.50
1	3/8	1/4	20.00
1 1/8	3/8	1/4	23.00
1 1/4	3/8	1/4	26.00
1 3/8	3/8	1/4	30.00
1 1/2	3/8	1/4	34.00
1 5/8	7/16	5/16	40.00

Above are proper sizes for bolt heads or nuts.

Brass Washers



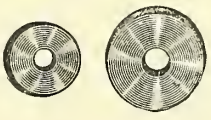
For Bolt Inch	Outside Diameter Inch	Thickness Inch	For Bolt Inch	Outside Diameter Inches	Thickness Inches
1/8	1/4	.025	3/8	3/4	1/16
3/16	1/2	.050	1/2	1 3/8	12
1/4	1/2	.050	5/8	1 3/4	10
1/4	5/8	.065	3/4	2	10
5/16	3/4	1/16	7/8	2 1/4	9
3/8	1	1/16	1	2 1/2	9

B & S Gauge

Prices on application

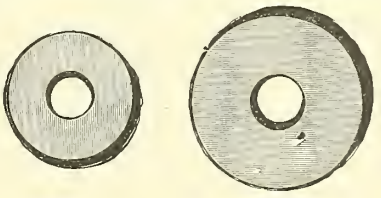
Brass Burrs

Diameters and thickness are approximate only



Size Number	7	8	9	10	12
Inside diameter, inch	11/64	5/32	9/64	9/64	1/8
Outside diameter, inch	1/2	1/2	7/16	13/32	25/64
Thickness, inch	.050	.045	.036	.036	.028

Plumbers Washers



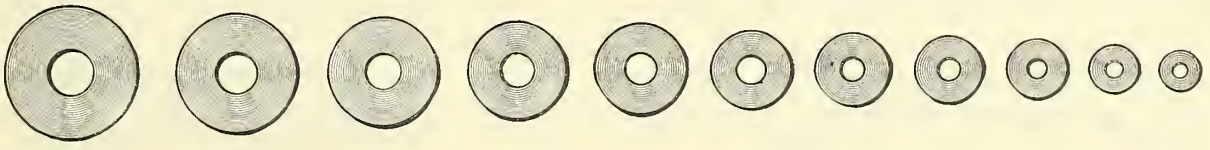
No. 6 No. 330

No. 6 Brass, dipped, gross
No. 6 Brass, nickel-dipped, gross
No. 330 Brass, dipped, gross
No. 330 Brass, nickel-dipped, gross
} Prices on application

No. 6 Inside diameter 7/32 inch; outside diameter 21/32 inch; thickness 17 B. & S. gauge.

No. 330 Inside diameter 1/4 inch; outside diameter 27/32 inch; thickness 17 B. & S. gauge.

Copper Burrs



No. 5 6 7 8 9 10 11 12 13 14 15

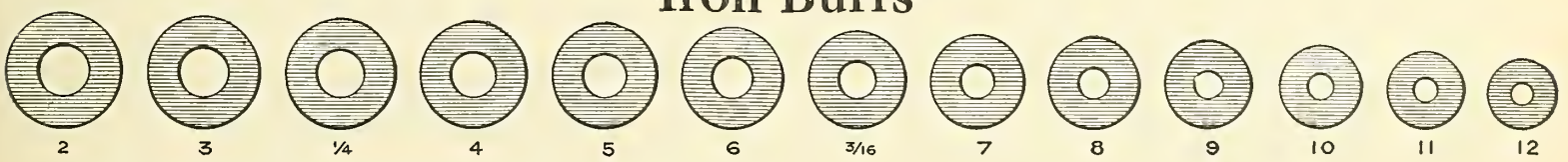
Size Number	5	6	7	8	9	10	11	12	13	14	15
Per Pound	$ .49	.49	.49	.50	.52	.54	.56	.58	.60	.65	.70

Approximate Dimensions

Number	Outside Diameter, Inch	Size Hole Inch	Thickness Inch
5	688	.220	.058
6	.628	.203	.049
7	.562	.180	.049
8	.500	.165	.042
9	.469	.148	.035

Number	Outside Diameter, Inch	Size Hole Inch	Thickness Inch
10	.406	.134	.032
12	.344	.109	.032
13	.312	.095	.028
14	.250	.083	.025
15	.219	.072	.022

Iron Burrs



2 3 1/4 4 5 6 3/16 7 8 9 10 11 12

Size	Per Pound	Size	Per Pound
3/8-inch	$ .36	3/16-inch	$ .42
11/32-inch	.36	No. 7	.43
5/16-inch	.36	No. 8	.44
No. 1	.36	No. 9	.45
No. 2	.36	No. 10	.47
No. 3	.36	No. 11	.50
1/4-inch	.36	No. 12	.60
No. 4	.37	No. 13	.70
No. 5	.38	No. 14	.80
No. 6	.42		

Net Extras—For metallic tinning, add 3½ cents per pound; for coppering or tin plating, add 1¼ cents per pound.

List Rebates—For 25 and 50-pound boxes, deduct 2 cents per pound; for 100-pound boxes, deduct 3 cents per pound; for 100 and 200-pound kegs, deduct 4 cents per pound.

Approximate Dimensions

Size	Outside Diameter Inch	Size Hole Inch	Thickness B. W. G. No.
No. 12	.350	.111	20
No. 11	.375	.122	20
No. 10	.400	.136	19
No. 9	.425	.150	19
No. 8	.450	.168	19
No. 7	.475	.183	19
3/16-inch	.475	.192	19
No. 6	.500	.206	18
No. 5	.525	.223	18
No. 4	.550	.242	18
1/4-inch	.550	.257	18
No. 3	.575	.263	18
No. 2 or 9/32-inch	.600	.288	17

Steel Spring Cotters

List of January 1, 1906



List Per 1,000

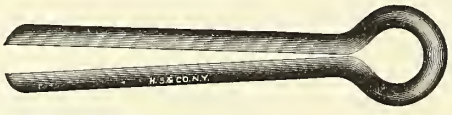
These cotters are made of the best quality, half round, spring wire. The length measurements given are from point to neck or under the eye.

Length Inches	Diameter, Inch													
	3/32	7/64	1/8	9/64	5/32	11/64	3/16	13/64	7/32	1/4	5/16	3/8	7/16	1/2	5/8
1/2	$3.50	$4.00	$5.00	$6.00	$7.00	$8.00									
3/4	4.15	4.75	5.85	7.00	8.15	9.30	$11.10	$12.00							
1	4.80	5.50	6.70	8.00	9.30	10.60	12.80	14.00	$18.00	$20.00	$32.50				
1 1/4	5.45	6.25	7.55	9.00	10.45	11.90	14.50	16.00	20.80	23.50	37.50				
1 1/2	6.10	7.00	8.40	10.00	11.60	13.20	16.20	18.00	23.60	27.00	42.50	$72.00			
1 3/4	6.75	7.75	9.25	11.00	12.75	14.50	17.90	20.00	26.40	30.50	47.50	79.20	$108.00		
2	7.40	8.50	10.10	12.00	13.90	15.80	19.60	22.00	29.20	34.00	52.50	86.40	119.50	$148.50	
2 1/4	....	....	10.95	13.00	15.05	17.10	21.30	24.00	32.00	37.50	57.50	93.60	131.00	163.50	
2 1/2	....	....	11.80	14.00	16.20	18.40	23.00	26.00	34.80	41.00	62.50	100.80	142.50	178.50	
2 3/4	....	....	....	....	....	....	24.70	28.00	37.60	44.50	67.50	108.00	154.00	193.50	
3	....	....	....	....	....	....	26.40	30.00	40.40	48.00	72.50	115.20	165.50	208.50	$384.00
3 1/4	....	....	....	....	....	....	....	....	....	51.50	77.50	122.40	177.00	223.50	404.00
3 1/2	....	....	....	....	....	....	....	....	....	55.00	82.50	129.60	188.50	238.50	424.00
3 3/4	....	....	....	....	....	....	....	....	....	58.50	87.50	136.80	200.00	253.50	444.00
4	....	....	....	....	....	....	....	....	....	62.00	92.50	144.00	211.50	268.50	464.00
5	....	....	....	....	....	....	....	....	....	....	....	....	257.00	328.50	544.00
6	....	....	....	....	....	....	....	....	....	....	....	....	....	388.50	644.00

Brass Spring Cotters. List prices 8 times list of steel

Steel Cellar Box Cotters

List of January 1 1906

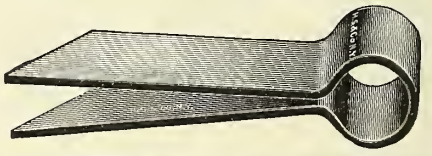


List Per 1,000

Length Inches	Diameter of Wire, Inch					
	3/8	7/16	1/2	9/16	5/8	3/4
3	.....	.....	.....	.....	.....	$900.00
4	.....	.....	.....	.....	.....	1,068.00
5	.....	.....	.....	.....	.....	1,236.00
6	.....	.....	.....	.....	.....	1,404.00
7	$412.00	$628.00	$796.00	$852.00	$960.00	1,572.00
8	454.00	689.00	877.00	948.00	1,080.00	1,740.00
9	496.00	750.00	958.00	1,044.00	1,200.00	1,908.00
10	538.00	811.00	1,039.00	1,140.00	1,320.00	2,076.00
11	580.00	872.00	1,120.00	1,236.00	1,440.00	2,244.00
12	622.00	933.00	1,201.00	1,332.00	1,560.00	2,412.00
13	664.00	994.00	1,282.00	1,428.00	1,680.00	2,580.00
14	706.00	1,055.00	1,363.00	1,524.00	1,800.00	2,748.00
15	748.00	1,116.00	1,444.00	1,620.00	1,920.00	2,916.00
16	790.00	1,177.00	1,525.00	1,716.00	2,040.00	3,084.00
17	832.00	1,238.00	1,606.00	1,812.00	2,160.00	3,252.00
18	876.00	1,299.00	1,687.00	1,908.00	2,280.00	3,420.00

Flat Spring Keys

List of January 1, 1906



List Per 1,000

Length Inches	Width, Inch (Nos. 16 and 17 Wire Gauge)				
	3/8	1/2	5/8	3/4	7/8
1 1/4	$39.00	$52.00			
1 1/2	44.50	58.00			
1 3/4	50.00	64.00	$78.00		
2	55.50	70.00	84.50	$104.00	$125.00
2 1/4	61.00	76.00	91.00	111.00	131.00
2 1/2	66.50	82.00	97.50	118.00	138.00
2 3/4	72.00	88.00	104.00	125.00	147.00
3	77.50	94.00	110.50	132.00	155.00
3 1/4	.....	.....	117.00	139.00	162.00
3 1/2	.....	.....	123.50	146.00	170.00

Flat Riveted Keys



Made to order only. Price on receipt of quantity specifications, accompanied by sample or sketch.

Packing of Spring Cotters

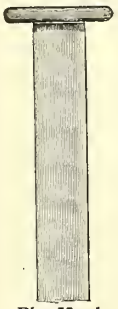
	To Package
1/16 and 5/64 inch diameter, all lengths	1000
3/32, 7/64, 1/8, 9/64, 5/32, 11/64 inch diameter, 1 inch and shorter	1000
3/32, 7/64, 1/8, 9/64, 5/32, 11/64 inch diameter, 1 1/8 inches and longer	500
3/16, 7/32, 13/64 inch diameter, 1 1/2 inches and shorter	500
3/16, 7/32, 13/64 inch diameter, 1 3/4 inches and longer	250
1/4 inch diameter, all lengths	250
5/16 inch diameter, 2 inches and shorter	250
5/16 inch diameter, 2 1/4 inches and longer	125
3/8 inch diameter	In bulk
7/16 inch diameter	In bulk
1/2 inch diameter	In bulk
5/8 inch diameter	In bulk
3/4 inch diameter	In bulk

SEE DISCOUNT SHEET

Iron Rivets

Any Style Head


Round Head


Flat Head


Wheel Head


Globe Head

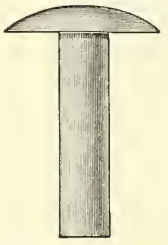

Truss Head


Cone Head


Bevel Head


Countersunk Head


Oval Countersunk Head


Wagon Box Head

Measured by English Standard Gauge

List Per Pound in 10-pound or 5-pound Boxes

List of January 8, 1904. (Revised May, 1906 and April 1, 1913)

Size Wire	Length, Inch: 1 and longer	7/8	3/4	5/8	1/2	15/32	7/16	13/32	3/8	11/32	5/16	9/32	1/4	7/32	3/16	5/32	1/8	3/32
7/16	$ .19	$ .19½	$ .19½	$ .20	$ .20	$ .20												
3/8	.19	.19½	.19½	.20	.20	.21												
11/32	.19½	.20	.20	.20½	.20½	.21	$ .21											
5/16	.19½	.20	.20	.20½	.20½	.21	.22	$ .22	$ .22									
1	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	$ .23								
2	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	.23	$ .24							
3	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	.23	.24	$ .24	$ .24					
¼	.20	.20½	.20½	.21	.21	.22	.23	.23	.23	.23	.24	.24	.24	$ .25	$ .25			
4	.21	.21½	.21½	.22	.22	.23	.23	.24	.24	.24	.24	.24	.24	.25	.25	$ .26		
5	.21	.21½	.21½	.22	.22	.23	.24	.24	.24	.24	.25	.26	.26	.27	.27	.28	$ .28	$ .29
6	.21	.21½	.21½	.22	.22	.23	.24	.24	.25	.25	.26	.26	.27	.28	.29	.29	.29	.30
3/16	.21	.21½	.21½	.22	.22	.23	.24	.24	.25	.25	.26	.26	.27	.28	.29	.30	.31	.32
7	.21	.21½	.22	.23	.23	.24	.24	.24	.25	.25	.26	.26	.27	.28	.29	.30	.31	.32
8	.22	.22½	.22½	.23	.23	.24	.25	.25	.26	.26	.27	.27	.28	.29	.30	.31	.32	.33
9	.23	.23½	.23½	.24	.24	.25	.26	.26	.27	.27	.29	.29	.29	.30	.31	.33	.35	.36
10	.24	.24½	.24½	.25	.25	.26	.27	.28	.29	.31	.33	.34	.34	.36	.39	.41	.43	.44
11	.25	.25½	.25½	.26	.26	.28	.30	.32	.33	.34	.36	.37	.37	.39	.43	.46	.48	.51
12	.26	.26½	.26½	.27	.27	.30	.32	.34	.35	.36	.38	.40	.41	.42	.47	.51	.56	.61
13	.30	.30½	.30½	.31	.31	.33	.36	.39	.40	.41	.43	.45	.46	.47	.51	.56	.61	.66
14	.32	.32½	.32½	.33	.33	.36	.41	.44	.46	.51	.56	.58	.61	.64	.64	.66	.69	.71

Rivets made from smaller wire than No. 14, all lengths, list 80 cents per pound; 3/32 diameter, list price No. 13; 7/32 diameter, list price No. 5; 5/32 diameter, list price No. 8; 1/8 diameter, list price No. 11; 9/32 diameter, list price No. 2.

List Extras.—For Shoulder and Pointed Rivets, add 2 cents per pound to list price for each specialty, except Pointed Hame. Intermediate lengths and diameters, list price of nearest smaller size.

Net Extras.—For Tin or Copper Plating, add 1½ cents per pound to net price. For Metallic Tinning, add 3½ cents per pound to net price.

List Rebates.—For 25 or 50 pound Boxes, deduct 2 cents per pound from list price.

For 100 pound Boxes, deduct 3 cents per pound from list price.

For 100 or 200 pound Kegs, deduct 4 cents per pound from list price.

For approximate number of rivets to one pound, see next page.

Round Head Iron Rivets

Approximate Number in One Pound

Listed on Preceding Page

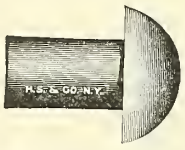
Length Inches	Diameter of Wire 3/8	0	5/16	1	2	3	1/4	4	5	6	3/16	7	8	9
3/4	..	..	..	..	..	..	..	..	..	154	188	221	256	334
1/2	32	42	51	57	65	75	80	89	108	131	159	185	215	278
5/8	29	37	45	50	57	67	70	78	94	114	138	158	185	238
3/4	26	33	41	45	51	59	63	70	84	101	122	139	163	208
7/8	24	30	37	41	46	54	57	63	75	91	109	123	145	185
1	22	28	34	39	42	49	52	57	68	82	98	111	131	166
1 1/8	20	26	31	34	39	45	47	53	63	75	90	101	119	151
1 1/4	19	24	29	32	36	42	44	49	58	69	83	93	109	138
1 3/8	18	22	27	29	33	39	41	45	54	64	76	86	101	127
1 1/2	17	21	25	28	31	37	38	42	51	59	71	80	94	119
1 3/4	15	18	22	24	27	33	34	40	44	55	63	70	82	104
2	13	17	20	22	25	29	30	35	40	47	56	62	73	92
2 1/4	12	15	18	19	22	27	28	32	36	42	50	56	66	83
2 1/2	11	14	17	18	20	24	25	29	33	39	46	50	60	75

Length Inches	Diameter of Wire 3/8	0	5/16	1	2	3	1/4	4	5	6	3/16	7	8	9
2 3/4	10	13	15	17	19	22	23	26	30	36	42	46	55	67
3	9	12	14	15	17	21	22	24	28	33	39	43	51	64
3 1/4	8 1/2	11	13	14	16	19	20	23	26	31	36	40	47	59
3 1/2	8	10 1/2	12	13 1/2	15	18	19	21	24	29	34	38	44	55
3 3/4	7 1/2	9 3/4	11 3/4	12 3/4	14	17	18	20	23	27	32	35	41	52
4	7 1/4	9 1/4	11	12	13	16	17	18	21	25	30	33	38	49
4 1/4	7	8 3/4	10 1/2	11 1/4	12 3/4	15	16	17	20	24				
4 1/2	6 1/2	8 1/4	10	10 3/4	12	14	15	16	19	23				
4 3/4	6 1/4	8	9 1/4	10	11 1/2	13 3/4	14 3/4	15 3/4	18	22				
5	6	7 1/2	9	9 3/4	11	13	14	15	17	21				
5 1/4	5 3/4	7 1/4	8 1/2	9 1/4	10 1/2	12 1/2	13 1/2	14 1/2	16 1/2	20				
5 1/2	5 1/2	7	8 1/4	9	10	12	13	14	16	19				
5 3/4	5 1/4	6 3/4	7 3/4	8 1/2	9 1/2	11 1/2	12 1/2	13 1/2	15	18				
6	5	6 1/2	7 1/2	8 1/4	9 1/4	11	12	13	14	17				

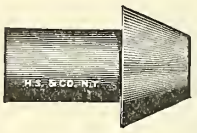
Boiler and Structural Steel Rivets



Countersunk Head



Round or Button Head



Cone Head

Standard List of Extras for Rivets in 200 pound Kegs

Round or Button Head	Base price
Cone Head	Base price
Countersunk Heads	Add $.25 per 100 pounds
Flat Heads	Add .25 per 100 pounds
3/4 to 1 1/4-inch diameter, 2 to 5-inch length	Base price
5/8 and 11/16-inch diameter	Add $.15 per 100 pounds
1/2 and 9/16-inch diameter	Add .50 per 100 pounds
Diameter over 1 1/4 inches	Add .25 per 100 pounds
Lengths 1 inch and shorter	Add .50 per 100 pounds
Lengths from 1 inch to 2 inches	Add .25 per 100 pounds
Lengths over 5 inches	Add .25 per 100 pounds
In 100-pound kegs	Add .10 per 100 pounds
Less than 100 pounds of a size	Add .50 per 100 pounds

Tinners Rivets

List of January 8, 1904. (Revised May, 1906, and April, 1 1913)

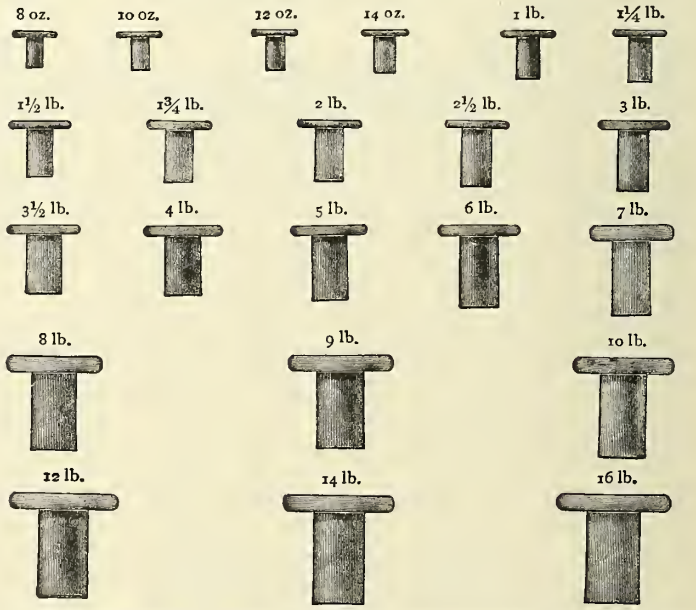
Measured by English Standard Gauge

In Packages (Boxes) of 1000—Per 1000

Size	Black	Tinned	Tin-plated
8 Ounce	$ .22	$ .31	$ .26
10 Ounce	.24	.35	.29
12 Ounce	.26	.39	.32
14 Ounce	.28	.43	.35
1 Pound	.29	.47	.37
1 1/4 Pound	.32	.54	.42
1 1/2 Pound	.37	.64	.49
1 3/4 Pound	.41	.72	.55
2 Pound	.44	.79	.59
2 1/2 Pound	.56	1.00	.75
3 Pound	.62	1.15	.85
3 1/2 Pound	.72	1.34	.99
4 Pound	.79	1.49	1.09
5 Pound	1.00	1.88	1.38
6 Pound	1.12	2.17	1.57
7 Pound	1.31	2.54	1.84
8 Pound	1.50	2.90	2.10
9 Pound	1.68	3.26	2.36
10 Pound	1.77	3.52	2.52
12 Pound	2.06	4.16	2.96
14 Pound	2.40	4.85	3.45
16 Pound	2.77	5.57	3.97

In Boxes of 10 and 5 Pounds—Per Pound

Size	Black	Barrel Rivets	Size	Black
8 Ounce	$ .42		3 1/2 Pound	$ .23
10 Ounce	.38		4 Pound	.22
12 Ounce	.35		5 Pound	.22
14 Ounce	.33		6 Pound	.21
1 Pound	.30		7 Pound	.21
1 1/4 Pound	.27		8 Pound	.21
1 1/2 Pound	.26		9 Pound	.21
1 3/4 Pound	.25		10 Pound	.20
2 Pound	.24		12 Pound	.19 1/2
2 1/2 Pound	.24		14 Pound	.19 1/2
3 Pound	.23		16 Pound	.19 1/2



Net Extras

For Metallic Tinning	Add 3 1/2 cents per pound
For Tin Plating	Add 1 1/2 cents per pound

List Rebates

For 25 and 50-pound boxes	Deduct 2 cents per pound
For 100-pound boxes	Deduct 3 cents per pound
For 100 and 200-pound kegs	Deduct 4 cents per pound

Oval or countersunk heads, or extra lengths, 10 cents per 1,000 in addition to the above prices.

Approximate Dimensions

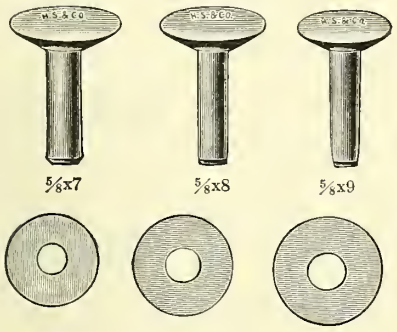
Revised October 21, 1884

Size	Length	Diameter Wire Gauge
8 ounce	5/32	No. 13 1/4
10 ounce	11/64	No. 13
12 ounce	3/16	No. 12 1/4
14 ounce	3/16	No. 12
1 pound	13/64	No. 11 3/4
1 1/4 pound	7/32	No. 11
1 1/2 pound	15/64	No. 10 1/4
1 3/4 pound	1/4	No. 10

Size	Length	Diameter Wire Gauge
2 pound	17/64	No. 9 1/4
2 1/2 pound	9/32	No. 9
3 pound	5/16	No. 8 1/4
3 1/2 pound	21/64	No. 8
4 pound	11/32	No 7 1/4
5 pound	3/8	No. 6 3/4
6 pound	25/64	No. 6

Size	Length	Diameter Wire Gauge
7 pound	13/32	No. 5 1/4
8 pound	7/16	No. 4 3/4
9 pound	29/64	No. 4 1/4
10 pound	15/32	No. 4
12 pound	1/2	No. 3
14 pound	33/64	No. 2
16 pound	17/32	No. 1

*Copper Belt Rivets and Burrs



The following lengths are regular: ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼ and 1½ inches.

Per Pound for Any Regular Length

Numbers	7	8	9	10	11	12	13	14	15
Per pound	$ .49	.50	.52	.54	.56	.58	.60	.65	.70

Approximate Number to a Pound of Copper Belt Rivets and Burrs

Number	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	Burrs
7	211	171	150	132	110	97	91	72	63	368
8	266	227	172	147	136	116	100	88	71	417
9	365	261	228	184	169	156	133	113	99	600
10	411	336	257	223	206	180	162	...	..	820
11	416	360	320	...	...	...	...	...	..	944
12	545	400	325	292	257	221	190	...	..	1167
13	799	547	448	392	316	...	...	...	..	1442

*Copper Oval Head or Trunk Rivets and Burrs



The following lengths are regular: ¼, ⅜, ½, ⅝, ¾, ⅞, 1 and 1¼ inches.

No. 9 In any regular length, as listed above, pound..... $ .52

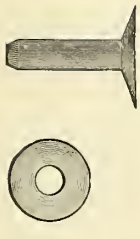
*Copper Rivets are measured from ⅛ to ¼ inch from small end—or about where the burr sets, after being riveted or "headed" on.

The rivets are not absolutely uniform, the holes in the burrs allowing a variation of .002 inch over and under, are as follows: No. 7, .180; No. 8, .165; No. 9, .148; No. 10, .134; No. 11, .120; No. 12, .109; No. 13, .095; No. 14, .083 and No. 15, .072.

Iron Belt Rivets and Burrs

Measured by English Standard Gauge

List Per Pound Any Length

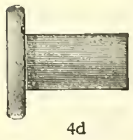


Tinned or Coppered	7	8	9	10	11	12	13	14
Uniform lengths in 1-pound boxes..	$. 35	$ .36	$ .37	$ .39	$ .41	$ .45	$ .48	$ .51
Uniform lengths in ½-pound boxes.	.39	.40	.41	.43	.45	.49	.52	.55
Uniform lengths in ¼-pound boxes.	.43	.44	.45	.47	.49	.53	.56	.59
Assorted lengths, ⅜ to ¾ inch, in 1-pound boxes.....	.39	.40	.41	.43	.45	.49	.52	.55
Assorted lengths, ⅜ to ¾ inch, in ½-pound boxes.....	.43	.44	.45	.47	.49	.53	.56	.59
Assorted lengths, ⅜ to ¾ inch, in ¼-pound boxes.....	.47	.48	.49	.51	.53	.57	.60	.63

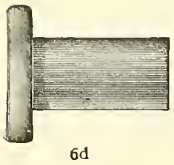
Lengths are same as Belt Rivets and Burrs listed above.



2d



4d



6d

Coopers Rivets

List Per Pound in 10 and 5 Pound Boxes

List of April 1, 1913

Size	Approximate Dimensions Length Inch	Diameter	Pound
1d	13/32	No. 4	$ .21
2d	7/16	No. 3	.20½
3d	15/32	No. 2	.20
4d	17/32	No. 1	.20
5d	19/32	No. 0	.20
6d	11/16	No. 00	.20

Hame Rivets

List Per Pound in 10, 5 and 1 Pound Boxes

List of April 1, 1913

Size	Length, Inch 1	7/8	3/4	5/8
No. 6	$ .21	$ .21½	$ .21½	$ .22
No. 3/16	.21	.21½	.21½	.22
No. 7	.21	.21½	.22	.23
No. 8	.21	.21½	.22	.23



Flat



Round



Bevel

List Rebates on Coopers and Hame Rivets

For 25 and 50-pound boxes, deduct 2 cents per pound; for 100 pound boxes, deduct 3 cents per pound; for 100 and 200-pound kegs, deduct 4 cents per pound.

Copper Brake Band Rivets



For Automobile Construction and Repair Work

	Size Shank Inch	Length Overall Inch	Pound
No. 6	209	3/4	$ .49
No. 8	.169	3/4	.50
No. 8	.169	5/8	.50
No. 10	.138	5/8	.54
No. 10	138	1/2	.54
No. 12	.122	5/8	.58

Specify number and length

Bifurcated Rivets



Made of soft steel, copper-plated. Diameter of head 5/16-inch; diameter of body 5/32-inch.

Length, inch...	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Per 1000.....	$ .75	.75	.75	.85	.85	.85	.95	1.05

Above list applies only when packed in bulk cases. When packed 1000 to the box, add 2 cents per 1000.

Assorted lengths, 1/4 to 1/2-inch, 100 in box, with handle in each box for holding rivets while clinching, per dozen boxes..... $ .70

Escutcheon Pins

In one pound paper boxes. Measured by Washburn & Moen gauge

List Per Pound



Brass

Inches...	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1	1⅛	1¼	1½	1¾	2
No. 10...	....	....	$ .75	$ .73	$ .72	$ .71	$ .70	$ .69	$ .68	$ .67	$ .66	$ .65	$ .63
No. 11...	....	....	.76	.74	.73	.72	.71	.70	.69	.68	.67	.66	.66
No. 12...	....	....	.77	.75	.74	.73	.72	.71	.70	.69	.68	.67	.67
No. 13...	....	....	.78	.76	.75	.74	.73	.72	.71	.70	.69	.69	.69
No. 14...	$ .90	$ .83	.80	.77	.76	.75	.74	.73	.72	.71	.70	.70	.70
No. 15...	.95	.85	.82	.78	.77	.76	.75	.74	.73	.72	.72	.72	.72
No. 16...	1.00	.90	.85	.82	.80	.78	.76	.75	.74	.74	.74	.74	.75
No. 17...	1.10	1.00	.92	.89	.87	.85	.83	.81	.80	.80	.80	.81	.82
No. 18...	1.20	1.10	1.00	.96	.94	.92	.90	.90	.90	.92	.92	.93	.95
No. 19...	1.35	1.20	1.15	1.10	1.05	1.00	1.00	1.03	1.03	1.03	1.05		
No. 20...	1.55	1.35	1.25	1.20	1.15	1.10	1.10	1.15	1.15	1.15			
No. 21...	1.75	1.55	1.45	1.25	1.30	1.30	1.35	1.35					
No. 22...	2.00	1.75	1.60	1.45	1.40	1.45							

For Whitening (silver dipped), add 12 cents per pound net.

Iron

Inches...	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1	1⅛	1¼	1½	1¾	2
No. 10...	....	....	$ .29	$ .26	$ .24	$ .23	$ .22	$ .21	$ .20	$ .19	$ .17	$ .17	$ .16
No. 11...	....	....	.29	.26	.24	.23	.22	.21	.20	.19	.17	.17	.16
No. 12...	....	....	.32	.28	.26	.24	.23	.22	.21	.19	.18	.17	.17
No. 13...	....	....	.34	.30	.28	.26	.24	.23	.22	.20	.19	.19	.19
No. 14...	....	....	.37	.33	.30	.27	.24	.23	.23	.21	.20	.20	.20
No. 15...	....	$ .44	.40	.36	.32	.28	.25	.24	.24	.23	.22	.22	.22
No. 16...	....	.47	.42	.37	.33	.29	.26	.25	.25	.24	.24	24	.24
No. 17...	....	.49	.44	.39	.35	.31	.28	.27	.27	.26	.26	.26	.26
No. 18...	....	.52	.47	.42	.37	.33	.30	.29	.29	.28	.28	.28	.28
No. 19...	....	.62	.52	.47	.42	.37	.35	.35	.35	.35	.35		
No. 20...	$1.02	.82	.67	.57	.47	.42	.42	.42	.42	.42			
No. 21...	1.22	1.02	.87	.77	.62	.57	.57	.57					

Tacks

All prices are per hundred pounds. List of June 1, 1914

Upholsterers



Tinned. Genuine Swedish Iron

Can also be supplied made of soft steel.

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$60.00	45.00	34.00	28.50	24.50	22.50	21.00	20.00
½-pound papers	58.00	43.00	32.00	26.50	22.50	20.50	19.00	18.00
1-pound packages	57.00	42.00	31.00	25.50	21.50	19.50	18.00	17.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	$19.50	19.00	19.00	19.00	19.00	19.00	19.00	19.00
½-pound papers	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
1-pound packages	16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Blued. Genuine Swedish Iron

Can also be supplied made of soft steel.

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$45.00	35.00	26.50	23.50	20.50	19.00	18.00	17.00
½-pound papers	43.00	33.00	24.50	21.50	18.50	17.00	16.00	15.00
1-pound packages	42.00	32.00	23.50	20.50	17.50	16.00	15.00	14.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	$16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00
½-pound papers	14.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00
1-pound packages	13.50	13.00	13.00	13.00	13.00	13.00	13.00	13.00

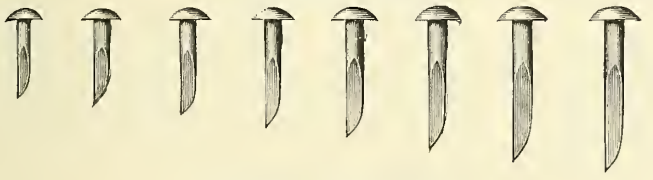
Baling



Blued. Soft Steel

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$45.00	35.00	26.50	23.50	20.50	19.00	18.00	17.00
½-pound papers	43.00	33.00	24.50	21.50	18.50	17.00	16.00	15.00
1-pound packages	42.00	32.00	23.50	20.50	17.50	16.00	15.00	14.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	$16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00
½-pound papers	14.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00
1-pound packages	13.50	13.00	13.00	13.00	13.00	13.00	13.00	13.00

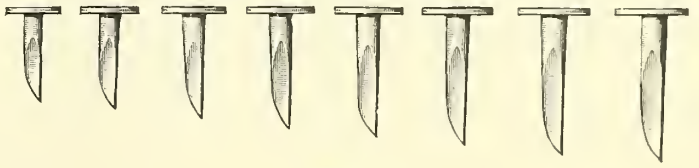
Oval Head Carpet



Tinned. Soft Steel

Number	3	4	6	8	10	12
¼-pound papers	$23.50	22.00	20.50	19.50	19.00	18.60
½-pound papers	21.50	20.00	18.50	17.50	17.00	16.50
1-pound packages	20.50	19.00	17.50	16.50	16.00	15.50
Number	14	16	18	20	2	24
¼-pound papers	$18.50	18.60	18.50	18 50	18.50	18.50
½-pound papers	16.50	16.50	16.50	16.50	16.50	16.50
1-pound packages	15.50	15.50	15.50	15.50	15.50	15.50

Bill Posters. Soft Steel



Blued

Number	2	2½	3	4	6	8	10
½-pound papers	$23.50	20.50	17.50	16.00	15.00	14.00	13.50
1-pound packages	22.50	19.50	16.50	15.00	14.00	13.00	12.50
Number	12	14	16	18	20	22	24
½-pound papers	$13.00	13.00	13.00	13.00	13.00	13.00	13.00
1-pound packages	12.00	12.00	12.00	12.00	12.00	12.00	12.00

Tinned

Number	2	2½	3	4	6	8	10
½-pound papers	$31.00	25.50	21.50	19.50	18.00	17.00	16 50
1-pound packages	30.00	24.50	20.50	18.50	17.00	16.00	15.50
Number	12	14	16	18	20	22	24
½-pound papers	$16.00	16.00	16.00	16.00	16.00	16.00	16.00
1-pound packages	15.00	15.00	15.00	15.00	15.00	15.00	15.00

These can also be supplied made of genuine Swedish Steel.

American Cut. Soft Steel

This is the same type tack as Upholsterers, except has smaller head and shank.



Blued

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$45.50	35.50	27.00	24.00	21.00	19.50	18.50	17.50
½-pound papers	.....	.....	.....	.....	.....	.....	16.50	15.50
1-pound packages	42.50	32.50	24.00	21.00	18.00	16.50	15.50	14.50
Number	10	12	14	16	18	20	22	24
¼-pound papers	$17.00	16.50	16.50	16.50	16.50	16.50	16.50	16.50
½-pound papers	15.00	14.50	14.50	14.50	14.50	14.50	14.50	14.50
1-pound packages	14.00	13.50	13.50	13.50	13.50	13.50	13.50	13.50

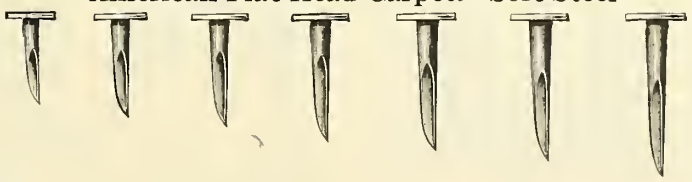
Tinned

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$60.50	45.50	34.50	29.00	25.00	23.00	21.50	20.50
½-pound papers	.....	.....	.....	.....	.....	.....	19.50	18.50
1-pound packages	57.50	42.50	31.50	26.00	22.00	20.00	18.50	17.50
Number	10	12	14	16	18	20	22	24
¼-pound papers	$20.00	19.50	19.50	19.50	19.50	19.50	19.50	19.50
½-pound papers	18.00	17.50	17.50	17.50	17.50	1.750	17.50	17.50
1-pound packages	17.00	16.50	16.50	16.50	16.50	16.50	16.50	16.50

Established Lengths of all Tacks on this Page

Number	1	1½	2	2½	3	4	6	8
Length in sixteenths of an inch	3	3½	4	5	6	7	S	9
Number	10	12	14	16	18	20	22	24
Length in sixteenths of an inch	10	11	12	13	14	15	16	18

American Flat Head Carpet. Soft Steel



Blued

Number	3	4	6	8	10	12
¼-pound papers	$20.00	18.50	17.50	16.50	16.00	15.50
½-pound papers	18.00	16.50	15.50	14.50	14.00	13.50
1-pound packages	17.00	15.50	14.50	13.50	13.00	12.50
Number	14	16	18	20	22	24
¼-pound papers	$15.50	15.50	15.50	15.50	15.50	15.50
½-pound papers	13.50	13.50	13.50	13.50	13.50	13.50
1-pouud packages	12.50	12.50	12.50	12.50	12.50	12.50

Tinned

Number	3	4	6	S	10	12
¼-pound papers	$23.50	22.00	20.50	19.50	19.00	18.50
½-pound papers	21.50	20.00	18.50	17.50	17.00	16.50
1-pound packages	20.50	19.00	17.50	16.50	16.00	15.50
Number	14	16	18	20	22	24
¼-pound papers	$18.50	18.50	18.50	18.50	18.50	18.50
½-pound papers	16.50	16.50	16.50	16.50	16.50	16.50
1-pound packages	15 50	15.50	15.50	15.50	15.50	15.50

Established Lengths

Number	3	4	6	8	10	12	14	16	18	20	22	24
Length in sixteenths of an inch	6	7	8	9	10	11	12	13	14	15	16	18

Deductions for Bulk

For 25 or 50-pound boxes, deduct $1.00 per 100 pounds from the 1-pound lists; for 100-pound kegs, deduct $2.00 per 100 pounds from the 1-pound list

Tacks

All prices are per hundred pounds. List of June 1, 1914.

Lace. Soft Steel



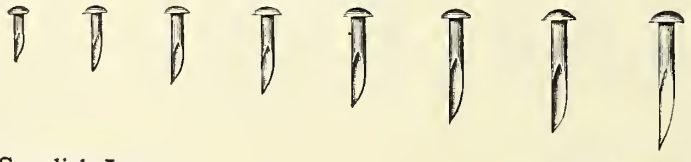
Blued

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$51.00	41.00	31.00	27.50	24.00	21.00	20.00	19.00
1-pound packages	50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	18.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
1-pound packages	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00

Tinned

Number	1	1½	2	2½	3	4	6	8
½-pound papers	$66.00	51.00	38.50	32.50	28.50	24.50	23.00	22.00
1-pound packages	65.00	50.00	37.50	31.50	27.50	23.50	22.00	21.00
Number	10	12	14	16	18	20	22	24
½-pound papers	$21.50	21.00	21.00	21.00	21.00	21.00	21.00	21.00
1-pound packages	20.50	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Gimp



Blued. Genuine Swedish Iron

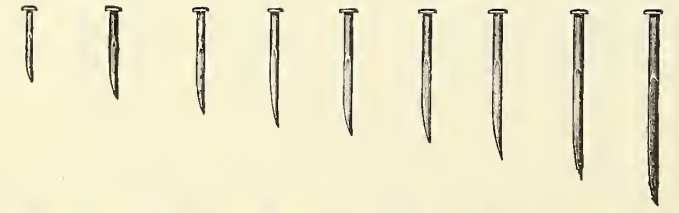
Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00
½-pound papers	48.00	38.00	28.00	24.50	21.50	18.00	17.00	16.00
1-pound packages	47.00	37.00	27.00	23.50	20.50	17.00	16.00	15.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	$17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
½-pound papers	15.50	15.00	15.00	15.00	15.00	15.00	15.00	15.00
1-pound packages	14.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00

Tinned. Soft Steel

Number	1	1½	2	2½	3	4	6	8
¼-pound papers	$65.00	50.00	37.50	31.50	27.50	23.50	22.00	21.00
½-pound papers	63.00	48.00	35.50	29.50	25.50	21.50	20.00	19.00
1-pound packages	62.00	47.00	34.50	28.50	24.50	20.50	19.00	18.00
Number	10	12	14	16	18	20	22	24
¼-pound papers	$20.50	20.00	20.00	20.00	20.00	20.00	20.00	20.00
½-pound papers	18.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
1-pound packages	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00

Established Lengths of Lace and Gimp Tacks

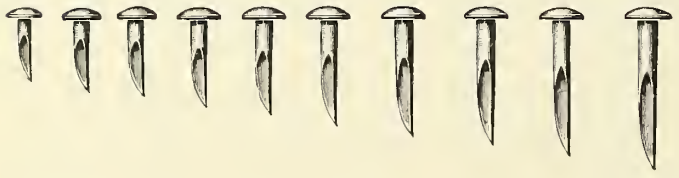
Number	1	1½	2	2½	3	4	6	8	10	12	14	16	18	20	22	24
Length, in sixteenths of an inch	3½	4	5	6	7	8	9	10	11	12	13	14	15	16		



Looking Glass

Blued. Soft Steel

Number	1	1½	2	2½	3	4	6	8
½-pound papers	$51.00	41.00	31.00	27.50	24.50	21.00	20.00	19.00
1-pound packages	50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00
Number	10	12	14	16	18	20	22	24
½-pound papers	$18.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
1-pound packages	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00



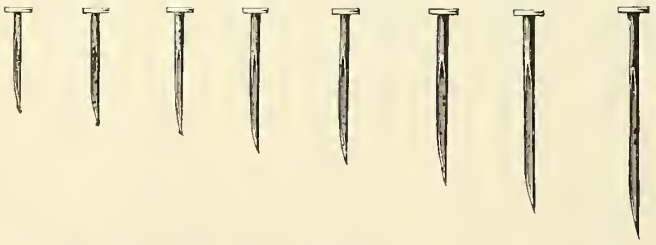
Solid Head Lining Nails

Japanned or Silvered

Number	2½	3	4	6	8
1-pound packages	$30.00	25.00	24.00	23.00	22.00
Number	10	12	14	16	18
1-pound packages	$21.00	20.00	20.00	20.00	20.00

Deductions for Bulk

For 25 or 50-pound boxes, deduct $1.00 per 100 pounds from the 1-pound list; for 100-pound kegs, deduct $2.00 per 100 pounds from the 1-pound list.



Brush

Blued. Soft Steel

Length, inch	⅜	½	⅝	¾	⅞	1
1-pound packages	$44.00	41.00	40.00	38.50	38.00	37.00

For 25 or 50-pound boxes, deduct $1.00 per 100 pounds; for 100-pound kegs, deduct $2.00 per 100 pounds.



Cut Copper Tacks

Number	2	2½	3	4	6	8	10	12
Established lengths in sixteenths of an inch.	4	5	6	7	8	9	10	11

In ¼-pound papers and 1-pound packages. Prices on application.

SEE DISCOUNT SHEET

Wire Tacks

For 25 or 50-pound boxes, deduct $1.00 per 100 pounds from 1-pound list. For 100-pound kegs, deduct $2.00 per 100 pounds from 1-pound list.

American Carpet Peerless



List of June 1, 1914

List Per Hundred Pounds

	Number	3	4	6	8	10	12	14	16	18	20	22	24
Polished or Blued	¼-pound papers	$20.00	18.50	17.50	16.50	16.00	15.50	15.50	15.50	15.50	15.50	15.50	15.50
	½-pound papers	18.00	16.50	15.50	14.50	14.00	13.50	13.50	13.50	13.50	13.50	13.50	15.50
	1-pound packages	17.00	15.50	14.50	13.50	13.00	12.50	12.50	12.50	12.50	12.50	12.50	12.50
Tinned or Coppered	¼-pound papers	23.50	22.00	20.50	19.50	19.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50
	½-pound papers	21.50	20.00	18.50	17.50	17.50	16.50	16.50	16.50	16.50	16.50	16.50	16.50
	1-pound packages	20.50	19.00	17.50	16.50	16.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50

American Upholsterers Peerless



	Number	1	1½	2	2½	3	4	6	8	10	12	14	16	18	20	22	24
Blued	¼-pound papers	$45.00	35.00	26.50	23.50	20.50	19.00	18.00	17.00	16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	½-pound papers	43.00	33.00	24.50	21.50	18.50	17.00	16.00	15.00	15.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00
	1-pound packages	42.00	32.00	23.50	20.50	17.50	16.00	15.00	14.00	14.50	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Tinned	¼-pound papers	60.00	45.00	34.00	28.50	24.50	22.50	21.00	20.00	19.50	19.00	19.00	19.00	19.00	19.00	19.00	19.00
	½-pound papers	58.00	43.00	32.00	26.50	22.50	20.50	19.00	18.00	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
	1-pound packages	57.00	42.00	31.00	25.50	21.50	19.50	18.00	17.00	16.50	16.00	16.00	16.00	16.00	16.00	16.00	16.00



Bill Posters

Large Heads—Needle Pointed

Number	3	4	6	8	10	12
Blued, in 1, 5 or 10-pound packages	$16.50	15.00	14.00	13.00	12.50	12.00
Tinned, in 1, 5 or 10-pound packages	20.50	18.50	17.00	16.00	15.50	15.00



Linoleum Brads

Soft steel, cut. In ½-pound papers.

Length, inch	½	⅝	⅔
Pound	$ .45	.39	.34

Tempered steel wire, headless, with diamond point. For laying linoleum on cement floors.

½ inch long, 15½ gauge wire, pound ..... $ .20

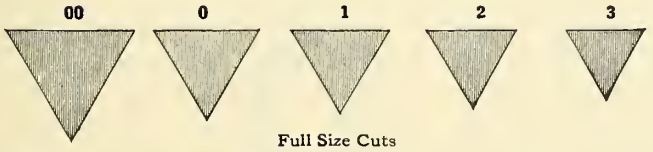
Zinc Shoe Nails



Length, inch	⅜	½	⅝	¾
1 Pound packages	$ .25	.25	.25	.25

Points

Glaziers

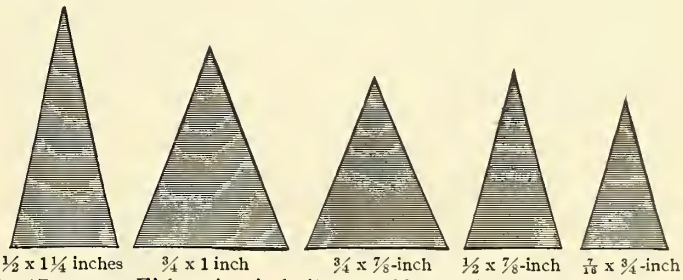


Full Size Cuts

Zinc, in ½-pound papers, per dozen $1.20

Zinc, in bulk, per 100 pounds 20.00

Panel



½ x 1¼ inches	¾ x 1 inch	¾ x ⅞-inch	½ x ⅞-inch	7/16 x ¾-inch
No. 17 gauge	Either size, in bulk, per 100 pounds			$8.00
No. 17 gauge	Either size in 10-pound boxes, per box			1.00



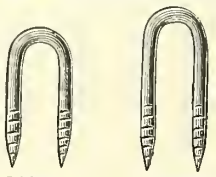
Picture Frame

List Per 100 Pounds

Number	1	1½	2	2½	3	4	6	8	10	12	14	16	18	20	22	24
Blued, 1-pound packages	$50.00	40.00	30.00	26.50	23.50	20.00	19.00	18.00	17.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00
Tinned, 1-pound packages	65.00	50.00	37.50	31.50	27.50	23.50	22.00	21.00	20.50	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Staples

Barbed Bed Spring



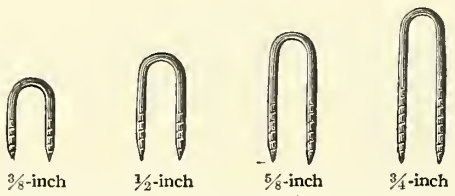
⅝-inch ¾-inch

In bulk, in 100-pound kegs. Made of No. 15 coppered wire.

Length, inch	⅝	¾
Per pound	$ .38	.37

For packing in 50-pound boxes, add $ .15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Barbed Blind



⅜-inch ½-inch ⅝-inch ¾-inch

In bulk, in 100-pound kegs. Made of No. 18 coppered wire.

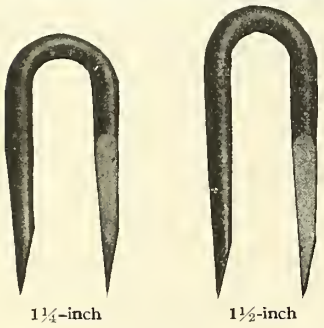
Length, inch	⅜	½	⅝	¾
Per pound	$ .50	.48	.48	.48

For packing in 50-pound boxes, add $ .15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Fence

Annealed or polished take base price. When made of No. 9 wire, base prices apply. Galvanized at extra as shown below. Also made of Nos. 8, 10, 11, 12 and 13 wire, for which extras are charged, as shown below. Packed in kegs containing 100 pounds at base price. Also packed in 5-pound, 10-pound, 15-pound, 25-pound and 50-pound boxes, for which extras are charged, as shown below.

Prices on staples up to 3 inches in length, special wide spread staples or gauges not listed, furnished on request.



1¼-inch 1½-inch

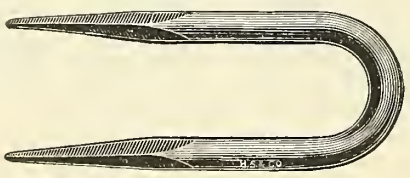
Length Inches	Approximate Number to Pound No. 9 Gauge
⅞	120
1	108
1⅛	96
1¼	87
1½	72
1¾	65
2	58

Extras

Cut from No. 9 wire	Base
Cut from No. 8 wire and coarser	$ .25 per 100 pounds extra
Cut from No. 10 wire	.10 per 100 pounds extra
Cut from No. 11 wire	.20 per 100 pounds extra
Cut from No. 12 wire	.35 per 100 pounds extra
Cut from No. 13 wire	.50 per 100 pounds extra
Galvanizing	.40 per 100 pounds extra
Oiling	.15 per 100 pounds extra

Annealed Fence Staples same price as polished.
Barbed Staples, all gauges and lengths, 15 cents per 100 pounds extra

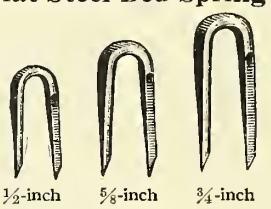
Wrought Iron



Machine-made

Length, inches	1	1¼	1½	2	2¼	2½
Plain, per gross	$1.20	1.20	1.25	1.70	2.00	2.35
Galvanized, per gross	1.80	2.00	2.25	3.00	3.50	4.00
Length, inches	2¾	3	3½	4	4½	5
Plain, per gross	$2.65	3.20	3.70	5.25	6.50	8.00
Galvanized, per gross	5.00	6.00	7.00	9.00	11.00	13.00

Flat Steel Bed Spring



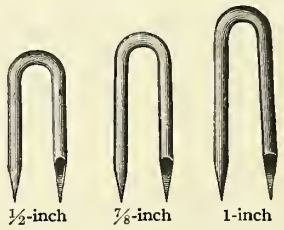
½-inch ⅝-inch ¾-inch

In bulk, in 100-pound kegs.

Length, inch	½	⅝	¾	⅞
Blued, per pound	$ .43	.40	.38	.38
Tinned, per pound	.50			

For packing in 50-pound boxes, add $ .15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Poultry Netting



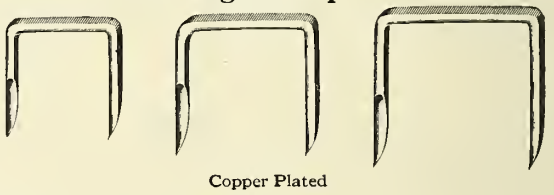
½-inch ⅞-inch 1-inch

In bulk, in 100-pound kegs. Made from No. 14 galvanized wire.

Length, inch	¾	⅞	1
Number of staples in pound	480	416	352
Per pound	$ .20	.20	.20

For packing in 50-pound boxes, add $ .15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Light Hoop



Copper Plated

Packed in 100-pound kegs.

Width, inch	½	½	⅝	⅝
Length, inch	½	⅝	½	⅝
Per pound	$ .39	.36	.36	.35

Electricians



½-inch

In bulk, in 100-pound kegs. Made of tinned wire.

½ inch long, per pound ..... $ .50

For packing in 50-pound boxes, add $ .15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Clinch



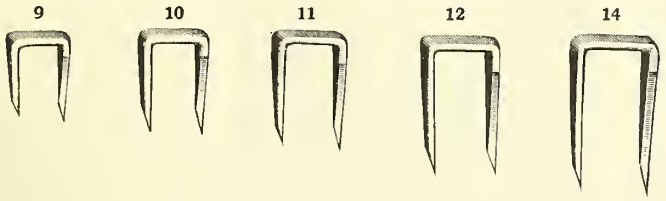
1-inch

In bulk, in 100-pound kegs. Made of heavy, flat coppered steel wire.

Size, inches	¾	⅞	1	1¼
Number of wire	12	12	11	10
Per pound	$ .32	.32	.31	.29

For packing in 50-pound boxes, add $ .15 net per 100 pounds.
For packing in 25-pound boxes, add .20 net per 100 pounds.
For packing in 10-pound boxes, add .40 net per 100 pounds.

Double-Pointed Tacks



In 100 Count Papers

Number	9	10	11	12	14
Blued or Coppered, dozen	$1.20	1.30	1.40	1.95	2.20
Tinned, dozen	1.55	1.65	1.80	2.50	2.80

In 25 lb. Boxes

Number	9	10	11	12	14
Blued or Coppered, pound	$ .46	.42	.41	.40	.39
Tinned, pound	.61	.57	.56	.55	.54

In 100 lb. Kegs

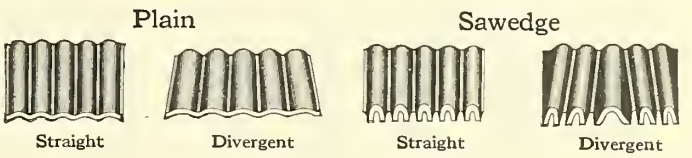
Number	9	10	11	12	14
Blued or Coppered, pound	$ .46	.42	.41	.40	.39
Tinned, pound	.61	.57	.56	.55	.54

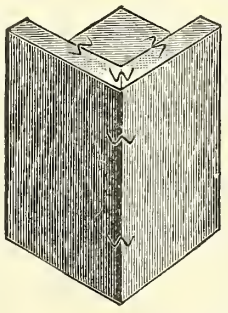
Double-Pointed Shade Tacks

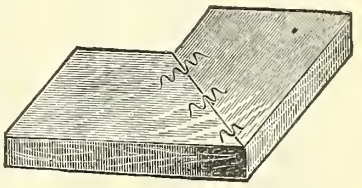


In 120 count papers, blued, dozen	$1.60
In 120 count papers, tinned, dozen	2.60
In 100 pound kegs, blued, pound	.50
In 100 pound kegs, tinned, pound	.65

Corrugated Steel Fasteners







Illustrations show method of fastening

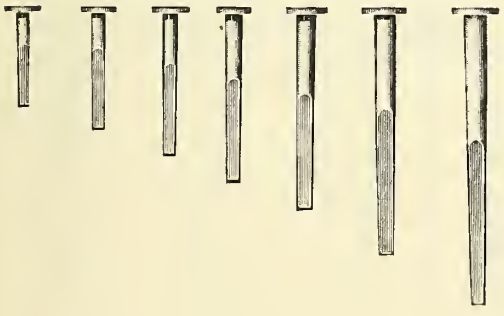
Corrugated Fasteners are a cheap and efficient substitute for nails, dowels, screws etc. Straight Fasteners are preferable when the joint is well made. Divergent Fasteners draw the parts of the work together. The Saw Edge Fasteners drive easier than the Plain, but are more expensive.

List Per 1000

Number of Corrugations	Inches in Depth: 1/8 3/16 & 1/4	3/8	1/2	5/8	3/4	7/8	1
2	$ .45	$ .55	$ .60	$ .80	$ .90	$1.00	$1.15
3	.60	.75	.85	1.00	1.15	1.35	1.45
4	.75	.95	1.05	1.30	1.45	1.75	1.85
5	.90	1.20	1.30	1.70	1.85	2.20	2.40
6	1.10	1.40	1.50	1.85	2.15	2.55	2.85
7	1.30	1.60	1.80	2.20	2.50	3.00	3.35
8	1.50	1.80	2.10	2.55	2.90	3.45	3.85
9	1.75	2.00	2.40	2.90	3.20	3.65	4.10
10	2.00	2.20	2.70	3.15	3.55	3.90	4.35
11	2.20	2.40	2.85	3.30	3.75	4.15	4.65

Clout Nails

Prices are Per 100 Pounds



List of June 1, 1914

Blued

Length, inches	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
1 lb. pkgs	$18.00	15.00	14.50	14.00	13.00	12.50	12.50	12.50	12.50	12.50	12.50

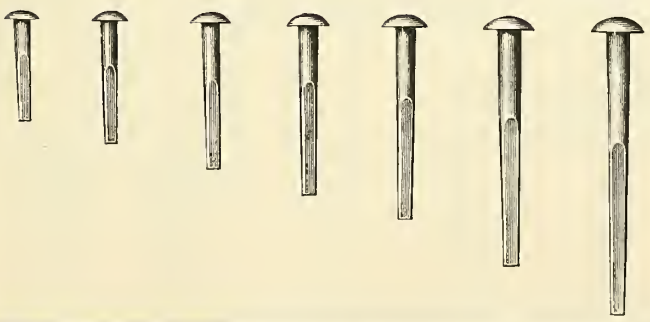
Tinned

Length, inches	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
1 lb. pkgs	$22.00	18.00	17.50	17.00	16.00	15.50	15.50	15.50	15.50	15.50	15.50

For 25 or 50 pound boxes, deduct $1.00 per 100 pounds from above list. For 100 pound kegs, deduct $2.00 per 100 pounds from above list.

Trunk Nails

Prices are Per 100 Pounds



List of June 1, 1914

Blued

Length, inch	3/8	1/2	5/8	3/4	7/8	1
1 pound packages	$18.00	15.00	14.50	14.00	13.00	12.50
Length, inches	1 1/8	1 1/4	1 1/2	1 3/4	2	
1 pound packages	$12.50	12.50	12.50	12.50	12.50	

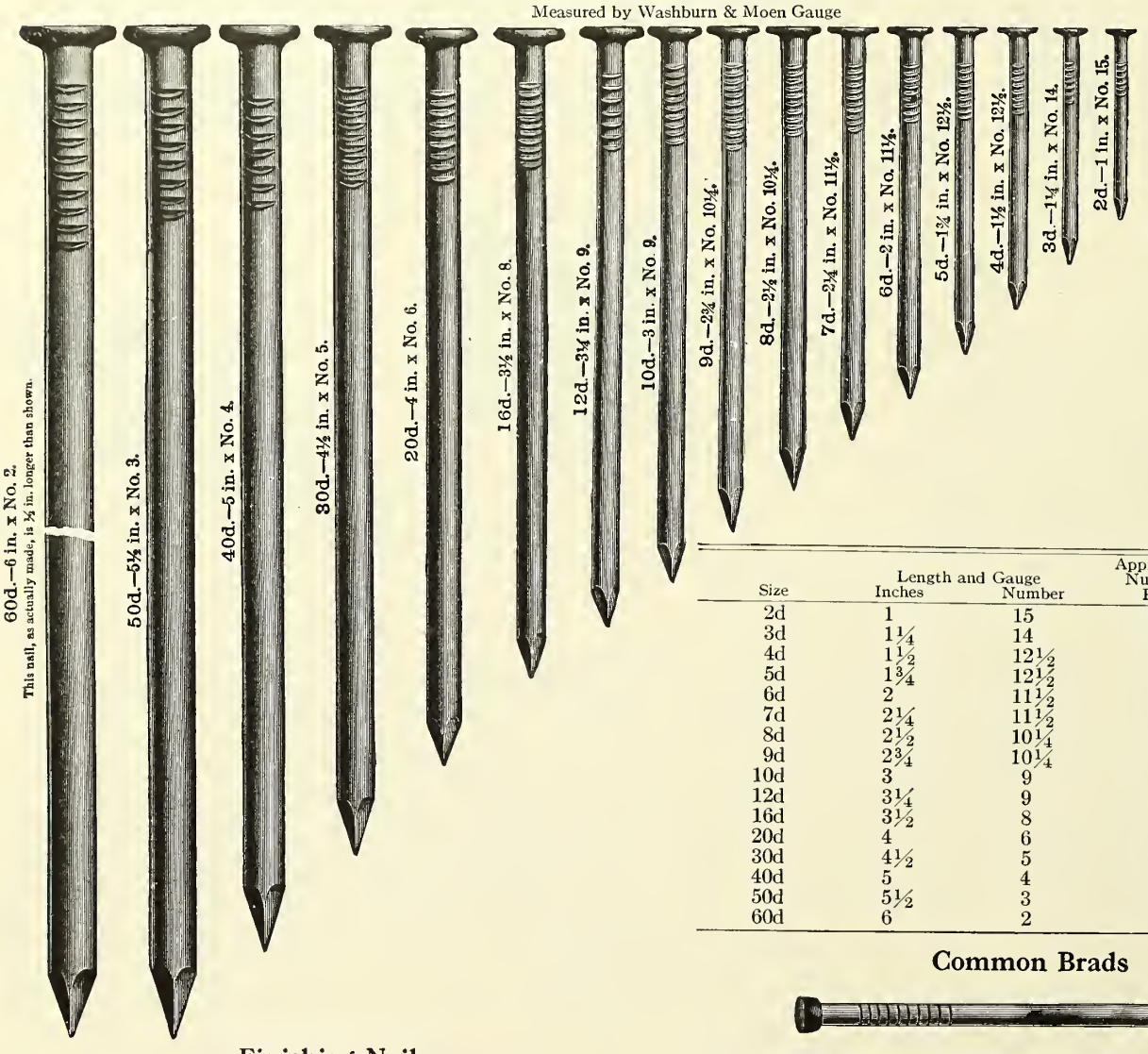
Tinned

Length, inch	3/8	1/2	5/8	3/4	7/8	1
1 pound packages	$22.00	18.00	17.50	17.00	16.00	15.50
Length, inches	1 1/8	1 1/4	1 1/2	1 3/4	2	
1 pound packages	$15.50	15.50	15.50	15.50	15.50	

For 25 or 50 pound boxes, deduct $1.00 per 100 pounds from above list. For 100 pound kegs, deduct $2.00 per 100 pounds from above list.

Common Wire Nails

Measured by Washburn & Moen Gauge



Illustrations are actual size

Size	Length and Gauge Inches	Length and Gauge Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15	876	$ .70
3d	1¼	14	568	.45
4d	1½	12½	316	.30
5d	1¾	12½	271	30
6d	2	11½	181	.20
7d	2¼	11½	161	.20
8d	2½	10¼	106	.10
9d	2¾	10¼	96	.10
10d	3	9	69	.05
12d	3¼	9	63	.05
16d	3½	8	49	.05
20d	4	6	31	Base
30d	4½	5	24	Base
40d	5	4	18	Base
50d	5½	3	14	Base
60d	6	2	11	Base

Finishing Nails



Size	Length and Gauge Inches	Length and Gauge Number	Approximate Number to Pound	Advance Over Base Price
2d	1	16½	1351	$1.15
3d	1¼	15½	807	.85
4d	1½	15	584	.65
5d	1¾	15	500	.65
6d	2	13	309	.45
7d	2¼	13	238	.45
8d	2½	12½	189	.35
9d	2¾	12½	172	.35
10d	3	11½	121	.25
12d	3¼	11½	113	.25
16d	3½	11	90	.25
20d	4	10	62	.25

Common Brads

Size	Length and Gauge Inches	Length and Gauge Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15	876	$ .70
3d	1¼	14	568	.45
4d	1½	12½	316	.30
5d	1¾	12½	271	.30
6d	2	11½	181	.20
7d	2¼	11½	161	.20
8d	2½	10¼	106	.10
9d	2¾	10¼	96	.10
10d	3	9	69	.05
12d	3¼	9	64	.05
16d	3½	8	49	.05
20d	4	6	31	Base
30d	4½	5	24	Base
40d	5	4	18	Base
50d	5½	3	16	Base
60d	6	2	11	Base

Flooring Brads



Size	Length and Gauge Inches	Length and Gauge Number	Approximate Number to Pound	Advance Over Base Price
6d	2	11	157	$ .20
7d	2¼	11	139	.20
8d	2½	10	99	.10
9d	2¾	10	90	.10

Size	Length and Gauge Inches	Length and Gauge Number	Approximate Number to Pound	Advance Over Base Price
10d	3	9	69	$ .05
12d	3¼	8	54	.05
16d	3½	7	43	.05
20d	4	6	31	Base

Above Nails and Brads furnished barbed in all sizes at advance of $ .15 net on list per 100 pounds over smooth

Wire Nails

Measured by Washburn & Moen Gauge

Smooth Box



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15½	1010	$1.00
3d	1¼	14½	635	.70
4d	1½	14	473	.50
5d	1¾	14	406	.50
6d	2	12½	236	.35
7d	2¼	12½	210	.35
8d	2½	11½	145	.25
9d	2¾	11½	132	.25
10d	3	10½	94	.15
12d	3¼	10½	88	.15
16d	3½	10	71	.15
20d	4	9	52	.15
30d	4½	9	46	.15
40d	5	8	35	.15

Barbed Box



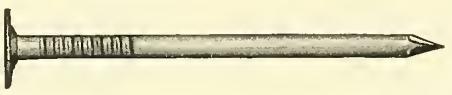
Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15½	1010	$1.15
3d	1¼	14½	635	.85
4d	1½	14	473	.65
5d	1¾	14	406	.65
6d	2	12½	236	.50
7d	2¼	12½	210	.50
8d	2½	11½	145	.40
9d	2¾	11½	132	.40
10d	3	10½	94	.30
12d	3¼	10½	88	.30
16d	3½	10	71	.30
20d	4	9	52	.30
30d	4½	9	46	.30
40d	5	8	35	.30

Casing



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	15½	1010	$1.00
3d	1¼	14½	635	.70
4d	1½	14	473	.50
5d	1¾	14	406	.50
6d	2	12½	236	.35
7d	2¼	12½	210	.35
8d	2½	11½	145	.25
9d	2¾	11½	132	.25
10d	3	10½	94	.15
12d	3¼	10½	87	.15
16d	3½	10	71	.15
20d	4	9	52	.15
30d	4½	9	46	.15
40d	5	8	35	.15

Tobacco



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
4d	1½	12	274	$ .30
5d	1¾	12	235	.30
6d	2	11	157	.20
7d	2¼	11	139	.20
8d	2½	10	99	.10
9d	2¾	10	90	.10
10d	3	9	69	.05

Also furnished in needle point, 15c advance.

Fence

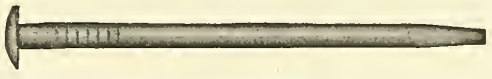


Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
5d	1¾	10	142	$ .30
6d	2	10	124	.20
7d	2¼	9	92	.20
8d	2½	9	82	.10
9d	2¾	8	62	.10
10d	3	7	50	.05
12d	3¼	6	40	.05
16d	3½	5	30	.05
20d	4	4	23	Base

Clinch

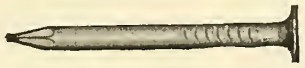
Bright or Annealed

Bright clinch nails will be furnished unless otherwise ordered



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	14	710	$1.05
3d	1¼	13	429	.85
4d	1½	12	274	.65
5d	1¾	12	235	.65
6d	2	11	157	.55
7d	2¼	11	139	.55
8d	2½	10	99	.45
9d	2¾	10	90	.45
10d	3	9	69	.35
12d	3¼	9	62	.35
16d	3½	8	49	.35
20d	4	7	37	.35

Shingle



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
3d	1¼	13	429	$ .45
3½d	1⅜	12½	345	.40
4d	1½	12	274	.30
5d	1¾	12	235	.30
6d	2	12	204	.20
7d	2¼	11	139	.20
8d	2½	11	125	.10
9d	2¾	11	114	.10
10d	3	10	83	.05

Slating



Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	12	411	$ .80
3d	1¼	10½	225	.60
4d	1½	10½	187	.40
5d	1¾	10	142	.40
6d	2	9	103	.30

All nails on this page are furnished barbed in all sizes at advance of $ .15 per 100 pounds over smooth

Wire Nails

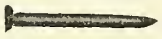
Measured by Washburn & Moen Gauge

Barbed Roofing



Size Inches	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
3/4	3/4	13	714	$ .75
7/8	7/8	12	469	.65
1	1	12	411	.60
1 1/8	1 1/8	12	365	.60
1 1/4	1 1/4	11	251	.55
1 3/8	1 3/8	11	230	.55
1 1/2	1 1/2	10	176	.45
1 3/4	1 3/4	10	151	.45
2	2	9	103	.35

Berry Box



Diamond or Needle Point, Barbed. Flat Head

Size Inches	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
3/4	3/4	16	1,500	$1.35
7/8	7/8	16	1,300	1.25
1	1	16	1,150	1.15
1 1/8	1 1/8	16	1,010	1.15
1 1/4	1 1/4	16	910	1.00

American Felt Roofing



A large head nail especially designed for use in laying prepared roofing material. This nail, having an extra large head and thin shank, meets admirably the requirements for placing all prepared roofing. The head is reinforced on the shank so that it will not easily pull or break off.

Length Inch	Gauge Number	Diameter of Heads Inch	Approximate Number to Pound
1	12	5/8	180
7/8	12	5/8	195

Price on application

Plaster Board



A smooth nail with diamond point and 1/2-inch flat head.

Number	9	10	11
Size head, inch	1/2	1/2	7/16
1 inch long, advance over base	$. 75	.85	.95
1 1/4 inch long, advance over base	.65	.75	.85
1 1/2 inch long, advance over base	.50	.60	.70

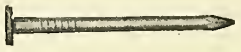
All above nails are furnished barbed in all sizes at advance of $ .15 per 100 pounds over smooth.

Barrel



Size Inches	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
5/8	5/8	15 1/2	1615	$1.35
3/4	3/4	15 1/2	1346	1.00
7/8	7/8	14 1/2	906	.85
1	1	14 1/2	775	.70
1 1/8	1 1/8	14 1/2	700	.60
1 1/4	1 1/4	14	568	.50
1 3/8	1 3/8	13	400	.40
1 1/2	1 1/2	13	367	.30

Fine



Size Inches	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	16 1/2	1351	$1.00
3d	1 1/8	15	778	.50
4d	1 1/2	14	473	.50
2d extra fine	1	17	1560	1.10
3d extra fine	1 1/8	16	1015	.65

3d fine and 3d extra fine for lathing purposes usually furnished blued.

Sterilized Blued Lath



Lathers carry the nails in the mouth while at work, and it is therefore from the standpoint of health sanitation necessary to have the nails free from all injurious substances. Polished or bright nails cannot be made or kept entirely clean owing to process of manufacture as well as the effect of atmospheric conditions.

Size	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
2d	1	16 1/2	1351	$1.25
2d light	1	17	1560	1.35
3d	1 1/8	15	778	.75
3d light	1 1/8	16	1015	.90

Lining



Size Inch	Length and Gauge Inch	Number	Approximate Number to Pound	Advance Over Base Price
3/4	3/4	17	2077	$1.20
7/8	7/8	17	1781	1.00
1	1	17	1558	.80

Barbed Dowel Pins

No. 8 Standard



Size Inches	Length and Gauge Inches	Number	Approximate Number to Pound	Advance Over Base Price
5/8	5/8	8	290	$1.25
3/4	3/4	8	250	1.00
7/8	7/8	8	210	.85
1	1	8	190	.70
1 1/8	1 1/8	8	165	.60
1 1/4	1 1/4	8	150	.60
1 3/8	1 3/8	8	130	.60
1 1/2	1 1/2	8	120	.60

Wire Nails

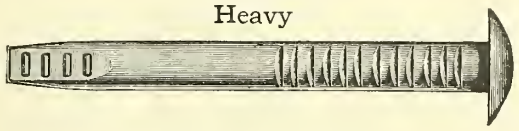
Measured by Washburn & Moen Gauge

Hinge Nails

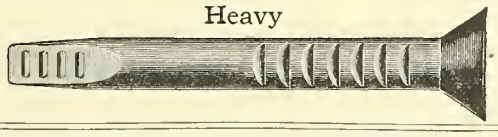
Diamond or chisel point. Will be furnished with chisel point unless diamond point is specified.

In ordering hinge nails specify whether oval or countersunk head, light or heavy, annealed or bright.

Oval Head
Heavy



Countersunk Head
Heavy



Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	¼	50	$ .80
6d	2	¼	38	.70
8d	2½	¼	30	.60
10d	3	5/16	12	.50
12d	3¼	5/16	11	.50
16d	3½	5/16	10	.50
20d	4	5/16	9	.50

Light



Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	3/16	82	$ .80
6d	2	3/16	62	.70
8d	2½	3/16	50	.60
10d	3	¼	25	.50
12d	3¼	¼	23	.50
16d	3½	¼	22	.50
20d	4	¼	19	.50

Boat Nails

Light



Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	3/16	82	$1.05
6d	2	3/16	62	.95
8d	2½	3/16	50	.85
10d	3	¼	22	.75
12d	3¼	¼	20	.75
16d	3½	¼	18	.75
20d	4	¼	16	.75

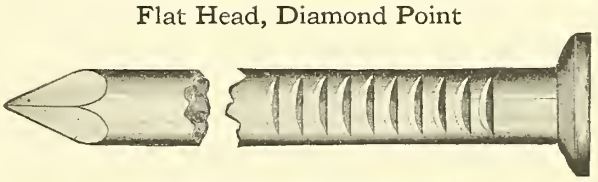
Heavy

Size	Length Inches	Diameter Inch	Approximate Number to Pound	Advance Over Base Price
4d	1½	¼	44	$1.05
6d	2	¼	32	.95
8d	2½	¼	26	.85
10d	3	5/16	14	.75
12d	3¼	5/16	13	.75
16d	3½	5/16	12	.75
20d	4	5/16	10	.75

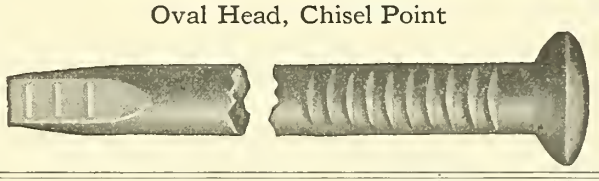
Spikes

Made only in flat head, diamond point and oval head, chisel point.

Flat Head, Diamond Point



Oval Head, Chisel Point



Size	Length Inches	Gauge Number	Approximate Number to Pound	Advance Over Base Price
10d	3	6	41	$ .10
12d	3¼	6	38	.10
16d	3½	5	30	.10
20d	4	4	23	.10
30d	4½	3	17	.10
40d	5	2	13	.10
50d	5½	1	10	.10
60d	6	1	9	.10
Inches		Inch		
7	7	5/16	7	.10
8	8	3/8	4	.10
9	9	3/8	3½	.10
10	10	3/8	3	.25
12	12	3/8	2½	.25

Special Gauges, 10c. additional.

Barbed Car Nails

In ordering car nails be sure to specify whether light or heavy, annealed or bright, oval or flat head.

Flat Head



Oval Head



Heavy

Size	Length Inches	Gauge Number	Approximate Number to Pound	Advance Over Base Price
4d	1½	10	165	$ .45
5d	1¾	9	118	.45
6d	2	9	103	.35
7d	2¼	8	76	.35
8d	2½	8	69	.25
9d	2¾	7	54	.25
10d	3	7	50	.20
12d	3¼	6	42	.20
16d	3½	6	35	.20
20d	4	5	26	.15
30d	4½	5	24	.15
40d	5	4	18	.15
50d	5½	3	15	.15
60d	6	3	13	.15

Light

Size	Length Inches	Gauge Number	Approximate Number to Pound	Advance Over Base Price
4d	1½	12	274	$ .45
5d	1¾	10	142	.45
6d	2	10	124	.35
7d	2¼	9	92	.35
8d	2½	9	82	.25
9d	2¾	8	62	.25
10d	3	8	57	.20
12d	3¼	7	50	.20
16d	3½	7	43	.20
20d	4	6	31	.15
30d	4½	6	28	.15
40d	5	5	21	.15
50d	5½	4	17	.15
60d	6	4	15	.15

Miscellaneous Nail List

Applying to regular wire nails and brads, also all other nails and brads to which list of extras apply, except standard nails in kegs. Per pound for 1, 5 and 10-pound packages. In ordering state if flat heads or brad heads are wanted. Measured by Washburn & Moen gauge. Revised February, 1910.

3/16-inch

No. 20	$1.80
No. 21	2.00
No. 22	2.20
No. 23	2.40
No. 24	2.55

1/4-inch

No. 19	1.00
No. 20	1.25
No. 21	1.55
No. 22	1.90
No. 23	2.15
No. 24	2.35
No. 25	2.55
No. 26	3.10

3/8-inch

No. 18	.80
No. 19	.90
No. 20	1.00
No. 21	1.25
No. 22	1.55
No. 23	1.95
No. 24	2.15
No. 25	2.40
No. 26	2.80

1/2-inch

Nos. 14, 15, 16	.55
No. 17	.60
No. 18	.65
No. 19	.75
No. 20	.85
No. 21	1.00
No. 22	1.25
No. 23	1.65
No. 24	1.90

5/8-inch

Nos. 12, 13, 14	$ .43
No. 15	.45
No. 16	.50
No. 17	.52
No. 18	.58
No. 19	.65
No. 20	.75
No. 21	.85
No. 22	1.10
No. 23	1.45
No. 24	1.65

3/4-inch

Nos. 10, 11, 12	.36
No. 13	.38
No. 14	.38
No. 15	.42
No. 16	.43
No. 17	.46
No. 18	.52
No. 19	.60
No. 20	.70
No. 21	.85

7/8-inch

Nos. 8, 9	.33
Nos. 10, 11, 12	.33
No. 13	.34
No. 14	.35
No. 15	.36
No. 16	.39
No. 17	.43
No. 18	.45
No. 19	.56
No. 20	.67

1-inch

Nos. 7 to 12	$ .30
No. 13	.31
No. 14	.32
No. 15	.33
No. 16	.36
No. 17	.40
No. 18	.43
No. 19	.53
No. 20	.64

1 1/8-inch

Nos. 7 to 12	.30
No. 13	.31
No. 14	.32
No. 15	.32
No. 16	.35
No. 17	.40
No. 18	.43
No. 19	.53

1 1/4 and 1 3/8-inch

Nos. 6 to 12	.29
No. 13	.30
No. 14	.31
No. 15	.32
No. 16	.34
No. 17	.39

1 1/2 and 1 5/8-inch

Nos. 4 to 13	.29
No. 14	.30
No. 15	.31
No. 16	.33
No. 17	.38

1 3/4-inch

Nos. 4 to 13	.28
No. 14	.29
No. 15	.30
No. 16	.32
No. 17	.38

2-inch

Nos. 3 to 10	$ .27
No. 11	.28
No. 12	.28
No. 13	.28
No. 14	.29
No. 15	.30
No. 16	.35

2 1/4-inch

Nos. 3 to 10	.27
No. 11	.28
No. 12	.28
No. 13	.28
No. 14	.29

2 1/2-inch

Nos. 3 to 10	.26
No. 11	.27
No. 12	.27
No. 13	.28

2 3/4-inch

Nos. 3 to 10	.26
No. 11	.27
No. 12	.27

3-inch

Nos. 3 to 10	.25
No. 11	.26
No. 12	.27

3 1/4-inch

Nos. 3 to 10	.25
No. 11	.26
No. 12	.27

3 1/2-inch

Nos. 3 to 10	.25
No. 11	.26

4-inch

Nos. 3 to 10	.25
No. 11	.26

Extras Which Must Be Added to List

2 cents per pound for barbing; 2 cents for special heads or headless; 2 cents for needle points or any special points; 2 cents per pound for annealing. For sizes not listed, use list price for same gauge in nearest shorter length. For fractional gauge nails, use the list price for same length applying on the next finest full gauge. Nails heavier than listed, at special net prices, according to quantity. Tinned, galvanized, blued or coppered nails at special prices.

Rebates from list prices: Rebate for 25 and 50-pound boxes, 1 cent per pound; rebate for nails in 100-pound kegs, 2 cents per pound.

Approximate Number of Wire Nails Per Pound

Number of Gauge *	Length, Inches																										
	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/2	4	4 1/2	5	6	7	8	9	10	11	12
3/8	....	....	....	....	....	....	....	....	....	33	27	23	20	18	16	15	14	12	10	9	8	7	6	5	4½	4	3¾	3¼
0	....	....	....	....	....	....	....	....	....	34	29	25	21	19	17	16	15	13	11	10	9	8	7	5½	5	4⅓	4	3½
5/16	....	....	....	....	....	....	....	57	50	45	38	32	28	25	23	21	19	16	14	13	11	10	8	7	6	5½	5	4½
2	....	....	....	....	....	....	....	65	58	52	44	37	32	29	26	24	22	19	16	14	13	11	9	8	7	6½	6	5½
3	....	....	....	....	....	100	87	76	67	60	50	43	38	34	30	28	25	22	19	17	15	13	11	10	8	7½		
4	....	....	....	....	....	120	103	90	80	72	60	51	45	40	36	33	30	26	23	20	18	15	13	11	10	9		
5	....	....	....	211	169	141	121	106	94	85	71	60	53	47	42	39	35	30	26	24	21	18	15					
6	....	....	....	247	197	164	141	123	111	99	82	71	62	55	50	45	41	35	31	28	25	21	18					
7	....	....	....	299	239	200	171	149	133	120	100	85	75	67	60	54	50	43	37	33	30	25						
8	....	....	....	345	275	229	197	172	153	137	115	98	86	76	69	62	57	49	43	39	35	29						
9	....	....	....	414	331	276	236	207	184	165	138	118	103	92	82	75	69	59	52	46	41							
10	....	....	663	496	397	333	283	248	220	198	165	142	124	110	99	90	83	71	62	55	50							
11	....	....	837	628	502	418	359	314	279	251	209	179	157	139	125	114	105	90	79	70								
12	....	....	1096	822	658	548	469	411	365	329	274	235	204	182	164	149	137	117	103									
13	....	....	1429	1072	857	714	613	536	476	429	357	306	268	238	214	195	178	153										
14	....	2840	1893	1420	1136	947	811	710	631	568	473	406	350	315	284	258	236											
15	....	3504	2336	1752	1402	1168	1001	876	778	701	584	500	438	389	350													
16	....	4571	3048	2280	1828	1523	1305	1143	1015	913	761	653	571	508														
17	....	6233	4156	3116	2495	2077	1781	1558	1385	1246	1038	890	779															
18	....	8276	5517	4138	3310	2758	2364	2069	1839	1655	1379	1182																
19	....	10668	7112	5334	4267	3556	2933	2667	2370	2133	1778																	
20	20000	15000	10000	7500	6000	5000	4400	3750	3333	3000																		
21	23702	17777	11850	8888	7111	5926	5079	4444																				
22	30476	22856	15237	11428	9143	7618																						

* Washburn & Moen Standard Wire Gauge.

These approximate numbers are an average only, and the figures given may be varied either way, by changes in the dimensions of the heads or points. Brads and no-head nails will run more to the pound than table shows, and large or thick-headed nails will run less.

Miscellaneous Nails

We illustrate below some of the more common styles other than Flat Head Nails and Brads on which the Miscellaneous Nail list prices and extra apply. (See preceding page.)

Needle Point



Has a very fine needle-point and is used in basket making, etc. Generally used in lengths ¼ to 1¼ inches; in gauges 17 to 21.

Headless



Generally used in lengths from ⅜ to 1¼ inches; in gauges 17 to 21.

Checked Head Shade Nails



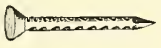
For use in putting up shade brackets, etc. In 1-inch lengths of 12 and 13 gauge and 1¼ inch length 13 gauge.

Oval Head Barbed Lock Nails



For use in attaching small locks, etc. ⅝ inch long, 13 gauge.

Countersunk Head Barbed Nails



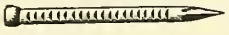
¾ inch long, 14 gauge.

Barbed Caster Nails



For attaching small-sized casters. 1 inch long, 13 gauge; 1¼ inches long, 13 gauge.

Special Barbed Brad



For parquet flooring. 1⅛ inches long, 15 gauge.

Cigar Box Nails



Cigar Box Nails are usually made with short square point, or if so ordered with short round point. Bright, barbed or smooth. Made in sizes ½, ⅝, ¾ or ⅞-inch, of either 18, 19 or 20 gauge.

Flat or oval heads as ordered.

Oval head, 15 cents per 100 pounds extra.

All Gauges referred to in above listings are Washburn and Moen Standard

Cut Copper Nails

For Boat Work, Etc.



These Nails are rounded under the head, allowing the wood to contract above the flare, and preventing them from working loose. Sizes ½ inch to 6 inches long, in 5-pound papers and 50-pound boxes. Price on application.

Furrier Pins

These Pins are made of brass, have long sharp points and are used for stretching skins.



1⅛ inches long, 18 gauge.

1¼ inches long, 15 gauge.

Price on application.

Pocket Nail Boxes

Containing an assortment of nails. Very handy for use about the house.

Put up in illuminated tin display boxes, 2½x3½ inches. Weight of nails and box, 7 ounces.

Price on application.



Coated Wire Nails

The coating on these nails gives a greatly increased holding power over bright nails, making them especially suitable for all purposes where strength of construction is necessary. These nails are sold by count only—the number of nails in each keg being guaranteed. This system is advantageous to the buyer and user, as they are naturally more interested in the number of nails than in the weight of metal. Gauged by Washburn & Moen Standard. Sold in full kegs only.

Coolers and Sinkers

These nails are listed together, as they are identical in dimensions, price and count, differing only in the heads. They excel in box and crate work, for framing, boarding in, clap-boarding and all the everyday uses of common nails.

The Cooler head is flat and of good size, preferred by many for machine driving and in work where large diameter is desired. It is perfectly satisfactory for hand driving in soft wood.



Sevenpenny Cooler

The Sinker head is reinforced by a slight counter-sinking, which reduces the diameter. It will not break or pull off, and is recommended for hand driving in hard wood. It can be used in automatic nailing-machines.



Sevenpenny Sinker

The Sinker type of head is used on Coolers larger than twelvepenny; the larger sizes are therefore identical in every particular.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	85,700	1	16	79	$ .70
3d	54,300	1⅛	15½	64	.45
4d	29,800	1⅜	14	61	.30
5d	25,500	1⅝	13½	70	.30
6d	17,900	1⅞	13	65	.20
7d	15,300	2⅛	12½	72	.20
8d	10,100	2⅜	11½	71	.10
9d	8,900	2⅝	11½	68	.10
10d	6,600	2⅞	11	63	.05
12d	6,200	3⅛	10	80	.05
16d	4,900	3¼	9	80	.05
20d	3,100	3¾	7	83	Base
30d	2,400	4¼	6	84	Base
40d	1,800	4¾	5	82	Base
50d	1,300	5¼	4	79	Base
60d	1,100	5¾	3	82	Base

Box



Sixpenny

Box Nails are necessarily lighter in wire than Coolers and Sinkers, but where conditions permit of their use are economical because of the larger count.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	96,200	1	16½	74	$1.00
3d	64,600	1⅛	16	68	.70
4d	45,500	1⅜	15½	64	.50
5d	39,700	1⅝	15	74	.50
6d	23,600	1⅞	13½	77	35
7d	19,300	2⅛	13½	72	.35
8d	14,000	2⅜	12½	75	.25
9d	13,100	2⅝	12½	78	.25
10d	8,900	2⅞	11½	75	.15
12d	8,700	3⅛	11½	80	.15
16d	7,100	3⅜	11	78	.15
20d	5,200	3⅞	10	83	.15
30d	4,600	4⅜	10	81	.15
40d	3,500	4⅞	9	84	.15

Corkers

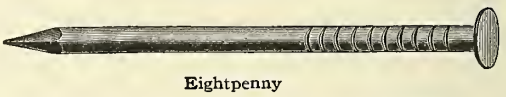


Eightpenny

The base price for Corkers is higher than that of other coated nails and special quotation should be secured before orders are placed.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	85,700	1	16	79	$ .70
3d	54,300	1¼	15	80	.45
4d	29,800	1½	13½	76	.30
5d	25,500	1⅝	13½	70	.30
6d	17,900	1⅞	12½	77	.20
7d	15,300	2⅛	12½	72	.20
8d	10,100	2⅜	11	78	.10
9d	8,900	2⅝	11	77	.10
10d	6,600	2⅞	10	78	.05
12d	6,200	3⅛	10	80	.05
16d	4,900	3⅜	9	82	.05
20d	3,100	3⅞	7	85	Base
30d	2,400	4⅜	6	86	Base
40d	1,800	4⅞	5	84	Base
50d	1,300	5⅜	4	80	Base
60d	1,100	5⅞	3	86	Base

Fence



Eightpenny

Coated Fence Nails have the double advantage of increased holding power, and, as with all coated nails, extreme resistance to the action of moisture.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
5d	12,200	1¾	11	70	$ .30
6d	10,500	2	11	70	.20
7d	7,800	2¼	10	70	.20
8d	7,000	2½	10	70	.10
9d	5,000	2¾	9	70	.10
10d	3,500	3	8	70	.05
12d	2,900	3¼	7	70	.05
16d	2,400	3½	6	70	.05
20d	1,750	4	5	70	Base

Finishing



Sixpenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	90,000	1	16½	70	$1.15
3d	55,000	1¼	15½	70	.85
4d	42,000	1½	15	70	.65
5d	35,000	1¾	15	70	.65
6d	20,000	2	13½	70	.45
7d	16,500	2¼	13	70	.45
8d	12,600	2½	12½	70	.35
9d	11,800	2¾	12½	70	.35
10d	8,300	3	11½	70	.25
12d	7,700	3¼	11½	70	.25
16d	6,100	3½	11	70	.25
20d	4,500	3⅞	10	70	.25

Barrel



1⅛ inch

Size, Inch	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
¾	95,000	¾	15½	70	$1.00
⅞	67,200	⅞	14½	70	.85
1	55,000	1	14½	70	.70
1⅛	48,000	1⅛	14½	70	.60
1¼	37,000	1¼	14	70	.50
1⅜	26,000	1⅜	13	70	.40
1½	24,500	1½	13	70	.30

For remainder of listing of Coated Wire Nails, see next page

Coated Wire Nails

(Continued from preceding page)

Fine



Threepenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	120,000	1	17½	70	$1.00
3d	64,600	1⅛	16	68	.50

Shingle

These nails will hold the shingles firmly to place and thus prevent damage through warping, blowing off, or the entrance of moisture to the nails or roofing boards.

NOTE—In ordering, specify whether Light or Heavy.



Fourpenny Light

Size	Light Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
3d	36,500	1¼	14	70	$ .45
4d	26,000	1⅜	13	70	.30
5d	21,700	1⅝	13	70	.30
6d	17,900	1⅞	13	65	.20



Fourpenny Heavy

Size	Heavy Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
3d	32,500	1¼	13½	70	$ .45
4d	22,500	1⅜	12½	70	.30
5d	17,800	1¾	12½	70	.30
6d	16,600	2	12½	70	.20

Leaders

The Perfect Flooring Nails



Eightpenny

The features are a blunt point, to avoid splitting, and a high cone head to overcome the necessity for a nail set. The shoulder on the under side of the head does not go through the board, but catches it, so that each blow of the hammer assists in drawing the board closely to place. The great holding power removes all necessity of spikes and wedges for drawing purposes.

NOTE—The length of Leaders is measured under, and does not include, the head.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
6d	12,300	1¾	11½	69	$ .35
7d	9,000	2	11	65	.35
8d	8,000	2¼	10½	69	.25
9d	6,400	2½	10	68	.25
10d	5,100	2¾	9½	66	.15
12d	4,200	3	9	64	.15
16d	3,200	3¼	8	67	.15
20d	2,100	3¾	7	65	.15

The count per keg of Leaders is guaranteed to equal the count per one hundred pounds of Standard Cut Flooring Nails.

Flooring Brads

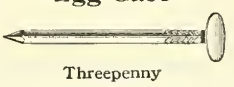


Eightpenny

Coated Flooring Brads are exactly the same in style as standard wire floor brads, except that they are coated. Their advantage over the uncoated brads is that their holding power gives a much firmer floor, and that they draw closer.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
6d	14,500	2	12	70	$ .20
7d	12,500	2¼	12	70	.20
8d	9,000	2⅜	11	70	.10
9d	7,800	2¾	11	70	.10
10d	5,900	3	10	70	.05
12d	4,300	3¼	9	70	.05
16d	3,450	3½	8	70	.05
20d	2,600	4	7	70	Base

Egg Case

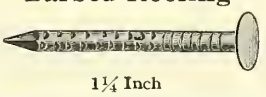


Threepenny

Endorsed by the carriers, and have every desirable feature for the use intended.

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	73,500	1	16	70	$ .85
3d	51,700	1⅛	15	70	.60
4d	30,500	1½	14	70	.45

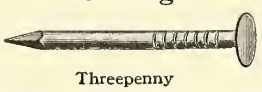
Barbed Roofing



1¼ Inch

Size Inches	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
¾	61,000	¾	14	70	$ .75
⅞	34,100	⅞	12½	70	.65
1	30,000	1	12½	70	.60
1⅛	28,000	1⅛	12½	70	.60
1¼	21,500	1¼	12	70	.55
1⅜	19,600	1⅜	12	70	.55
1½	18,200	1½	12	70	.45
1¾	16,000	1¾	12	70	.45
2	10,900	2	11	70	.35

Slating



Threepenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	35,000	1	13	70	$ .80
3d	22,100	1¼	12	70	.60
4d	19,000	1½	12	70	.40
5d	12,200	1¾	11	70	.40
6d	8,400	2	10	70	.30

Casing



Sixpenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	82,500	1	16	70	$1.00
3d	48,000	1¼	15	70	.70
4d	42,500	1½	15	70	.50
5d	36,000	1¾	15	70	.50
6d	19,000	2	13	70	.35
7d	16,300	2¼	13	70	.35
8d	11,800	2½	12	70	.25
9d	10,200	2¾	12	70	.25
10d	7,700	3	11	70	.15
12d	6,950	3¼	11	70	.15
16d	6,200	3½	11	70	.15
20d	4,400	4	10	70	.15
30d	3,900	4½	10	70	.15
40d	2,900	5	9	70	15

Common Brads



Eightpenny

Size	Number in Keg	Length Inches	Gauge Number	Net Weight Pounds	Advance Over Base
2d	82,400	1	16	70	$ .70
3d	53,000	1⅛	15	70	.45
4d	30,000	1⅜	13½	70	.30
5d	26,100	1⅝	13½	70	.30
6d	17,200	1⅞	12½	70	.20
7d	15,500	2⅛	12½	70	.20
8d	9,400	2⅜	11	70	.10
9d	8,500	2⅝	11	70	.10
10d	6,250	2⅞	10	70	.05
12d	5,600	3⅛	10	70	.05
16d	4,200	3⅜	9	70	.05
20d	2,625	3⅞	7	70	Base
30d	2,040	4⅜	6	70	Base
40d	1,540	4⅞	5	70	Base
50d	1,190	5⅜	4	70	Base
60d	910	5⅞	3	70	Base

Steel Cut Nails

Prices Per 100 Pounds

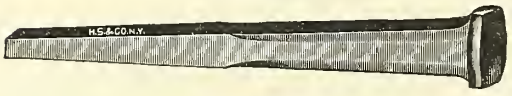
Common, Fence, Hookhead Brads and Sheathing



8d Common



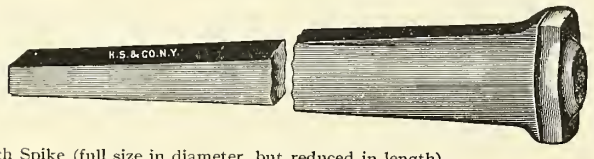
8d Fence



8d Sheathing

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	$ .75	10d	3	$ .05
3d	1¼	.45	12d	3¼	.05
4d	1½	.30	16d	3½	.05
5d	1¾	.30	20d	4	.00
6d	2	.20	30d	4½	.00
7d	2¼	.20	40d	5	.00
8d	2½	.10	50d	5½	.00
9d	2¾	.10	60d	6	.00

Spikes



6-inch Spike (full size in diameter, but reduced in length).
All sizes, 10 cents advance over Base Price.

Clinch, Car, Boat, Chute, Clout, Hoop and Hinge



1¼-inch Clout



2½-inch Boat



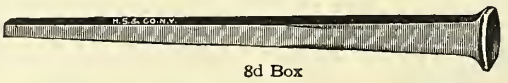
2½-inch Clinch

Size Inches	Advance Over Base Price	Size Inches	Advance Over Base Price
¾	$1.45	1½ and 1¾	$ .75
⅞	1.30	2 and 2¼	.65
1	1.15	2½ and 2¾	.55
1⅛	1.05	3 and larger	.45
1¼	.95		

Tobacco Warehouse

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
4d	1½	$ .40	7d	2¼	$ .20
5d	1¾	.40	8d	2½	.10
6d	2	.20			

Casing, Box, Flooring, Stout Flooring, Parquet Flooring and Finishing (New York Pattern)



8d Box



8d Flooring



8d Finishing



8d Parquet Flooring

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	$1.00	8d	2½	$ .25
3d	1¼	.70	9d	2¾	.25
4d	1½	.50	10d	3	.15
5d	1¾	.50	12d	3¼	.15
6d	2	.35	16d	3½	.15
7d	2¼	.35			

Fine Finishing

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	$1.15	8d	2½	$ .35
3d	1¼	.85	9d	2¾	.35
4d	1½	.65	10d	3	.25
5d	1¾	.65	12d	3¼	.25
6d	2	.45	16d	3½	.25
7d	2¼	.45			

Fine Nails

Size	Length Inches	Advance Over Base Price
2d	1	$1.00
3d	1¼	.75
3d (light)	1¼	1.25
4d	1½	.50

Light Barrel and Lining



1-inch Light Barrel

Inches	¾	⅞	1	1⅛
Advance over base price	$1.20	1.00	.85	.75

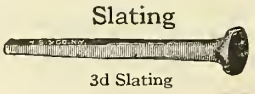
Common Barrel, Roofing and Cooper



1⅛-inch Barrel | 1-inch Roofing | 1⅛-Cooper

Size Inches	Advance Over Base Price	Size Inches	Advance Over Base Price
¾	$1.00	1¼	$ .50
⅞	.85	1⅜	.40
1	.70	1½	.30
1⅛	.60		

Slating



3d Slating

Size	Length Inches	Advance Over Base Price	Size	Length Inches	Advance Over Base Price
2d	1	$ .80	5d	1¾	$ .40
3d	1¼	.60	6d	2	.30
4d	1½	.40			

For Count on Steel Cut Nails see next page

Approximate Number of Steel Cut Nails to a Pound

Common

Size	Length Inches	Number to a Pound
2d	1	740
3d	1¼	460
4d	1½	280
5d	1¾	210
6d	2	160
7d	2¼	120
8d	2½	88
9d	2¾	72
10d	3	60
12d	3¼	46
16d	3½	33
20d	4	22
30d	4½	16½
40d	5	12
50d	5½	10
60d	6	8

Brads

Size	Length Inches	Number to a Pound
6d	2	120
7d	2¼	94
8d	2½	74
9d	2¾	62
10d	3	50
12d	3¼	40
16d	3½	27

Shingle

Size	Length Inches	Number to a Pound
3	1¼	296
3½	1⅜	220
4	1½	192
8d	2½	90
9d	2¾	72
10d	3	60

Slating

Size	Length Inches	Number to a Pound
2d	1	340
3d	1¼	280
4d	1½	220
5d	1¾	180

Lining

Length Inches	Number to a Pound
¾	1462
⅞	1300

Spikes

Length Inches	Number to a Pound
3½	17
4	14
4½	11
5	9
5½	7½
6	6
6½	5½
7	5

Fine Finishing

Size	Length Inches	Number to a Pound
2d	1	1100
3d	1¼	900
4d	1½	600
5d	1¾	350
6d	2	300
7d	2¼	220
8d	2½	178
9d	2¾	160
10d	3	150
12d	3¼	140
16d	3½	110
20d	4	90

Fencing

Size	Length Inches	Number to a Pound
5d	1¾	100
6d	2	80
7d	2¼	60
8d	2½	52
9d	2¾	38
10d	3¾	26
12d	3¾	20
16d	3½	18
20d	4	16

Light Barrel

Length Inches	Number to a Pound
1⅛	400
1¼	304
1½	224

Barrel

Length Inches	Number to a Pound
⅝	750
¾	600
⅞	500
1	450
1⅛	310
1¼	280
1⅜	210
1½	190

Casing and Box

Size	Length Inches	Number to a Pound
4d	1½	420
5d	1¾	300
6d	2	210
7d	2¼	180
8d	2½	130
9d	2¾	107
10d	3	88
12d	3¼	70
16d	3½	52
20d	4	38
30d	4½	30
40d	5	26
50d	5½	20
60d	6	16

Clinch

Size	Length Inches	Number to a Pound
2d	1	400
3d	1¼	260
4d	1½	180
5d	1¾	125
6d	2	100
7d	2¼	80
8d	2½	68
9d	2¾	52
10d	3	48
12d	3¼	40
16d	3½	34
20d	4	24

Tobacco

Size	Length Inches	Number to a Pound
5d	1¾	130
6d	2	97
7d	2¼	85
8d	2½	68
9d	2¾	58
10d	3	48

Fine

Size	Length Inches	Number to a Pound
2d	1	1100
3d	1⅛	800
4d	1⅜	650

SEE DISCOUNT SHEET PAGE 711

Boat, Dock and Wharf Spikes



Diamond Head



Button Head



Nail Head

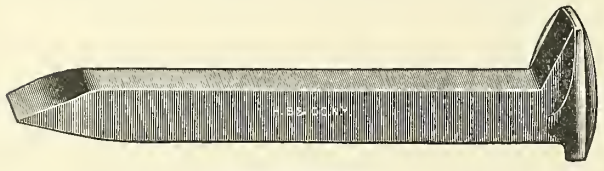
Square Inch	Length Inches	Net Advance Over Base Price
3/4	12 to 24	$ .15
5/8	8 to 16	.15
1/2	6 to 16	.15
7/16	6 to 12	.20
3/8	4 to 12	.30
5/16	4 to 8	.45
1/4	4 to 8	.75
1/4	3 to 3 1/2	1.00

When ordering specify which style head is wanted.
3/8 and 5/16 inch shorter than 4 inches, 25 cents extra per 100 pounds.
Spikes 1/2 inch and larger can be furnished with Goldie Point for 10 cents extra.

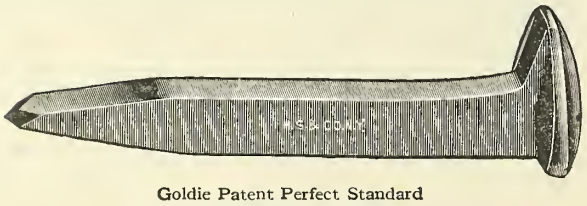
Approximate Number of Boat Spikes to a Keg of 200 Pounds

Square Inch	Length Inches											
	3	4	5	6	7	8	9	10	11	12	14	16
5/8	....	....	....	....	...	260	240	220	205	190	175	160
1/2	....	....	....	450	375	335	300	275	260	240		
7/16	....	....	....	600	590	510	400	360	320	230		
3/8	1,320	1,140	940	800	650	600	525	475				
5/16	1,660	1,360	1,230	1,175	990	880						
1/4	3,000	2,375	2,050	1,825								

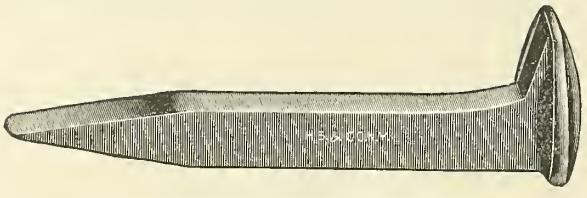
Railroad Spikes



Common Standard



Goldie Patent Perfect Standard



Pennsylvania R.R. Standard (Rolled Point)

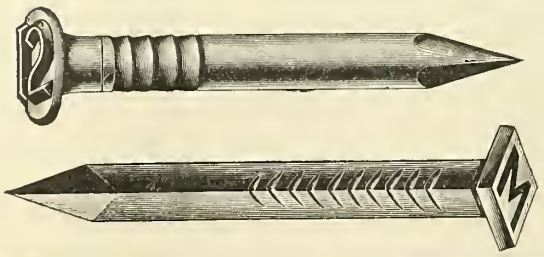
	Net Advance Over Base Price
Common Standard, 5 1/2x9/16 inches	
Common Standard, 5x9/16 inches	
Common, 3 1/2, 4, 4 1/2 and 5x1/2 inches	$ .05
Common, 3 1/2, 4 and 4 1/2x7/16 inches	.20
Common, 3, 3 1/2, 4 and 4 1/2x3/8 inches	.30
Common, 2 1/2x3/8 inches	.40
Common, 2 1/2, 3 and 3 1/2x5/16 inches	.60
Common, 2x5/16 inches	.80
Goldie Patent Perfect Standard, 5 1/2x9/16 inches	.10
Goldie Patent Perfect, 4 1/2 and 5x9/16 inches	.10
Goldie Patent Perfect, 4, 4 1/2 and 5x1/2 inches	.10
Penn. R. R. Standard, 5 1/2x9/16 inches	.10
Penn. R. R., 4 1/2 and 5x9/16 inches	.10
Penn. R. R., 4, 4 1/2 and 5x1/2 inches	.10

Rolled Points, add 10 cents to above prices.
Reverse Points (smallest 3x3 3/8 inches), add 25 cents per 100 pounds to above prices.

Size, Measured Under Head Inches	Average Number Per Keg of 200 Pounds	Ties 2 feet between center 4 spikes per tie, makes Per Mile Pounds	Per Mile Kegs	Rail Used, Weight Per Yard
5 1/2x9/16	360	5920	29 1/3	45 to 100
5 x9/16	405	5230	26	40 to 56
4 1/2x9/16	460	4606	23	35 to 40
5 x1/2	475	4460	22 3/10	
4 1/2x1/2	518	4080	20 2/5	28 to 35
4 x1/2	605	3515	17 1/2	24 to 35
3 1/2x1/2	670	3180	15 7/8	
4 1/2x7/16	690	3090	15 1/2	20 to 30
4 x7/16	780	2730	13 3/5	
3 1/2x7/16	890	2377	12	
4 1/2x3/8	780	2730	13 3/5	16 to 25
4 x3/8	1025	2044	10 1/5	
3 1/2x3/8	1250	1740	8 1/2	
3 x3/8	1380	1592	8	16 to 20
2 1/2x3/8	1650	1280	6 2/5	
3 x5/16	1880	1152	5 3/4	12 to 16
2 1/2x5/16	2230	948	4 3/4	8 to 12

Tie or Pole Dating or Marking Nails

Furnished with raised or depressed figures



	Count per Pound Bright	Galvanized
Standard size, round, 2 1/2 inches, No. 3 Gage	30	27
Standard size, square, 2 1/2x1/4 inches	23	20

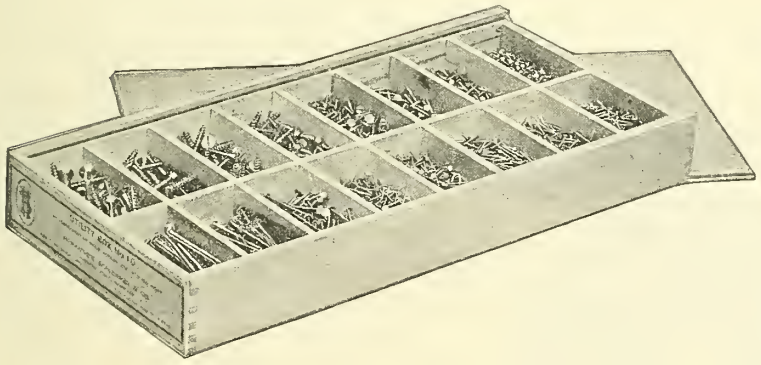
Bright, galvanized or tinned.

Prices on application

Utility Boxes

These outfits have been carefully designed to meet the requirements of the "Odd Job Man," as well as those who like to make their own repairs. Both boxes are so constructed that each compartment keeps its contents intact and there is a sufficient supply of each item to last the average man a long time.

Utility Box No. 10



This box is 15 inches long, 7 inches wide and 1¾ inches deep, outside measurements; with slide cover and has 16 compartments, containing the following assortment:

Wire Brads. ⅝, ⅞ and 1¼ inches long.
Wire Nails. ⅝, 1, 1½, 2 and 2½ inches long.
Flat Head Iron Screws. ½, ¾, 1, 1¼ and 1½ inches long.
Upholsterers tacks. 1½, 4 and 8 ounce.

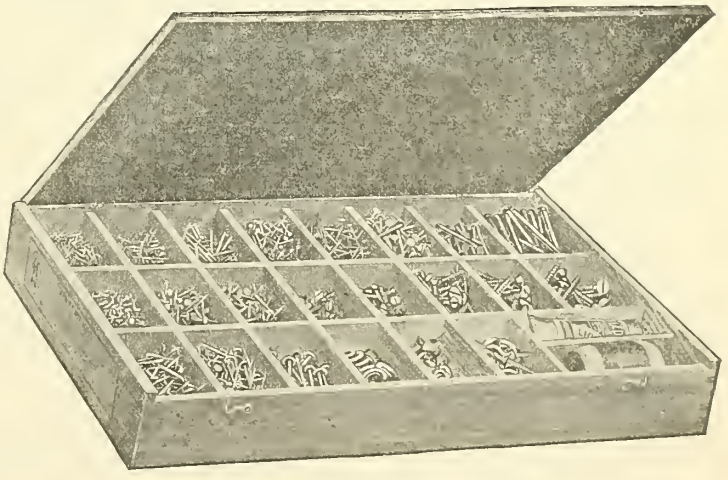
Dozen boxes..... $9.50
Each..... .95

Utility Box No. 20

This box is made of hardwood and has hinged cover. It is 15¼ inches long, 9¾ inches wide and 2 inches deep, outside measurements. It has 24 compartments, containing the following assortments:

Wire Brads. ⅝, ⅞ and 1¼ inches long.
Wire Nails. ⅝, 1, 1½, 2 and 2½ inches long.
Flat Head Iron Screws. ½, ¾, 1, 1¼ and 1½ inches long.
Upholsterers Tacks. 1½, 4 and 8-ounce.
Assorted Brass Cup and Screw Hooks.
Assorted Bright Wire Screw Eyes.
Assorted Brass Capped Picture Nails.
Carton of Gilt Nails.
Package of Double Pointed Tacks.
Tube of Le Page Liquid Glue.
Spool of Copper Wire.

Dozen boxes..... $19.00
Each..... 1.90



Taper Pins

Morse No. 136

Special attention is called to the fact that these Taper Pins are highly polished and finely finished



Taper ¼ inch to the foot. If ordering sizes other than those included in the list, specify the length and the size at the large end

List Per 100

Length Inches	Number 0	1	2	3	4	5	6	7	8	9	10
	Diameter at Large End Inch .156	.172	.193	.219	.250	.289	.341	.409	.492	.591	.706
	Approximate Fractional Sizes 5/32	11/64	3/16	7/32	1/4	19/64	11/32	13/32	1/2	19/32	23/32
¾	$1.80	$2.00	$2.10	$2.30	$2.50	$2.75	$3.00				
1	2.05	2.25	2.35	2.55	2.75	3.00	3.25	$3.75			
1¼	*2.30	2.50	2.60	2.80	3.00	3.25	3.50	4.00	$4.65		
1½	2.55	*2.75	2.85	3.05	3.25	3.50	3.75	4.25	5.00	$7.00	$9.00
1¾	2.80	3.00	*3.10	3.30	3.50	3.75	4.00	4.50	5.40	7.50	9.50
2	3.05	3.25	3.35	*3.55	3.75	4.05	4.35	4.75	5.80	8.00	10.00
2¼	3.30	3.50	3.60	3.80	*4.00	4.40	4.75	5.25	6.25	8.60	10.75
2½	3.55	3.75	3.85	4.05	4.25	*4.75	5.20	5.75	6.75	9.20	11.50
2¾	3.80	4.00	4.10	4.30	4.50	5.10	5.70	6.25	7.25	9.80	12.25
3	4.05	4.25	4.35	4.55	4.75	5.45	6.25	6.75	7.80	10.50	13.25
3¼	....	....	4.60	4.80	5.00	5.80	*6.75	7.25	8.40	11.20	14.25

Length Inches	Number 6	7	8	9	10
	Diameter at Large End Inches .341	.409	.492	.591	.706
	Approximate Fractional Siz 11/32	13/32	1/2	19/32	23/32
3½	$7.25	$7.75	$9.00	$11.90	$15.25
3¾	7.75	8.25	9.60	12.60	16.25
4	8.25	*8.75	10.20	13.30	17.25
4¼	8.75	9.25	10.80	14.00	18.25
4½	9.25	9.75	11.40	14.70	19.25
4¾	9.75	10.25	12.00	15.40	20.25
5	10.25	10.75	12.60	16.10	21.25
5¼	....	....	....	16.80	22.25
5½	....	....	....	17.50	23.25
5¾	....	....	....	18.20	24.25
6	....	....	....	18.90	25.25

* Pins marked with * are too long for use with regular Taper Pin Reamers of corresponding numbers.
Special attention is called to the fact that our Taper Pins are highly polished and finely finished.

Hardened Steel Balls

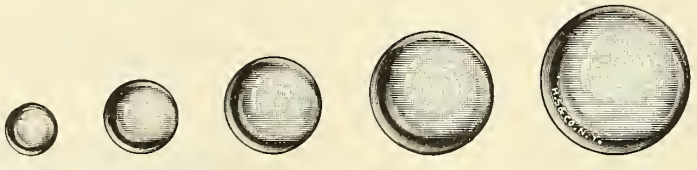


These Balls are made from high-grade tool steel, are accurate in shape and size, carefully hardened and polished, suitable for the best of machinery or instruments.

List Per 100

Diameter Inch	Price	Diameter Inch	Price	Diameter Inch	Price	Diameter Inches	Price
1/16	$2.50	1/4	$2.70	5/8	$24.00	1½	$250.00
3/32	1.70	9/32	4.40	11/16	35.00	1¾	420.00
7/64	1.40	5/16	4.60	¾	44.00	2	900.00
⅛	1.10	3/8	7.00	7/8	70.00	2¼	1,300.00
5/32	1.50	7/16	12.00	1	110.00	2½	2,100.00
3/16	1.70	½	16.00	1⅛	130.00	2¾	2,700.00
7/32	2.40	9/16	22.00	1¼	190.00	3	4,300.00

Brass and Bronze Balls



We are prepared to promptly furnish solid, finished brass or bronze balls. The Solid Brass Balls are regular in sizes 7/16 inch to 2 inches in diameter, inclusive; Hollow Brass from 2 inches to 3 inches in diameter, inclusive, and solid bronze from ⅛ inch to 1½ inches, inclusive.

Steel Music Wire

We are sole agents in the United States and Canada for the celebrated Felten & Guilleaume Steel Music Wire, which for strength, uniformity, tone-quality and every other known requisite for an absolutely perfect wire

Has No Equal

It is made by Messrs. Felten & Gilleaume at their famous plant in Germany, and as produced to-day, is the result of years of experience, by the most exacting processes, conducted by men whose skill in the manufacture of wire and kindred goods is of world-wide repute.

Aside From Its Use in Pianos

We guarantee its reliability for use in electrical work, calculating machines, automatic machines of all kinds, typewriters, knitting and weaving machinery, carpet sweepers, toys; in brick making, soap making, cheese making, in fact, anywhere where a positively safe wire must be used.

Made in three distinct grades, known as Black, Red and Green Label, and herewith is shown a reduced fac-simile of the Black Label.

For very delicate work we recommend the best grade, the genuine Black Label; this has greatest tensile strength and is therefore very hard and is used in very high-grade pianos. Where other wires have failed in certain trying positions, as in very delicate springs, the F. & G. Black Label has been found most satisfactory.

The Red Label grade will be found especially satisfactory in making springs. It also runs very uniform, has exceptional tensile strength and is dependable in every way. We have sold it for years to manufacturers of calculating machines, typewriters, autos and motor cycles and for brick and soap cutting, etc.

The Green Label grade is recommended where a very high-grade wire is required, but which need not have the extreme tensile strength. It is a thoroughly reliable wire, far superior to any ordinary steel wire, and is also largely used by piano manufacturers.



Net Prices Per Pound

(In 1 or 5 pound coils)

Size	00	0	1	2	3	4	5	6
Black Label	$5.00	$4.25	$3.60	$3.00	$2.50	$2.15	$1.75	$1.05
Red Label	4.00	3.00	2.40	1.60	1.35	1.10	.90	.72
Green Label	3.00	2.65	2.20	1.40	1.20	1.00	.75	.60

Size	7	8	9	10	11	12	13 to 32*
Black Label	$ .90	$ .85	$ .85	$ .80	$ .80	$ .80	$ .75
Red or Blue Label	.67	.60	.55	.53	.52	.52	.50
Green Label	.55	.52	.50	.48	.45	.45	.42

*With half numbers from 12½ to 18½, inclusive.

We also supply this wire in a patented clamp, holding ¼ lb., at an advance over above prices of 10 cents per pound, net. Special prices for large import orders

Measurements by Fractions of Inches and Millimeters

Number	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Inches	.0087	.0093	.0098	.0106	.0114	.0122	.0138	.0157	.0177	.0197	.0216	.0236	.0260	.0283	.0303	.0323	.0342	.0362
Millimeters	.22	.235	.25	.27	.29	.31	.35	.40	.45	.50	.55	.60	.66	.72	.77	.82	.87	.92

Number	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Inches	.0382	.04	.042	.044	.046	.048	.051	.055	.059	.063	.067	.071	.074	.078	.082	.086
Millimeters	.97	1.02	1.07	1.12	1.17	1.22	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20

Approximate Number of Feet to the Pound

Number	00	0	1	2	3	4	5	6	7	8	9	10	11	12
Feet	5,138	4,564	3,973	3,415	2,955	2,581	2,026	1,553	1,221	995	755	690	571	479

Number	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Feet	415	368	328	292	263	240	217	197	180	168	148	128	108	95	85	75	69	62	56	49

SEE DISCOUNT SHEET

Wire

For the convenience of those who are unfamiliar with the terms peculiar to the wire trade, the following definitions and explanations are given:

Market Wire

Market wire is made of Bessemer steel, and is the kind of wire used for most commercial purposes. It will stand a moderate amount of punishment, and is generally satisfactory except where the material is subjected to some severe test. It is made in the following finishes—Bright, Coppered, Tinned and Galvanized.

Annealed and Cleaned Wire

This is made chiefly of Bessemer steel, and is annealed and cleaned after drawing. It is softer than ordinary market wire, and will stand severer tests. It is adapted especially for flattening, bending, twisting, etc.

Tensile Strength

The tensile strength of wire is a very variable quantity, and no exact values can be tabulated. Each variety of wire shows a different elasticity; and variation in the manipulation of any one variety of wire in process produces a variation in the tensile strength of the finished product.

As an aid in determining the kind or size of wire best suited to any particular purpose, however, the following average values of a few standard stocks are given:

Wire	Breaking Strain
Annealed Bessemer	50,000–60,000 pounds square inch
Soft-drawn Bessemer	80,000–90,000 pounds square inch
Hard-drawn Bessemer	100,000–120,000 pounds square inch

Table of Sizes, Weights and Lengths

Diameter Inch	W. & M. Gauge	Diameter Inch	Area Square Inch	Pounds Per 100 Feet	Feet Per Pound
1/8		.1250	.012272	4.168	24.00
	11	.1205	.011404	3.873	25.82
..	12	.1055	.0087417	2.969	33.69
3/32	..	.09375	.0069029	2.344	42.66
..	13	.0915	.0065755	2.233	44.78
..	14	.0800	.0050266	1.707	58.58
..	15	.0720	.0040715	1.383	72.32
1/16	16	.0625	.0030680	1.042	95.98
..	17	.0540	.0022902	0.7778	128.6
..	18	.0475	.0017721	0.6018	166.2
..	19	.0410	.0013203	0.4484	223.0
..	20	.0348	.00095115	0.3230	309.6
..	21	.0317	.00078924	0.2680	373.1
1/32	..	.03125	.00076699	0.2605	383.9
..	22	.0286	.00064242	0.2182	458.4
..	23	.0258	.00052279	0.1775	563.3

Diameter Inches	W. & M. Gauge	Diameter Inch	Area Square Inch	Pound Per 100 Feet	Feet Per Pound
..	24	.0230	.00041548	0.1411	708.7
..	25	.0204	.00032685	0.1110	900.9
..	26	.0181	.00025730	0.08738	1144.
..	27	.0173	.00023506	0.07983	1253.
..	28	.0162	.00020612	0.07000	1429.
..	29	.0150	.00017671	0.06001	1666.
..	30	.0140	.00015394	0.05228	1913.
..	31	.0132	.00013685	0.04647	2152.
..	32	.0128	.00012868	0.04370	2288.
..	33	.0118	.00010936	0.03714	2693.
..	34	.0104	.000084949	0.02885	3466.
..	35	.0095	.000070882	0.02407	4154.
..	36	.0090	.000063617	0.02160	4629.

Square wire weighs 1.273 times as much as round wire, the diameter of which is the same as the thickness of the square, and hexagonal wire weighs 1.103 times as much as round wire in the same way.

Measured by Washburn & Moen Gauge.

List Prices Per Pound

All wire listed herewith is in approximately 50 pound bundles, except stone wire which weighs about 12 pounds

Number	*Bright Market Wire	Galvanized Market Wire	Annealed Stone Wire Bright or Black	Tinned Market Wire	Tinned Stone Wire
0000 to 9	$ .10	$ .10	....	$ .15	
10 & 11	.11	.11	....	.16	
12	.11½	.11½	....	.17	
13 & 14	.12½	.12½	....	.17	
15	.14	.14	....	.17½	
16	.14	.14	$ .14	.17½	
17	.15	.15	.15	.18	
18	.16	.16	.16	.18½	$ .18½
19	.19	.19	.19	....	.19
20	.20	.20	.20	....	.19
21	.21	.21	.21	....	.20
22	.22	.22	.22	....	.20
23	.23	.23	.23	....	.21

Number	* Bright Market Wire	Galvanized Market Wire	Annealed Stone Wire Bright or Black	Tinned Market Wire	Tinned Stone Wire
24	$ .24	$ .24	$ .24	$.	$ .21
25	.25	.25	.25	.	.22
26	.26	.26	.26	.	.23
27	.28	.28	.28	.	.24
28	.29	.29	.29	.	.25
29	.30	.30	.30	.	.26
30	.32	.32	.32	.	.27
31	.33	.33	.33	.	.28
32	.35	.35	.35	.	.32
33	.37	.37	.37	.	.33
34	.40	.40	4.0	.	.34
35	.45	.45	.45	.	.40
36	.55	.55	.55	.	.48

* Coppered Market Wire and Coppered Bessemer Spring Wire take same list prices as Bright Market Wire.

Steel Springs

In lengths of 2 feet. Open or closed. Odd numbers are closed; even are open

Per pound 40 cents





Made of Oil-Tempered Wire

	Open				Closed															
Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Outside diameter, inches	1 5/16	1 5/16	1⅛	1⅛	⅞	⅞	¾	¾	11/16	11/16	½	½	7/16	7/16	⅜	⅜	5/16	5/16	¼	¼
Number of wire	9	9	11	11	12	12	13	13	14	14	16	16	18	18	19	19	20	20	20	20
Weight, each — Pounds	2		1		1		1													
Weight, each — Ounces	10⅘	15¾	14½	10⅓	6⅘	8⅗		6¼	12¼	5⅖	8¼	3	4 9/10	1½	3⅓	1	2⅓	⅘	2	⅜

Brass and Copper Wire

In 25-Pound Coils

All Brass and Copper Wire to No. 21, inclusive, is numbered by Stubs' Gauge; No. 22 and finer, by London Gauge. All orders where the gauge is not stated will be filled accordingly.

When ordering Brass Wire, state whether Soft or Hard or Spring Wire is wanted.

The terms "High" and "Low" refer to quality of the brass and not the temper.

Low Brass contains a smaller percentage of zinc.

If parties ordering wire have no gauge, a small piece may be sent which will answer for the gauge number.

Stubs Gauge Up to Number	Old English or London Gauge Up to Number	Soft and Hard High Brass Per Pound	Copper Per Pound	Stubs Gauge Number	Old English or London Gauge Number	Soft and Hard High Brass Per Pound	Copper Per Pound
10	12	$ .23	$ .28	25½	28	$ .35	$ .43
11	13	.23½	.28½	26	29	.35	.43
12	14	.23½	.28½	27	30	.38	.46
13	15	.23½	.28½	28	31	.42	.51
14	16	.23½	.28½	29	32	.45	.54
15	17	.23½	.28½	30	33	.48	.62
16	18	.23½	.28½	31	35	.51	.67
17	18½	.24	.32	32	35½	.55	.73
18	19	$ .24	$ .32	33	36	$ .59	$ .82
19	20	.25	.33	34	37	.64	.95
20	21	.25	.33	35	38	.70	1.30
21	22	.26	.34	36	39	.76	1.50
21½	23	.27	.35	37	40	1.00	1.70
22	24	.27	.35	38	..	1.30	2.00
23	25	.28	.36	39	..	2.00	3.25
24	26	.30	.38	40	..	2.60	5.75
25	27	.32	.40				

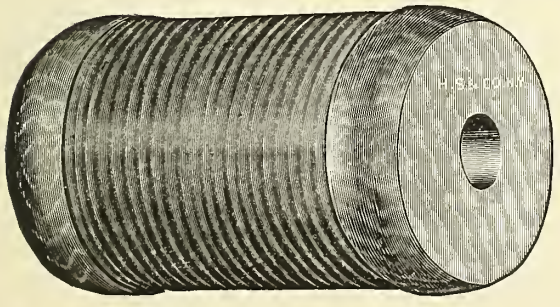
All Wire between gauges takes price of next smaller gauge.

Flat, Square and Half-round Wire, 4 cents advance on Round Wire, gauged the thin way after finishing.

Spring Wire, 2 cents per pound advance.

Whitened Wire, 3 cents per pound advance

Wire on Spools



List per dozen spools

Washburn & Moen Gauge Number	Number of Feet to Spool		Annealed Steel		Soft Brass, Spring Brass, Soft Copper	
	Medium Spools	Large Spools	Medium Spools	Large Spools	Medium Spools	Large Spools
16	35	65	$1.58	$2.46	$3.90	$7.50
17	44	91	1.60	2.56	3.90	7.50
18	55	126	1.64	2.64	3.90	7.50
19	77	169	1.66	2.68	3.90	7.50
20	111	226	1.68	2.76	3.90	7.50
21	128	283	1.74	2.86	4.20	8.00
22	158	324	1.80	2.96	4.40	8.20
23	201	418	1.86	3.05	4.60	8.50
24	254	528	1.94	3.15	4.70	8.60
25	328	700	2.00	3.20	4.80	9.00
26	386	897	2.04	3.30	4.90	9.20
27	431	966	2.06	3.53	5.52	10.34
28	494	1067	2.13	3.65	6.12	11.48
29	575	1242	2.21	3.78	6.48	12.14
30	656	1418	2.35	4.03	7.44	13.94
31	750	1607	2.43	4.16	8.04	15.08
32	788	1701	2.57	4.41	8.76	16.40
33	934	2012	2.72	4.66	9.84	18.44
34	1194	2578	2.94	5.04	11.40	21.38
35	1440	3092	3.31	5.67	15.60	29.24
36	1593	3442	3.94	6.73	18.00	33.76

German Silver Wire

Measured by Brown & Sharpe Gauge. Eighteen per cent nickel, spring temper. In small spools, approximately ¼ pound each.

Gauge	18	20	22	24	26	28
Price, dozen spools	$4.20	4.35	5.20	5.55	5.80	7.05

Aluminum Wire

Measured by English Standard gauge in large spools approximately 1 pound each.

Gauge	18	20	22	24
Price, spool	$1.20	1.25	1.30	2.40

Chain

Safety



Regular Type, No. 00



Plumbers Type, No. 0

Number	000	00	0	1	2	3	4
Brass, per dozen yards	$1.15	1.25	1.50	1.85	2.30	3.15	3.65

Nickel-plated. Add to net price of Brass, Nos. 000 to 1, 8 cents, and Nos. 2 to 4 15 cents per dozen yards, net.

On Reels of 500 Feet

Numbers	000	00	0	1	2	3	4
Brass, per 100 feet	$3.30	3.60	4.30	5.20	6.40	9.00	10.30

Nickel-plated. Add to net price of Brass, Nos. 000 to 1, 15 cents, and Nos. 2 to 4, 30 cents per 100 feet, net.

Ladder



Numbers	17	18	19	20
Brass, per dozen yards	$1.20	1.10	.90	.80

Nickel-plated. Add to net price of Brass 10 cents per dozen yards, net.

Proof Coil

Made of selected stock, but being a low priced machine made chain, it is not guaranteed and is recommended for unimportant uses only.



Straight Link



Twisted Link

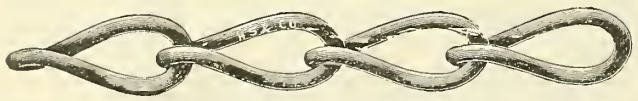
It is not possible to proof test twisted link chain, as proof test of any value would be sufficient to stretch the twist out of the links.

Size, inch	3/16	1/4	5/16	3/8	7/16	1/2	9/16
Approximate weight, per 100 feet, lbs.	46	75	110	155	200	260	325
Straight link proof test, lbs.	1,000	1,500	2,600	3,600	4,500	6,500	8,000
Average safe working load, lbs.	500	750	1,300	1,800	2,750	3,250	4,000

Size, inch	5/8	3/4	7/8	1	1 1/8	1 1/4
Approximate weight per 100 feet, lbs.	400	590	800	1,000	1,300	1,500
Straight link proof test, pounds	9,500	13,500	18,500	24,000	29,000	39,000
Average safe working load, pounds	4,750	6,750	9,250	12,000	14,500	19,500

Black, per pound } Prices on application
Galvanized, per pound }

German Type Coil



Number	6–0	5–0	4–0	3–0	2–0
American gauge	9/32	1/4	7/32	5	6
Weight per 100 feet, pounds	66	50	43	33	28
Proof test, pounds	1,200	1,000	900	600	550
Per 100 feet	$18.00	15.50	13.00	11.00	10.00

Numbers	1–0	1	2	3	4	5	6
American gauge	7	8	9	10	11	12	
Weight per 100 feet, pounds	23	19	16	13	10	8	6
Proof test, pounds	500	400	350	300			
Per 100 feet	$8.80	7.80	7.20	6.80	6.60	6.60	6.50

Jack

Single



No. 24



No. 20



No. 18



No. 15

Double



No. 24



No. 20



No. 18



No. 15

List Per Dozen Yards

Number	Single Iron	Single Brass	Double Iron	Double Brass
5	$1.60	$10.00		
6	1.30	8.00		
7	1.05	6.35		
8	.95	5.25		
9	.90	4.25		
10	.80	3.50	$ .95	$4.25
11	.55	2.55	.75	3.45
12	.44	2.05	.65	3.00
13	.42	1.70	.60	2.15
14	.40	1.35	.55	1.90
15	.35	1.00	.43	1.50
16	.30	.86	.38	1.20
17	.30	.82	.34	1.00
18	.28	60	.33	.75
19	.27	.54	.33	.65
20	.26	.50	.33	.62
21	.25	.45	.33	.60
22	.25	.40	.33	.60
23	.25	.40	.33	.60
24	.25	.40	.33	.60

German Type Machine



Number	6–0	5–0	4–0	3–0	2–0
American gauge	9/32	1/4	7/32	5	6
Weight per 100 feet, pounds	77	54	51	39	35
Proof test, pounds	1,750	1,200	1,000	700	600
Per 100 feet	$21.00	18.00	15.00	14.00	13.00

Number	1–0	1	2	3
American gauge	7	8	9	10
Weight per 100 feet, pounds	27	23	20	17
Proof test, pounds	550	450	350	300
Per 100 feet	$12.50	12.00	11.50	11.00

Universal Double Jointed



3/16 Inch



1/4 Inch



5/16 Inch

Universal Chain is as flexible as a piece of twine, can never kink, and is always free and pliable in any position. Where strength is required, the retinned chain should be used, as the process of retinning solders each joint into a solid link

Inch	3/16	1/4	5/16	3/8	1/2
Plain steel, per 100 feet	$3.00	3.50	4.00	5.00	7.00
Retinned, per 100 feet	$3.50	4.00	5.00	6.00	9.00

100 feet in a box, or 500 feet on a reel, as specified.

Chain

Sash



Red Metal

(A Red Bronze)

Number	For Sash Weighing	Per Foot
A	Not over 300 pounds	$ .13
1	Not over 225 pounds	.10
2	Not over 150 pounds	.08
0	Not over 100 pounds	.06

Coppered Steel

Number	For Sash Weighing	Per Foot
1	Not over 250 pounds	$ .08
2	Not over 150 pounds	.06
0	Not over 100 pounds	.04

Fastenings for Hanging Windows

For use with above chains.

Per dozen sets $1.50

Triumph



Number	List per 100 Feet	Weight per 100 Feet Pounds	Decimal Size of Wire Inch	Approximate Safe Working Load Pounds	Approximate Tensile Strength Pounds
00	$4.50	21.5	.133	330	1,650
0	4.00	17	.118	300	1,500
1	3.50	13	.105	220	1,100
2	3.10	10.5	.094	180	900
3	2.90	8	.083	150	750
4	2.75	6	.072	110	550
5	2.65	5.25	.067	100	500
6	2.55	4	.057	80	400
7	2.50	3	.050	60	300

Brass Open Link

Used for display purposes.



2-inch links, ¼-inch diameter wire.

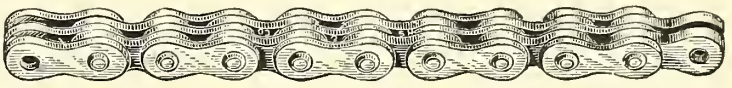
No. 235 Per foot ..... $ .24

Cable



No. 110

For a sash not over 400 pounds.



No. 10

For a sash not over 250 pounds.

Copper

No. 110 Per foot ..... $ .23

No. 10 Per foot ..... .17

Steel

No. 110 Per foot ..... $ .17

No. 10 Per foot ..... .14

Fastenings for Hanging Windows

For use with above chains.

Per dozen sets $2.60

Hammock

Brown

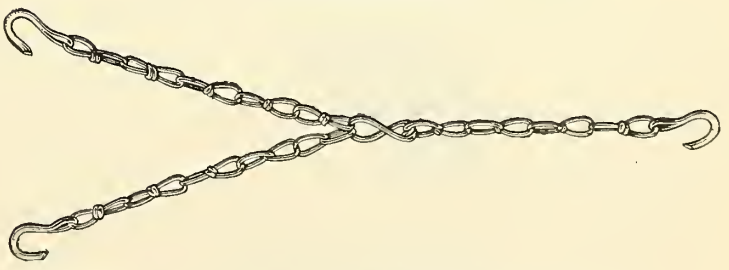


Made of 2–0 chain, hot galvanized finish.

Length, feet	3	6
Weight, pounds	15	27
Per dozen pairs	$4.00	8.00

Porch Swing—Galvanized

Triumph Pattern



Each set consists of two chains, two ceiling hooks and two "S" hooks.

No. 380 8 feet long, made of 3–0 chain and 2–0 chain, weight about 5½ pounds per set, set ..... $ .98

Twines

Stitching

	In 3 lb. Packages	Less
No. 252 Elm, medium, in ½-pound balls, per pound	$ .64	.70

Mattress

	In 3 lb. Packages	Less
No. 47 Elm, in ½-pound balls, per pound	$ .70	.76

Tufting

	In 3 lb. Packages	Less
No. 5A Elm, in ¼-pound balls, per pound	$ .66	.72

Spring

	In quantities of 10 lbs. or more	Less
Best Russia, three-ply, per pound	$ .18	.20
No. 208 English, per pound	.31	.34

Packing

	In 3 lb. Packages	Less
No. 18 B.C. Light, in ½-pound balls, per pound	$ .24½	.29
No. 24 B.C. Medium, in ½-pound balls, per pound	.24	.27
No. 36 B.C. Heavy, in ½-pound balls, per pound	.23	.26
No. 36 A.B. Heavy, best quality, in ½-pound balls, per pound	.27½	.30

Miscellaneous

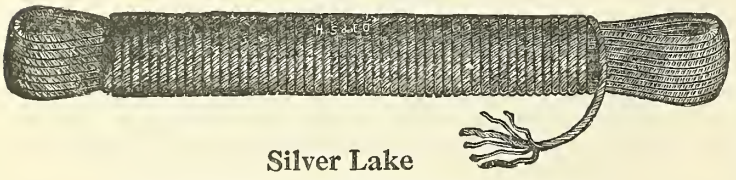
	In quantities of 10 lbs. or more	Less
Wool Four-ply, per pound	$ .13	.15
Cotton Four-ply, per pound	.29	.32
Jute Four-ply, per pound	.16½	.18

Waxed Thread

For rubber mat ends

On reels (6 reels to the pound), per dozen reels	$3.50
Per reel	.35

Sash Cord



Silver Lake

White Braided. Hanks contain 100 feet

Number	6	7	8	9	10
Diameter, inch	3/16	7/32	¼	9/32	5/16
In lots of one dozen hanks, per pound	$ .40½	.39½	.39	.39	.39
Less than one dozen hanks, per pound	.45	.44	.43	.43	.43

Eureka

White Braided

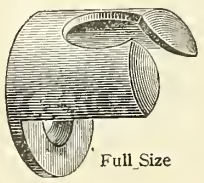
Number	7	8
Diameter, inch	7/32	¼
In dozen hank lots, pound	$ .30	.30
Less than dozen hank lots, pound	.33	.33

India Twist

No. 8, ¼-inch diameter

In dozen hank lots, pound	$ .20
Less than dozen hank lots, pound	.22

Sash Cord Fixtures



Full Size

No. 0 Cast iron, gross	$ .90

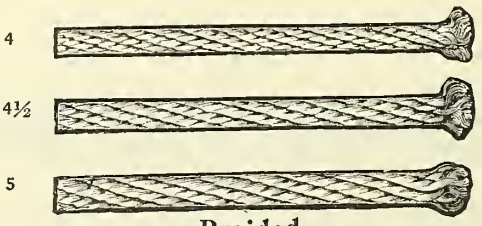
Bell Cord

Galvanized Wire Center

Made of the best Samson Sash Cord, with center of galvanized steel wire cable. Put up in coils of about 1200 feet, mahogany color.

Inch	3/16	¼	5/16	3/8
Per 100 feet	$3.00	3.50	4.25	5.00

Cotton Shade Line



Braided

	Drab	White	Dark Green
No. 4 48 feet in a hank, per dozen hanks	$2.25	2.00	2.25
No. 4½ 48 feet in a hank, per dozen hanks	2.75	2.50	2.75
No. 5 100 feet in a hank, per dozen hanks		7.50	

Twisted

	Dozen Hanks	Less
No. 48 thread. White, 95 yards in a hank, pound	$. 36½	.40
No. 72 thread. White, 100 yards in a hank, pound	.36½	.40
No. 108 thread. White, 115 yards in a hank, pound	.36½	.40

Awning Rope

	Coil	Less
3/16-inch, twisted (coil weighs about 30 pounds), per pound	$ .26	.29

White Cotton Rope

Diameter, inch	5/16	½	5/8
Approximate number of feet to pound	35	14	9
Approximate weight of coil, pounds	40	50	60

Prices upon application.

White Braided Cotton Rope

Diameter, inch	½	5/8

Prices upon application.

Manila Rope

3-Strand, Regular Laid

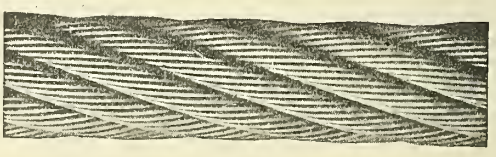
Diameter, inches	¼	5/16	3/8	½	5/8	¾	1	1¼	1½
Circumference, inches	¾	1	1⅛	1½	2	2¼	3	3¾	4½
Approximate number feet to pound	55	41	27	13⅓	7½	6	3⅔	2⅜	1⅞
Tensile strength, pounds	625	1,000	1,280	2,400	4,000	4,700	7,600	12,500	17,000

Prices upon application.

Wire Rope

Wire Rope should not be coiled or uncoiled like hemp or Manila rope, but should be unwound or wound from a reel by rolling on the ground or floor, or by blocking up the reel to revolve like a wheel. Avoid kinks or twists. Serve ends with soft binding wire on each side of the portion to be cut off, so that ends will not untwist.

Galvanized Iron



Suitable for Ship or Yacht rigging, or guy rope.

5 strands with 7 wire to the strand—hemp core

Approximate Circumference Inch	Diameter Inch	Weight per Foot Pound	Approximate Breaking Strain in Tons of 2,000 Pounds	Per Foot
½	3/16	.040	0.61	$ .02
¾	¼	.090	0.99	.02½
6 strands with 7 wires to the strand—hemp core				
1	5/16	.150	1.42	$ .03½
1⅛	3/8	.220	1.95	.04½
1½	½	.390	3.39	.06

Sash Cords

6 strands with 7 fine wires to the strand—cotton core

Number	Diameter Inch	Weight per Foot Pound	Approximate Breaking Strain Pounds	Per Foot
28	⅛	.025	465	$ .02¼

Larger sizes than listed quoted on application.

High-Speed Steel

Notwithstanding the fact that a good brand of High-Speed Steel costs several times as much as the best plain Carbon Steel, it is well known that the use of High-Speed Steel for all cutting and hot forming tools is far more economical.

To increase the shop output and to decrease the operating cost is the constant aim of all manufacturers—High-Speed Steel is so far the most effective agent in bringing about that result.

The friction caused by operating tools at a high rate of speed, and at the same time making deep cuts, generates a degree of heat that will draw the temper of carbon steels, but tools made of High-Speed Steel, as its name implies, owing to the use of certain elements in its makeup, will permit fast and heavy cuts to be made without such consequences as impair the life of tempering steels.

Nor does the forging, hardening and dressing of good brands of High-Speed Steel involve complicated treatment. Any good tool maker can develop the maximum efficiency of tools made from such steels without special knowledge.

Rex AA

Forges easily. Anneals and machines readily. Responds perfectly to heat treatment. Possesses a maximum of hardness, toughness, endurance and strength. Has great cutting power, both in ability to make a deep cut and in retaining its cutting edge under the greatest stress and speed. Specially recommended and exclusively used for:

Lathe Tools,	Taps,	End Mills,	Blanking and Screw Cutting Dies,
Planer Tools,	Reamers,	Slotting Cutters,	Insert Reamer Blades,
Boring Tools,	Twist and Straight Drills,	Threading Cutters,	Segmental Taps,
Rail and other Drills,	Milling Cutters,	Dies,	Formed Milling Tools,
etc., etc.		Gear Cutters,	Intricate Special Cutters, etc., etc.

It is also being used extensively for Dies for forming hot iron and steel, such as Bolt and Rivet Dies, Gripping Dies, Domino or Heading Tools, Nut Piercers, Nut Boxes, Crowning Tools, Shear Blades, Cut-Offs, Swedging Dies, Spike Cutters and Dies, etc., etc.

It is excellent for certain classes of Tools for stone work, machine wood-working knives, and for forming tools in tin and sheet metal, rubber, glass, etc.

We will furnish bars in any length, annealed or unannealed. Rounds, Squares, Octagons, Flats, Blocks, Blanks, Cut and Forged Discs, also Small Squares with single and double bevels, in three (3) foot lengths, hardened ready for use.

Standard Sizes and Lengths for Tool Holders

These sizes are adaptable to all the standard makes of tool holders and may also be used for any other purpose. It is not necessary to heal this steel, but it can be nicked on a sharp emery wheel, broken off to length desired, and then ground to the required cutting shape.

¼-inch square, 2½ inches long.
$\frac{5}{16}$-inch square, 2½ inches long.
⅜-inch square, 3 inches long.
$\frac{7}{16}$-inch square, 3½ inches long.
½-inch square, 4 inches long.
$\frac{9}{16}$-inch square, 4 inches long.
⅝-inch square, 4½ inches long.
¾-inch square, 4½ inches long.

The above lengths (with 30 degree bevel) will be furnished unless otherwise specified. They are put up in five (5) and ten (10) pound boxes.

Standard Sizes of Hardened Bevels for Cutting-off Tools

⅝x$\frac{3}{32}$ inch
¾x⅛ inch
1 x$\frac{3}{16}$ inch
⅞x⅛ inch
1⅜x1¼ inch
1⅛x $\frac{3}{16}$ inch
1¼x ¼ inch

This steel is beveled about $\frac{1}{32}$ inch on each side for clearance.

Octagon Shapes

We can supply all standard or special sizes which are used for beading tools.

Annealed Special Forgings

We can furnish annealed special forgings to order for particular purposes. Sketches and full details should accompany all inquiries.

Continued on following page

High Speed Steel

Rex AA

(Continued from preceding page)

Bright Polished Drill Rods

Morse Twist Drill Gauge

Size	1/2	31/64	15/32	29/64	7/16	27/64	Z	13/32	Y	X	25/64	W	V	3/8	U	23/64	T	S
Size in decimals of an inch	.500	.4843	.4687	.4531	.4375	.4218	.413	.4062	.404	.397	.3906	.386	.377	.375	.368	.3593	.358	.348
Feet per pound	....	....	....	....	....	....	....	....	....	....	....	....	....	2.75	....	3.00		
Price per pound	$1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40

Size	11/32	R	Q	21/64	P	O	5/16	N	13/64	M	L	9/32	K	J	I	H	17/64	G
Size in decimals of an inch	.3437	.339	.332	.3281	.323	.316	.3125	.302	.2968	.295	.290	.2812	.281	.277	.272	.266	.2656	.261
Feet per pound	3.26	....	....	3.59	....	....	3.97	....	4.38	....	....	4.89	....	....	....	....	5.46	
Price per pound	$1.50	1.50	1.50	1.50	1.50	1.50	1.80	1.80	1.80	1.80	1.80	1.95	1.95	1.95	1.95	1.95	1.95	1.95

Size	F	E	1/4	D	C	B	15/64	A	1	2	7/32	3	4	5	13/64	6	7	8
Size in decimals of an inch	.257	.250	.250	.246	.242	.238	.2343	.234	.228	.221	.2187	.213	.209	.2055	.2031	.204	.201	.199
Feet per pound	....	....	6.18	....	....	....	7.06	....	....	....	8.06	....	....	....	9.29			
Price per pound	$1.95	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20

Size	9	10	11	3/16	12	13	14	15	16	17	11/64	18	19	20	21	5/32	22	23
Size in decimals of an inch	.196	.1935	.191	.1875	.189	.185	.182	.180	.177	.173	.1718	.1695	.166	.161	.159	.1562	.157	.154
Feet per pound	....	....	....	10.94	....	....	11.93	....	....	....	13.07	....	14.38	....	....	15.89	....	16.52
Price per pound	$2.20	2.20	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.45	2.45	2.45

Size	24	25	26	27	9/64	28	29	30	1/8	31	32	33	34	7/64	35	36	37	38
Size in decimals of an inch	.152	.1495	.147	.144	.1406	.1405	.136	12.85	.125	.120	.116	.113	.111	.1093	.110	.1065	.104	.1015
Feet per pound	16.96	17.65	18.61	18.91	19.45	20.01	21.59	23.97	24.75	26.85	29.24	30.82	31.96	32.54	33.16	34.41	36.45	37.99
Price per pound	$2.45	2.45	2.45	2.45	2.45	2 45	2.45	2.45	2.50	2.59	2.71	2.79	2.85	2.88	2.91	2.97	3.07	3.15

Size	39	40	41	3/32	42	43	44	45	46	5/64	47	48	49	50	51	52	1/16	
Size in decimals of an inch	.0995	.098	.096	.0937	.0935	.089	.086	.082	.081	.0781	.0785	.076	.073	.070	.067	.0635	.0625	.062
Feet per pound	39.45	41.10	42.84	43.76	45.8	49.33	53.52	58.94	61.96	63.56	65.22	68.75	74.95	81.24	88.77	97.45	99	
Price per pound	$3.22	3.30	3.39	3.44	3.54	3.72	3.92	4.20	4.35	4.43	4.51	4.69	5.00	5.31	5.69	6.12	6.20	6.20

Size	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Size in decimals of an inch	.058	.055	.050	.045	.042	.041	.04	.039	.038	.037	.036	.035	.033	.032	.031	.030	.029	.027
Price per pound	$6.80	6.80	7.40	7.40	9.00	9.00	9.60	9.60	10.20	10.20	10.80	10.80	11.40	11.40	12.20	12.20	13.00	13.00

Size	71	72	73	74	75	76	77	78	79	[80
Size in decimals of an inch	.026	.024	.023	.022	.020	.018	.016	.015	.014	.013
Price per pound	$13.80	13.80	14.60	14.60	15.40	15.40	16.20	16.20	17.00	17.00

Tool Steel

Crescent Self-Hardening

A moderate priced steel which gives satisfactory service in shops which are not driven to utmost limit, or where work is intermittent or tools not fully employed.

Crescent Double Special

This is the hardest grade of carbon tool steel made, being harder and denser than high speed or self-hardening steel and has the additional advantage of toughness. It has the property of retaining an extremely sharp cutting edge and will make a finished cut on material that above-mentioned steels cannot handle, but is intended to be run at a low speed. It is invaluable for cutting such extremely hard metals as chilled iron, high carbon temper steels, etc., and for turning chilled iron rolls, and other excessively hard materials. Especially recommended for forming and cut-off tools, taps, reamers and all kinds of tools for automatic screw machine work, but is not suitable for tools subjected to shocks, like hammer or sledge blows.

Crescent Special

A very high grade carbon tool steel, specially recommended for expensive tools, such as milling and all circular cutters, minting and all engraved dies, intricate trimming and cutting dies and knives, stamping dies, screw cutting dies, threading dies, taps, reamers, broaches, tobacco and other long knives, angle and shear blades and knives, cold chisels, lathe, slotter and planer tools, and in general wherever requirements are excessive or the cost of the finished tool large as compared with the price of the steel.

Economical also for all ordinary tools where length of life and endurance of working parts are important.

Made in all tempers.

Crescent Extra

A carbon tool steel of extra fine quality, especially recommended for cold chisels, cold cutters, cold sets, boiler makers, snaps, granite points, woodworking and many other kinds of edge tools, etc.

The moderate price of this steel, combined with its excellent quality, makes it available for tools of a character where the highest grade is not required, but where a good, reliable steel should be used.

Made in all tempers.

Crescent

A standard brand of carbon tool steel for all general purposes, including axes, quarry tools, mining drills, hammers, sledges, etc., etc.

For list of Tool Steel Classification Extras, see page 724

Tool Steel

Champion, Non-Changeable

A high-grade oil-hardening steel, which remains practically unchanged in shape and dimensions in the hardening process. Suitable for the satisfactory production of intricate dies, gauges and similar tools, in which absolute accuracy of dimension is of prime importance. The tendency to crack has also been minimized. It is furnished so thoroughly annealed that it is readily machined in an automatic, and being an alloy steel, its cutting qualities are much superior to those of a straight carbon steel.

The results attained through the use of this steel, when used for forming tools, dies, gauges, cutters, taps, reamers and other intricate tools, where accuracy, endurance and cutting qualities are essential, have been most satisfactory in every respect.

Black Diamond Hollow Drill

Made in round and hexagon, with holes running clear through. The holes are practically in the center of the bars, are uniform in size and have a clean, smooth inside finish. The steel has no tendency to crack around the hole in the working end of the drill. Made specially for the manufacture of drills where it is desired to use lubricant or water at the actual working point.

Crescent Special Polished Drill Rods

Round

These Rods are made of Crescent Special Carbon Tool Steel, as described on preceding page, and are recommended for small fine tools, where satisfactory and enduring results are desired.

For taps, reamers, punches, twist drills, dental tools, watch parts, electrical work, etc. Regular lengths 1 foot and 3 feet.

Stubs Steel Wire Gauge

Size, in decimals of an inch	1.5	1.4843	1.4687	1.4531	1.4375	1.4218	1.4062	1.3906	1.375	1.3593	1.3437	1.3281	1.3125	1.2968
Nearest size in fractions of inches	1½	1 31/64	1 15/32	1 29/64	1 7/16	1 27/64	1 13/32	1 25/64	1 3/8	1 23/64	1 11/32	1 21/64	1 5/16	1 19/64
Price per pound	$ .50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50

Size in decimals of an inch	1.2812	1.2656	1.250	1.2343	1.2187	1.2031	1.1875	1.1718	1.1562	1.1406	1.125	1.1093	1.093	1.078
Nearest size in fractions of inches	1 9/32	1 17/64	1¼	1 15/64	1 7/32	1 13/64	1 3/16	1 11/64	1 5/32	1 9/64	1⅛	1 7/64	1 3/32	1 5/64
Price per pound	$ .50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50

Size in decimals of an inch	1.062	1.046	1.031	1.015	1	.984	.969	.953	.937	.921	.906	.89	.875	.859
Nearest size in fractions of inches	1 1/16	1 3/64	1 1/32	1 1/64	1	63/64	31/32	61/64	15/16	59/64	29/32	57/64	7/8	55/64
Price per pound	$ .50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50

Size in decimals of an inch	.844	.828	.812	.796	.781	.765	.75	.734	.719	.703	.687	.671	.656	.64	.625	.609	.594	.578
Nearest size in fractions of an inch	27/32	53/64	13/16	51/64	25/32	49/64	¾	47/64	23/32	45/64	11/16	43/64	21/32	41/64	5/8	39/64	19/32	37/64
Price per pound	$ .50	50	.50	.50	.50	.50	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55

Size	....	....	....	....	....	....	....	....	....	....	....	Z	....	Y	X	....	W	V	....	U	
Size in decimals of an inch	.562	.546	.531	.515	.5	.484	.469	.453	.437	.425	.421	.413	.406	.404	.397	.391	.386	.377	.375	.368	.359
Nearest size in fractions of an inch	9/16	35/64	17/32	33/64	½	31/64	15/32	29/64	7/16	....	27/64	....	13/32	....	....	25/64	....	....	3/8	....	23/64
Price per pound	$ .55	.55	.55	.55	.60	.60	.60	.60	.60	.75	.75	.75	.75	.75	75	.75	.75	.75	.75	.75	.75

Size	T	S	....	R	Q	....	P	O	....	N	....	M	L	K	J	I	H	G	F	E
Size in decimals of an inch	.358	.348	.344	.339	.332	.328	.323	.316	.312	.302	.297	.295	.29	.281	.277	.272	.266	.261	.257	.25
Nearest size in fractions of an inch	....	....	11/32	....	....	21/64	....	....	5/16	....	19/64	....	....	9/32	....	....	17/64	....	....	¼
Price per pound	$ .75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75

Size	D	C	B	A	1	2	3	4	5	....	6	7	8	9	10	11	12	13	14
Size in decimals of an inch	.246	.242	.238	.234	.227	.219	.212	.207	.204	.203	.201	.199	.197	.194	.191	.188	.185	.182	.180
Nearest size in fractions of an inch	....	....	....	15/64	....	7/32	....	....	....	13/64	....	....	....	....	....	3/16	....	....	....
Price per pound	$ .75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75

Size	15	16	17	18	19	20	21	...	22	23	24	25	26	27	...	28	29	30	..	31
Size in decimals of an inch	.178	.175	.172	.168	.164	.161	.157	.156	.155	.153	.151	.148	.146	.143	.141	.139	.134	.127	.125	.120
Size in fractions of an inch	....	....	11/64	....	....	....	....	5/32	....	....	....	....	....	....	9/64	....	....	....	⅛	
Price per pound	$ .75	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.90

Size	32	33	34	..	35	36	37	38	39	40	41	..	42	43	44	45	46	..	47	48
Size in decimals of an inch	.115	.112	.110	.109	.108	.106	.103	.101	.099	.097	.095	.094	.092	.088	.085	.081	.079	.078	.077	.075
Size in fractions of an inch	....	....	....	7/64	....	....	....	....	....	....	....	3/32	....	....	....	....	....	5/64		
Price per pound	$ .90	.90	.90	.90	.90	.90	.90	.90	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.20	1.20

Size	49	50	51	52	....	53	54	55	....	56	57	58	59	60	61	62	63	64	65	66
Size in decimals of an inch	.072	.069	.066	.063	.0625	.058	.055	.05	0.468	.045	.042	.041	.04	.039	.038	.037	.036	.035	.033	.032
Size in fractions of an inch	....	....	....	....	1/16	....	....	....	3/64											
Price per pound	$1.20	1.20	1.45	1.45	1.45	1.45	1.45	1.80	1.80	1.80	1.80	2.10	2.10	2.10	2.40	2.40	2.70	2.70	2.70	3.00

Size	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Size in decimals of an inch	.031	.030	.029	.027	.026	.024	.023	.022	.020	.018	.016	.015	.014	.013
Size in fractions of an inch	1/32	....	....	....	....	....	....	....	....	....	1/64			
Price per pound	$3.00	3.00	3.30	3.30	3.60	3.60	3.60	3.90	4.05	4.20	4.50	4.80	5.10	5.40

Square

Size in decimals of an inch	.5	.4687	.4375	.4062	.375	.344	.3125	.281	.25	.219	.1875	.156	.125	.094	.062
Size in fractions of an inch	½	15/32	7/16	13/32	3/8	11/32	5/16	9/32	¼	7/32	3/16	5/32	⅛	3/32	1/16
Price per pound	$1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60

For list of Tool Steel Classification Extras, see page 724

Tool Steel Classification Extras

Applying to all grades of American made tool steel. All dimensions are inclusive and intermediate sizes take the next higher extra.

Round, Square and Octagon

Base sizes are 5/8 inch to 2 inches. Following sizes are extra in round square and octagon shapes.

Inches	Extra Per Pound	Inches	Extra Per Pound
5/8 to 2	Base	9/16 to 1/2	$.00½
2⅛ to 3	$ .01	5/16 to 3/8	.01
3⅛ to 4	.01½	11/32 to 1/2	.02
4⅛ to 5	.02	¼ to 9/32	.03

Inches	Extra Per Pound	Inches	Extra Per Pound
5⅛ to 6	.02½	3/16	.05
6⅛ to 7	.03	5/32	.10
7⅛ to 8	.03½	⅛	.18

Flat

Base sizes are 5/8 inch to 2 inches thick by 9/16 inch to 2 inches wide. Following sizes are extra in flat shapes.

Inches	Extra Per Pound
⅛x 3/16	$ .20
⅛x ¼	.15
⅛x 5/16	.08
⅛x 3/8	.04
⅛x 7/16 to ½	.03
⅛x 9/16 to 7	.02
⅛x7⅛ to 8	.03
3/16x ¼	.05
3/16x 5/16	.04
3/16x 3/8	.03
3/16x 7/16 to 5/8	.02
3/16x 11/16 to 2	.01½
3/16x2⅛ to 7	.01

Inches	Extra Per Pound
3/16x7⅛ to 8	$ .02
¼x 5/16 to 3/8	.02
¼x 7/16 to 5/8	.01½
¼x 11/16 to 2	.01½
¼x2⅛ to 7	.01
¼x7⅛ to 8	.02
5/16x3/8 to 5/8	.01½
5/16x 11/16 to 8	.01
3/8x 7/16 to 8	.01
7/16x ½ to 8	.01
9/16x2⅛ to 8	.01
½x 9/16 to 8	.01

Inches	Extra Per Pound
9/16 to 2x 5/8 to 2	Base
5/8 to 2x2⅛ to 7	$ .01
5/8 to 1¾x7⅛ to 8	.01
1⅞ to 2x7⅛ to 8	.01½
2⅛ to 3x2⅛ to 5	.01
2⅛ to 3x5⅛ to 8	.01½
3⅛ to 4x3⅛ to 6	.01½
3⅛ to 4x6⅛ to 8	.02
4⅛ to 5x4⅛ to 7	.02
4⅛ to 5x7⅛ to 8	.02½
5⅛ to 6x5⅛ to 8	.02½
6⅛ to 7x6⅛ to 7	.03
6⅛ to 8x7⅛ to 8	.03½

Cutting to specified single and multiple lengths.

24 inches or over, pound	$ .00½	18 to 24 inches, pound	$ .01
12 to 18 inches, pound	.01½	6 to 12 inches, pound	.02

Less than 6 inches or over 18 feet, at special price.

Tool Steel

Round Bright



In 13-Inch Lengths

Numbers	1–5	6–15	16–30	31–38	39–46	47–50	51–54	55–57	58–60
Pound	$1.10	1.10	1.25	1.35	1.55	1.80	2.10	2.60	3.00

In 3-Foot Lengths

⅛ and 5/32-inch diameter, pound	$1.10
3/16, 7/32 inch, C, ¼ inch, G, I, K, M, 5/16, 3/8, 7/16 or ½ inch	1.10

Stubs

Square Black



In 3-Foot Lengths

Inch	⅛	5/32	3/16	7/32	¼	5/16	3/8	7/16	½
Pound	$ .75	.66	.60	.60	.42	.42	.42	.42	.42

Octagon Black



In 3-Foot Lengths

Inch	⅛	3/16	¼	5/16	3/8	½
Pound	$ .84	.66	.42	.42	.42	.42

Jessop

We can furnish all grades and sizes of Jessop tool steel, including self-hardening cast, annealed, etc. Prices will be quoted upon receipt of quantity specifications.

Bessemer Steel Rod

Straightened and Cut in 6-Foot Lengths

Bright

	100 Pound Lots	10 Pound Lots
⅛-inch diameter, pound	$ .04	$ .05
5/32, 3/16, 7/32, ¼, 9/32, 5/16, 3/8, 7/16 or ½-inch diameter, pound	.03¾	.04¾

Coppered

	100 Pound Lots	10 Pound Lots
⅛-inch diameter,	$ .04½	.06
3/16, 5/32, 7/32, ¼, 9/32, 5/16, 3/8, 7/16 or ½-inch diameter, pound	.04	.05

Threaded Rods

Iron and Brass

Threads	Lengths	List Per 100 feet Iron	Brass
6–32	1 foot	$3.50	$5.00
8–32	1 foot	3.75	5.50
10–32	1 foot	4.00	7.00
10–24	1 foot	4.00	7.00
12–24	2 feet	5.00	8.50
14–20	2 feet	6.00	10.00
14–24	2 feet	6.00	10.00
¼–20	2 feet	6.00	10.00
5/16–18	2 feet	7.50	18.00

Brass and Commercial Bronze Rods

Prices are for 100 pounds or more per item in one order. Brown & Sharpe Gauge. Base prices and discounts from extras quoted upon application.

List Extras Over Base Prices, Cents per Pound

Size	No. 11 (.0907) to ⅛ inch	Inc. ⅛ inch to 3/16 inch	Inc. 3/16 inch to 3/8 inch	Inc. 3/8 inch Inc. 2 inches
Round	6½	2	½	Base
Hexagon, Octagon and Square	9	4½	3	2
Rectangular and Half Round	11	6½	5	4

Sizes larger than 2 inches, special prices quoted upon application. Prices of Rectangular and Half Round are governed by the thinner dimension. Special Shaped Rods other than listed above, prices quoted upon application, not less than price of Rectangular and Half Round.

Rods cut to uniform specific lengths, add the following list advances:

Inc. 1 inch to 2 inches	12 cents	Inc. 9 inches to 12 inches	3 cents
Inc. 2 inches to 4 inches	8 cents	Inc. 12 inches to 24 inches	2 cents
Inc. 4 inches to 6 inches	5 cents	2 feet and over	1 cent
Inc. 6 inches to 9 inches	4 cents		

Shorter than 1 inch, special prices quoted upon application, not less than 12 cents list advance.

For sizes smaller than No. 11, consult Wire List.

Standard Lengths

When ordered in 12-foot lengths, no lengths less than 8 feet.
When ordered in 10-foot lengths, no lengths less than 6 feet.
When ordered in 8-foot lengths, no lengths less than 6 feet.
When ordered in 6-foot lengths, no lengths less than 4 feet.

This applies to all rods up to and including 1 inch diameter or thickness, whether round, rectangular, square or hexagonal. Above 1 inch, to and including 2 inches, the lengths will be random lengths from 4 feet to 10 feet. Above 2 inches, the lengths are special, but no length will be less than 4 feet.

SEE DISCOUNT SHEET

Soft Sheet Copper

Hot Rolled

The longest dimension of any sheet shall be considered its length

Net Extras Over Base

Sizes of Sheets		64 oz. and over	32 oz. to 64 oz.	24 oz. to 32 oz.	16 oz. to 24 oz.	15 oz.	14 oz.	13 oz.	12 oz.	11 oz.	10 oz.	9 oz.	8 oz.	Lighter than 8 oz.
Widths	Lengths	Cents per pound				Cents per pound over base								
Not wider than 30 ins.	Not longer than 72 inches	Base	Base	Base	Base	½	1	1½	2	2½	3	4½	6	9
	Longer than 72 inches; not longer than 96 inches	Base	Base	Base	Base	½	1	2	3	4½	6	7½	9	
	Longer than 96 inches; not longer than 120 inches	Base	Base	½	1	2	3	5	7					
	Longer than 120 inches	Base	Base	1	1½									
Wider than 30 ins. but not wider than 36 ins.	Not longer than 72 inches	Base	Base	Base	Base	1	2	3	4	6	8	10	12	
	Longer than 72 inches; not longer than 96 inches	Base	Base	Base	Base	1	2	4	6	8	10			
	Longer than 96 inches; not longer than 120 inches	Base	Base	1	2	3	4							
	Longer than 120 inches	Base	1	2	3									
Wider than 36 ins. but not wider than 48 ins.	Not longer than 72 inches	Base	Base	1	2	3	4	6	8	9	11			
	Longer than 72 inches; not longer than 96 inches	Base	Base	1	3	4	5	7	9					
	Longer than 96 inches; not longer than 120 inches	Base	Base	2	4	6	9							
	Longer than 120 inches	Base	1	3	6									
Wider than 48 ins. but not wider than 60 ins.	Not longer than 72 inches	Base	Base	1	3	5	7	9	11					
	Longer than 72 inches; not longer than 96 inches	Base	Base	2	4	7	10							
	Longer than 96 inches; not longer than 120 inches	Base	1	3	6									
	Longer than 120 inches	1	2	4	8									
Wider than 60 ins. but not wider than 72 ins.	Not longer than 96 inches	Base	1	3	8									
	Longer than 96 inches; not longer than 120 inches	Base	2	5	10									
	Longer than 120 inches	1	3	8										
Wider than 72 ins. but not wider than 108 ins.	Not longer than 96 inches	1	3	6										
	Longer than 96 inches; not longer than 120 inches	2	4	7										
	Longer than 120 inches	3	5	9										
Wider than 108 ins. but not wider than 120 ins.	Not longer than 120 inches	4	6											
	Longer than 120 inches	5	8											
Wider than 120 ins. but not wider than 132 ins.	Not longer than 132	6	9											
	Longer than 132 inches	7												
Wider than 132 ins.		8												

Base price quoted on application

Roll and Sheet Brass and Commercial Bronze

Prices are for 100 pounds or more per item in one order. Base prices and discounts from extras quoted on application.

List Extras Over Base Prices, Cents per Pound

			Wider than, inches	2	10	12	14	16	18	20	22	24	26	28	30	32	34	36
			Up to and including, inches	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
			No. 20 (.0319 inch) and thicker	Base	½	2	3	5	7	9	11	14	17	20	24	28	33	38
	21	.0284		Base	1	2½	4	6	8	10	12	15	18	21	25	29	34	39
	22	.0253		Base	1	2½	4	6	8	10	12	15	18	21	25	29	34	39
	23	.0225		Base	1	2½	4	6	8	10	12	15	18	21	25	29	34	
	24	.0201		Base	1	2½	4	6	8	10	12	15	18	21	25	29	34	
Brown & Sharpe	25	.0179		1	2	3½	5	7	9	11	13	16	19	22				
Gauge	26	.0159		1	2	3½	5	7	9	11	13	16	19	22				
	27	.0142		1	2½	4	6	8	10	12	14	17						
	28	.0126		1	2½	4	6	8	10	12	14	17						
(Second column is	29	.0112		1½	3	4½	6½	8½	10½	12½								
Decimal Equivalent	30	.0100		2	3½	5	7	9	11	13								
of an Inch)	31	.0089		2½	4	5½	7½											
	32	.0079		3	4½	6	8											
	33	.0071		4	5½	7												
	34	.0063		5	6½	8												
	35	.0056		6½	8													
	36	.0050		8	9½													

Sheet Metal thinner or wider than listed above, special prices quoted upon application.

All Metal heavier than No. 4 Gauge, listed and charged as Sawed Metal whether sheared, slit, or sawed.

Metal between gauges takes price of nearest gauge.

Circles cut from above metal, over 6 inches and not exceeding 12 inches diameter, No. 10 gauge and thinner.....6 cents list advance

Circles cut from above metal, over 6 inches and not exceeding 12 inches diameter, thicker than No. 10 gauge.....10 cents list advance

Circles cut from above metal, 6 inches and smaller, and larger than 12 inches diameter, special prices quoted upon application.

Segments, Pattern Sheets and Irregular Shape Blanks, special prices quoted upon application.

Embossed Metal.....4 cents list advance

Polished Sheets from above metal, special prices quoted upon application.

Sheet Metal over 2 inches but not wider than 14 inches, cut to uniform specific lengths, add the following list advances:

Shorter than 12 inches.....Special prices, not less than 1 cent
1 foot to 4 feet inclusive.....1 cent
4 feet to 6 feet inclusive.....2 cents
6 feet to 8 feet inclusive.....4 cents
8 feet to 10 feet inclusive.....6 cents
10 feet and over.....Special prices, not less than 6 cents

Sheet Metal wider than 14 inches cut to uniform specific lengths, special prices quoted upon application, not less than the prices for cutting metal 14 inches wide.

For Standard Lengths, see next page.

Extras For Slitting

Brown & Sharpe Gauge. Discounts from extras quoted upon application.

List Extras Over Price of Sheet Metal of Corresponding Gauge, Cents per Pound

Slitting Metal from	No. 4 (.2043)	No. 16 (.0508)	No. 20 (.0319)	No. 29 (.0112)	No. 33 (.0071)
To and including	No. 15 (.5070)	No. 19 (.0358)	No. 28 (.0126)	No. 32 (.0079)	and thinner
Over ½ inch to 2 inches wide, inclusive	1	1	1	1½	3
Over ¼ inch to ½ inch wide, inclusive		2	2	3	6
¼ inch wide and narrower			6	12	18

List Extras for Cutting Slit Metal to Uniform Specific Lengths, Cents per Pound

Width	Length	Inc. No. 20 (.0319) and thicker	Inc. No. 21 (.0284) Inc. No. 25 (.0179)	Inc. No. 26 (.0159) Inc. No. 30 (.0100)	Inc. No. 31 (.0089) Inc. No. 35 (.0056)	Inc. No. 36 (.0050) Inc. No. 38 (.0039)
Over ½ inch to 2 inches, inclusive	Inc. 2 to 6 feet..	2	3	4	6	10
	Inc. 6 to 8 feet..	4	5	6	8	12
	Inc. 8 to 10 feet..	6	7	8	10	14
Over ¼ inch to ½ inch inclusive	Inc. 2 to 6 feet..	4	5	7	10	20
	Inc. 6 to 8 feet..	6	7	9	12	22
	Inc. 8 to 10 feet..	8	9	11	14	24

For cutting Slit Metal to length, other than noted above, special prices quoted upon application.
No Slit Metal thinner than No. 20 Gauge, 2 inches wide and narrower, furnished in flat random lengths, without the extra charge for cutting as shown above.
Drawn Strip, above price of Slit Metal, 4 cents list advance. Drawn Strip is metal drawn through dies, wider than ⅜ inch to 2 inches inclusive, thinner than ⅛ inch but not thinner than No. 20 B. & S. Gauge.

Extras For Sawing

Brown & Sharpe Gauge. Discounts from extras quoted upon application.

List Extras Over Price of Sheet Metal of Corresponding Width, Cents per Pound

	Cents per Pound
Over 6 inches, up to and including 40 inches	$ .02
Over 3 inches, up to and including 6 inches	.03
Over 1 inch, up to and including 3 inches	.04
Over ½ inch, up to and including 1 inch	.05
½ inch and narrower	.08

Shorter than 1 inch, special prices quoted upon application, not less than.....12 cents list advance

10 feet and over, special prices quoted upon application, not less than.....10 cents list advance

All metal heavier than No. 4 gauge, listed and charged as Sawed Metal, whether sheared, slit or sawed.

Sawed Metal cut to uniform specific lengths, add the following list advances:

	Cents per Pound
Inclusive, 1 inch to 2 inches	$ .12
Inclusive, 2 inches to 4 inches	.10
Inclusive, 4 inches to 6 inches	.09
Inclusive, 6 inches to 9 inches	.08
Inclusive, 9 inches to 12 inches	.07
Inclusive, 1 foot to 2 feet	.06
Inclusive 2 feet to 4 feet	.05
Inclusive, 4 feet to 6 feet	.06
Inclusive, 6 feet to 8 feet	.08
Inclusive, 8 feet to 10 feet	.10

See next page for information regarding ordering, etc.

Drawn Brass and Commercial Bronze Angles and Channels

Prices are for 100 pounds or more per item in one order.
Angles, plain and of one angle; Channels, plain and of three sides only; Half Round and Half Oval only.
Brown & Sharpe's Gauge. Base prices and discounts from extras quoted upon application.

List Extras Over Base Prices, Cents per Pound

Width of Widest Dimension	Nos. 8 (.1285) and 9 (.1144)	Nos. 10 (.1019) and 11 (.0907)	Nos. 12 (.0808) and 13 (.0719)	Nos. 14 (.0640) to and inc. 19 (.0358)	No. 20 (.0319)	No. 21 (.0284)	No. 22 (.0253)	No. 23 (.0225)	No. 24 (.0201)
Inc. 3/8 inch to 1/2 inch	10	8	6	4	6	8	10	12	16
Inc. 1/2 inch to 3/4 inch	8	6	4	2	4	5	7	9	13
Inc. 3/4 inch to 1 inch, inc	6	4	2	Base	1	3	5	7	10
Over 1 inch to 1 1/2 inches, inc	8	6	4	2	3	5	7	9	12

Thicker than No. 8, narrower than 3/8 inch, or wider than 1 1/2 inches, special prices quoted upon application.
Angles and Channels between gauges takes price of nearest gauge.
Mouldings and Special Shapes other than listed, prices quoted upon application.
Angles and Channels cut to uniform specific lengths, add the following list advances:

Inclusive, 1 inch to 2 inches	6 cents	Inclusive, 6 inches to 12 inches	2 cents
Inclusive, 2 inches to 4 inches	4 cents	Inclusive, 12 inches to 96 inches	No Charge
Inclusive, 4 inches to 6 inches	3 cents	96 inches and over	1 cent

Shorter than 1 inch, special prices quoted upon application, not less than 6 cents list advance.

Standard Lengths Brass and Commercial Bronze Materials

Any of the materials named above ordered cut to uniform specific lengths will be subject to an extra charge, with the following exceptions:
When the length specified is 2 feet or over, no charge will be made for cutting provided either of the following phrases is added, viz:
"With end pieces included." "With random lengths included."
No sheet metal will be cut to lengths of less than 2 feet without an additional charge for cutting, except, that when the length specified is less than 2 feet, no charge will be made for cutting provided the following phrase is added, viz:
"Or cut to any multiple thereof."

Sheets and Strips

When orders call for stock lengths such as 6 feet, 8 feet, 10 feet, etc., the pieces shipped will be cut to the stated length as a maximum, and pieces shorter than this length will be shipped according to the following schedule, the percentages stated being taken by weight in any one shipment.

When ordered in 10-foot lengths—
40 per cent. may be 8 feet or over
30 per cent. may be 6 feet to 8 feet
20 per cent may be 4 feet to 6 feet
10 per cent. may be 2 feet to 4 feet
Not more than 40 per cent. of any one shipment will be less than 10 feet long.

When ordered in 8-foot lengths—
30 per cent. may be 6 feet or over
20 per cent. may be 4 feet to 6 feet
10 per cent. may be 2 feet to 4 feet
Not more than 30 per cent. of any one shipment will be less than 8 feet long.

When ordered in 6-foot lengths—
20 per cent. may be 4 feet or over
10 per cent. may be 2 feet to 4 feet
Not more than 20 per cent. of any one shipment will be less than 6 feet long.

The foregoing applies to Sheets and Strips in Brass, Commercial Bronze and German Silver, in all widths up to and including 14 inches wide.

Drawn Brass and Commercial Bronze Angles and Channels

When no length is specified, will be shipped in stock lengths of 10 feet to 14 feet. When ordered as 6 feet, 8 feet, or other approximate lengths, will be shipped under the same schedule as Rods (see page 724).

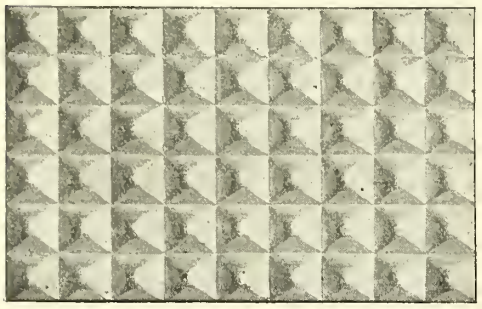
Sheet Zinc

Gauge number	5	6	7	8	9	10	11
Weight per square foot	.37	.45	.52	.60	.67	.75	.90
Approximate decimal equivalent	.010	.012	.014	.016	.018	.020	.024

Size of Sheet Inches	Square Feet per Sheet	Approximate Weight per Sheet						
24x84	14	5.2	6.3	7.3	8.4	9.4	10.5	12.6
30x84	17.5	6.5	7.9	9.1	10.5	11.8	13.2	15.8
36x84	21	7.8	9.5	10.9	12.6	14.1	15.8	18.9
40x84	23.4	8.7	10.6	12.2	14.1	15.7	17.6	21
48x84	28	10.4	12.6	14.6	16.8	18.8	21	25.2

Prices on sheet zinc will be quoted upon receipt of quantity specifications. Sizes not listed can also be furnished.
Sheet Zinc in casks of about 600 pounds.
Prices upon application.

Pyramid Aluminum



This material does not rust, tarnish nor stain from the effects of oil, grease or gasoline, and it can always be restored to its original brightness by washing. It forms an excellent covering for automobile floors and running boards or for motor boat floors and all other places where there is severe wear.

In sheets, 14 inches wide and 84 inches long.

No. 20 Gauge ¼ inch squares, square foot ..... $ .35
No. 24 Gauge ⅛ inch squares, square foot ..... .28

Other sizes can be supplied on special orders.

Sheet Aluminum

99+ per cent. pure aluminum—tempered soft.

In sheets 12 x 72 inches, Brown & Sharpe Gauges 22, 24, 26 and 28.

22 or 24 Gauge, pound.....$ .50 26 Gauge, pound.....$ .52 28 Gauge, pound.....$ .55

When specially ordered, sheets, tempered half-hard, No. 16 B. & S. Gauge, made for automobile use, may be had 24, 30, 36, 40 or 48 inches wide by 144 inches long. Various gauges, tempers and sizes of sheets may be secured when specially ordered.

Sheet Tin

Standard Roof—IC Coating

Sheets 14 x 20 inches, 112 sheets in box, box..... $6.00

Seamless Copper Tubing



Diameter is measured outside. All sizes under ⅜ inch are measured according to Brown & Sharpe gauge. All sizes ⅜ inch and over are measured according to Stubbs' gauge. Standard lengths are approximately 12 feet. Made soft, suitable for bending.

Diameter, inch	3/16	¼	5/16	⅜	7/16	½
Gauge	21	20	20	19	19	18

Prices on application.

(We stock up to ½-inch inclusive only, but can supply larger sizes on demand.)

Seamless Brass Tubing

Tempered Hard

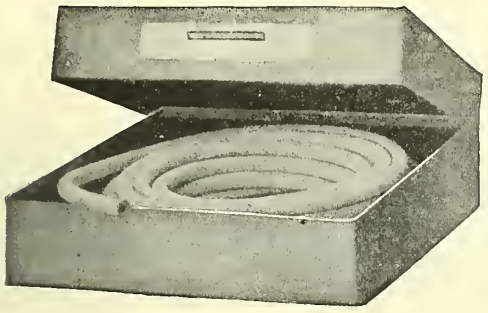


Diameter is measured outside. All sizes under ⅜ inch are measured according to Brown & Sharpe gauge. All sizes ⅜ inch and over are measured according to Stubbs gauge. Standard lengths approximately 12 feet.

Diameter, inch	3/16	¼	5/16	⅜	7/16	½	5/8	¾	1
Gauge	21	20	20	19	19	18	18	17	16

Prices on aplication

Rubber Tubing



Machine-made, Plain White

Inside diameter, inch	3/16	1/4	5/16	3/8	1/2	5/8	3/4
Thickness of wall, inch	1/16	1/16	1/16	1/16	3/32	3/32	3/32
Per foot	$ .04½	.05	.06	.08	.11½	.16½	.25

Pure Plain Red

Inside diameter 3/16 inch, thickness of wall 1/16 inch, per foot ..... $ .12

Cloth Insertion—Red

Inside diameter ½ inch, 3 ply, per foot ..... .28

Garden Hose

¾ Inch—3 Ply

Spider



An old reliable brand. A good hose at moderate price. With couplings attached.

Length, feet	10	15	20	25	35	50
Per foot	$ .15					

Double Diamond

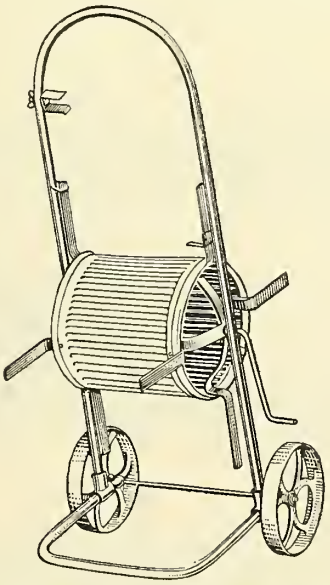


A high quality hose; made of wrapped duck insertion and high grade rubber.

Lengths, feet	25	50
Per foot	$ .24	

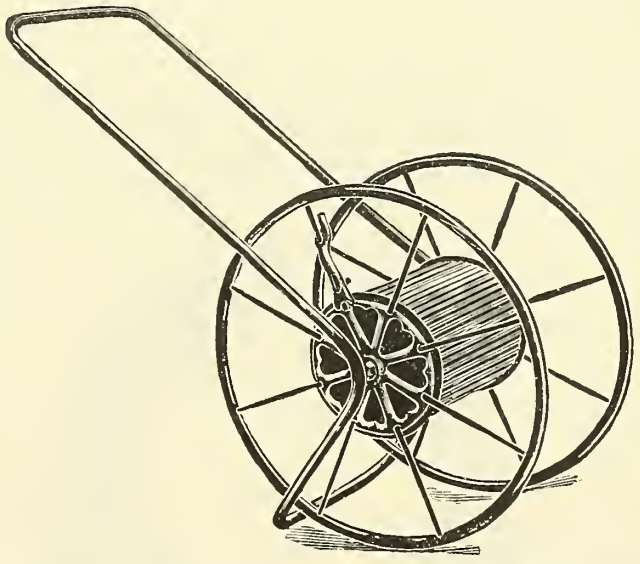
Hose Reels

All Metal, Strong Steel Tubular Frames



W. & K. No. 2 Reel is constructed entirely of metal. Best tubular steel in frame, strong, cast iron wheels 7 inches in diameter, solid steel reel arms and heavy galvanized iron drum. The drum is corrugated to allow circulation of air and prevent mildew on hose; the galvanizing insures freedom from rust; the 9-inch drum prevents injury to hose from tight winding. The reel is equipped with a crank for convenience in winding up the hose; the adjustable hose holder at top of frame holds the nozzle in any position while spraying. Frame enameled green, wheel and reel arms black, which, with the galvanized drum, makes a very attractive appearance. An exceptionally strong, serviceable reel and will outlast the best wooden reel made. Weight, 15 pounds, bundled for shipping. Capacity, 100 feet ¾-inch rubber hose.

Each $2.00



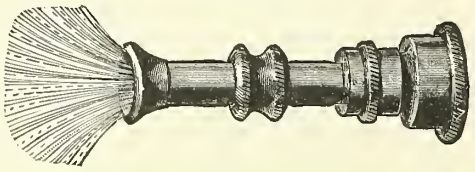
Wirt Style "B" Reels Nos. 10 and 20 are undoubtedly the best all-metal garden hose reels on the market, having features not possessed by any other type of reel. There are no exposed spokes to interfere with either reeling or unreeling the hose. They cannot tip over when unreeling, and the large rims of the wheels make the reel very easy to move about. There is no extra weight to carry, as the weight of the hose is borne upon the rims and is not carried on the handle as in other types of reels. Tubular steel rims and frame, steel spokes and malleable iron castings; corrugated galvanized drum. Neat in appearance and design. Frame and reel enameled green.

No. 10 Height of reel, 21 inches; weight, 18 pounds; capacity, 100 feet of ¾-inch rubber hose. Each $3.50

No. 20 Height of reel, 24 inches; weight, 20 pounds; capacity, 150 feet of ¾-inch rubber hose. Each 4.00

Nozzles

Gem



This nozzle is particularly adapted to general usage, the only action of the operator in changing from a solid stream to a fine mist or spray is the simple turning of the barrel.

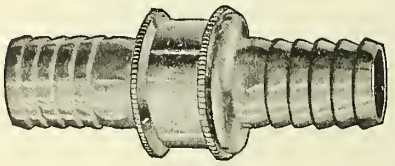
When the desired quality of stream or spray has been secured further attention is unnecessary, a feature of much value in the treatment of lawns or flower plots, when a fine spray is particularly advantageous.

This nozzle closes perfectly tight, making it unnecessary to turn off water supply at the valve when changing location of hose.

Brass finished, ¾-inch, dozen $6.00

Brass Hose Couplings

Sherman Finished



Being made from wrought brass, these couplings are free from sand holes and other defects. Double knurled flanges on nuts afford good grip for the hand. Full waterways, deep corrugations for imbedding into lining of hose. All seamless parts and fitted joints are other good features.

¾-inch size, dozen $2.40

Brass Hose Menders

Cooper



For ¾-inch hose, dozen..... $1.50

Hose Clamps

Sherman

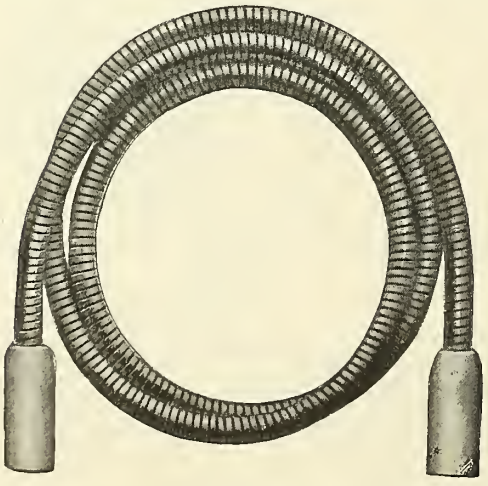


Illustration shows the clamp partly screwed together.

For ¾-inch garden hose, dozen ... $ .60

Metallic Gas Tubing

No. AG. 100 Rubber Packed



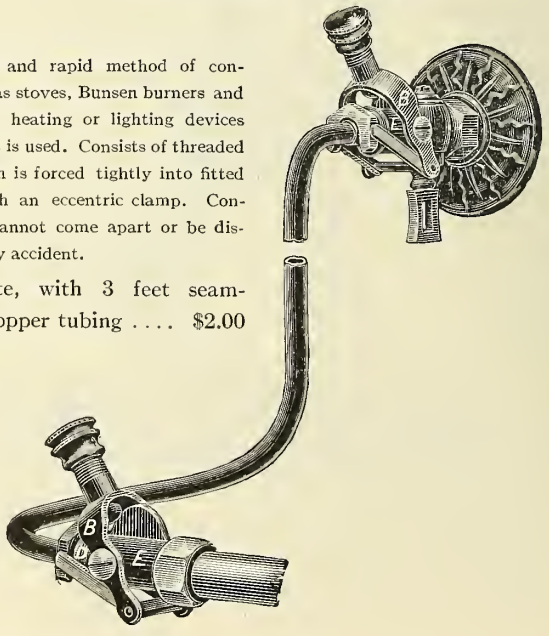
In lengths, feet.....	4	6	8	10	12	14
Complete with rubber ends, dozen.....	$5.60	7.75	9.95	12.00	14.15	16.25

Rapid Safety Gas Connection

With Copper Tubing

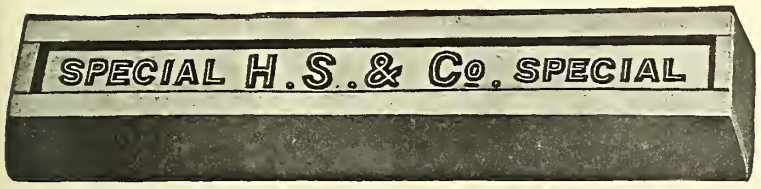
A safe and rapid method of connecting gas stoves, Bunsen burners and all other heating or lighting devices where gas is used. Consists of threaded cap which is forced tightly into fitted joint with an eccentric clamp. Connections cannot come apart or be dislodged by accident.

Complete, with 3 feet seamless copper tubing $2.00



Babbitt Metal

H. S. & Co. Special



A high grade Babbitt Metal, fully recommended; suitable for lining all machinery bearings. It is made after our own formula and we guarantee it to run absolutely uniform and to stand up under the most severe pressure. It can be remelted many times and with proper treatment will always pour freely; never crumbles, as inferior metals do. In bars of about three and one-half pounds.

Prices on application.



Has lowest frictional coefficient of any known metal; wears longer, runs cooler; absorbs less power; stands heavy pressures and high speeds.

Prices on application.

Directions for Pouring Babbitt Metal

1. Melt in a clean ladle or pot, and when hot enough to brown a white pine stick is best time to pour, and metal should be poured as promptly as possible, but if poured too cold will not flow freely.
2. Stir frequently, bringing metal up from bottom.
3. If left in a fluid state any length of time without stirring, the constituent metals will begin to separate into layers, the lighter metals coming to the top, the heavier ones sinking to the bottom, and if poured in that condition, the bearings will have soft spots (lead), which will squash out, and hard spots (antimony), which will cut the shaft, and where the metal contains graphite it will separate from the mass, thereby losing the value of that lubricant.
4. If a babbitt is poured around a cold mandrel it will produce a thin chill upon the surface of the bearing, and as this chill does not adhere very tenaciously to its comparatively soft backing, the grinding force of the shaft causes it to slough off in thin flakes. Heating the mandrel also burns off any moisture or grease which form gases that produce blow holes. Pouring a babbitt into a cold box checks its flow and produces a poor casting.
5. If a metal is peened before it becomes cool, it yields much more readily to the blow of the hammer, and there will be no danger of ever cracking metal.
6. As soon as a babbitt metal begins to change from a silvery to a yellowish tinge, it is an indication that a proper time is reached to check the heat, and in pouring metal any scum or oxide on surface should be held back and not be allowed to enter box.
7. Have your preparations all ready so that there will be no delay in pouring.
8. Hold ladle close to work to prevent air bubbles or chilling the metal.

Bar Tin

100 Per Cent Pure



Prices on application.

Solder

Bar



Market Half and Half.
Strictly Half and Half.

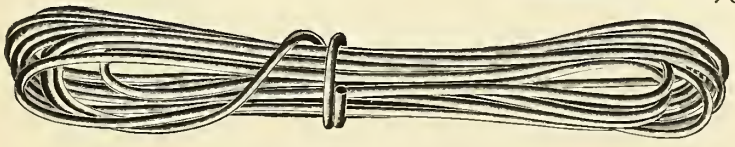
Prices on application.

Strip or Ribbon



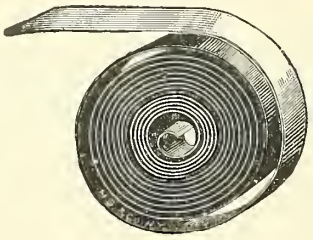
Prices on application.

Round Wire—⅛ Inch Diameter



Prices on application.

Silver Solder



We carry only a superior grade of Silver Solder and can supply in any quantity from one ounce up. It is packed in a neat brass box, each box containing one ounce. (In strips 7/8 inch wide, .004 inch thick.)

Prices on application.

Aluminum Solder

Rheinhold "Noflux"



Solders aluminum to aluminum
Prices on application.

Spelter Solder

No. 26. Extra Fine Grain

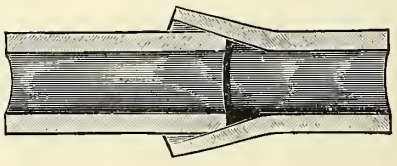
In case lots (50 pounds) } Prices on application.
In 10-pound lots }

No. 10. Gray (Quick Running)

In case lots (50 pounds) } Prices on application.
In 10-pound lots }

Tinol





Tinol is a complete solder in paste form. It is an alloy of tin and lead, finely granulated, then mixed with an oily flux, which gives it the consistency of soft paste.

Tinol is also made in hollow rods and wires, filled with the same oily flux, for use where this form is more convenient.

In using Tinol, no acid, rosin, or other flux is required. A thin coating of the paste is spread on the surface of the metal to be soldered, and then heated. The compound melts, the oily flux evaporates, and the solder hardens and adheres closely to the metal.

Easy Method of Soldering Lead Pipe with Tinol

One of the ends is spread open in the usual way, and the other end inserted. Then the space between is filled with Tinol paste, which is melted with the torch or iron.

Small cans, each	$ .25
Medium cans, each	.50
One pound cans, each	1.60
Sticks, each	.10

Bar Lead



Prices on application.

Pig Lead

Prices on application.

Shot

No. 5	In 25-pound bags, per pound	$ .10
	In less than 25-pound bags, per pound	.11
No. 7	In 25-pound bags, per pound	.10
	In less than 25-pound bags, per pound	.11

Can also furnish other sizes, and will quote prices upon receipt of quantity specifications.

Soldering Salts

Yager



Warranted to excel all other preparations for soldering tin, copper, brass, iron and steel. Is cheaper than acid and better than resin.

Is a dry salt in small bulk, and by simply adding a little water is instantly ready for use.

Is free from the disagreeable fumes and the injurious effects experienced by the use of acid.

Leaves the metal clean and bright, and causes the solder to flow more evenly.

Does not injure the irons like acid, and is unexcelled for tinning them.

Recommended for lead burning to prevent the lead from oxidizing in front of the flame of blow pipe.

Can be used on damp surfaces.

To solder steel, the metal should be heated enough to melt the solder. Iron must have clean surface, free from scale, rust and dirt. Makes a tight joint which will not heat up or corrode under the electrical current. The best flux for commutator windings. Gives a low resistance that saves current.

We are prepared to name very moderate prices for quantities.

In ½-pound bottles, each	$ .30
In 1-pound bottles, each	.40
In 5-pound bottles, each	2.00
In 10-pound bottles, each	4.00
In stick form, dozen	3.00

Caution—To preserve the Salts in granular form, it must not be exposed to strong sunlight or kept in a heated place, as exposure will form vapor between Salts and cork. This, condensing, dissolves the Salts which will then solidify.

Soldering Paste

Yagers

Same as salts described above but in paste form, especially adapted for electrical work.



2-ounce cans, each	$ .15
½-pound cans, each	.50
1-pound cans, each	.80
5-pound cans, each	3.70

Nokorode

Absolutely non-corrosive. Will solder all metals except aluminum—no work too delicate and none too rough. Always ready and convenient.

Case lots contain 3 dozen 2-ounce, or six 1-pound cans.

2-ounce cans, less than case lots, each	$ .25
2-ounce cans, 3 dozen (one case), each	2.00
1-pound cans, ½ dozen (one case), pound	1.00
10-pound cans, any quantity, pound	1.00
25-pound and 50-pound cans, pound	.90

Brazing Powder

Laffitte

Advantageously replaces borax—never swelling or blistering. One pound of this powder does the work of four pounds of borax.

The Brazing Powder must be mixed with the Spelter, according to the kind of work to be done; about 15 pounds of Powder to 85 pounds of Spelter. This mixture is used dry, by preference, or in the form of a paste, lightly moistening the mass according to requirements. The completed braze is absolutely homogeneous and there is no trace of oxides which are so prejudicial to good brazing.

Packed in cans containing 2½ pounds. Per pound $ .50

Welding Compound

Cherry Heat

Welds all kinds of steels as easily as iron. Iron to iron, steel to steel, malleable iron to steel.



Directions for Using

To weld tire—After the tire is scarfed and ready to weld (to get best results), apply the compound between the lap and on top; if not convenient to apply between the lap, then apply on top only.

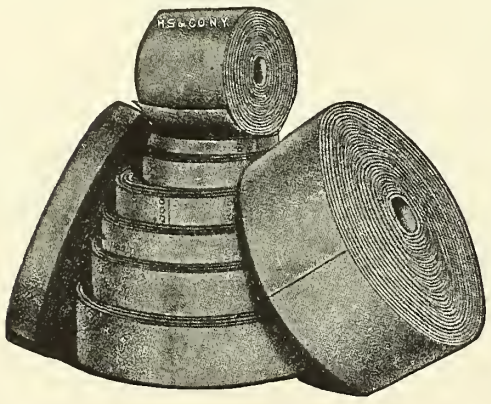
Axles and Springs and all work that is in separate pieces should be heated separately and not fastened together, as is customary when using borax.

The pieces to be welded, after being scarfed, should be placed in fire and heated thoroughly (not hot enough to burn the steel), then apply the compound so that it will come between the lap when the weld is made. Keep the work lying in the fire with compound up until at a welding heat, then turn work over about five seconds before taking from the fire.

Important—When welding steel that is in separate pieces it is very important to keep the work lying in the fire with compound up until at a welding heat, then turn work over about five seconds before taking from the fire. If the compound is turned down to the blast for the entire heat it will become injured and will not make the weld so readily. In 5 pound boxes, pound $ .14

Leather Belting

Flat



Adopted November 21, 1906

Width Inches	Single Per Foot	Double Per Foot	Width Inches	Single Per Foot	Double Per Foot
½	$ .12	$ .24	14	$3.36	$6.72
⅝	.15	.30	15	3.60	7.20
¾	.18	.36	16	3.84	7.68
⅞	.21	.42	17	4.08	8.16
1	.24	.48	18	4.32	8.64
1¼	.30	.60	19	4.56	9.12
1½	.36	.72	20	4.80	9.60
1¾	.42	.84	21	5.04	10.08
2	.48	.96	22	5.28	10.56
2¼	.54	1.08	23	5.52	11.04
2½	.60	1.20	24	5.76	11.52
2¾	.66	1.32	25	6.00	12.00
3	.72	1.44	26	6.24	12.48
3¼	.78	1.56	27	6.48	12.96
3½	.84	1.68	28	6.72	13.44
3¾	.90	1.80	30	7.20	14.40
4	.96	1.92	32	7.68	15.36
4½	1.08	2.16	34	8.16	16.32
5	1.20	2.40	36	8.64	17.28
5½	1.32	2.64	40	9.60	19.20
6	1.44	2.88	44	10.56	21.12
6½	1.56	3.12	48	11.52	23.04
7	1.68	3.36	52	12.48	24.96
8	1.92	3.84	56	13.44	26.88
9	2.16	4.32	60	14.40	28.80
10	2.40	4.80	64	15.36	30.72
11	2.64	5.28	68	16.32	32.64
12	2.88	5.76	72	17.28	34.56
13	3.12	6.24			

Cat Gut

In rolls of 20 running feet. Suitable for use as belting, etc., on light machines, as dentists' grinders, etc.

Number is Brown & Sharpe gauge.

Number	8	9	10	11	12
Per roll	$1.75	1.40	1.20	.90	.70

Solid Round



Diameter, inch	⅛	3/16	¼	5/16	⅜
Per 100 feet	$3.00	3.80	5.75	8.70	15.50

Belt Cement

Le Page

This cement is a blend of the very best glue gelatine properly mixed with high grade fish glue, to secure the greatest penetration, strength and flexibility. With its use, the engineer can make as good a repair as the expert belt maker.

Packed in 1 and 2-pound cans; complete directions accompany each package.

In 1-pound cans, per dozen cans	$6.00
In 2-pound cans, per dozen cans	12.00

Bar Belt Dressing

Stephenson



Stephenson Bar Belt Dressing comes in one-pound solid sticks. Is applied by holding the bar against the inner surface of the moving belt, the friction effecting an even distribution with no waste. Leaves the belts soft and pliable.

In ordering, specify Red Label for Leather Belts, and Green Label for Rubber and Canvas Belts, per pound ..... $ .40

Belt Lacing



Cut Rawhide

¼ inch, per 100 feet	$1.25
5/16 inch, per 100 feet	1.50
⅜ inch, per 100 feet	1.75
7/16 inch, per 100 feet	2.00
½ inch, per 100 feet	2.25
⅝ inch, per 100 feet	3.00
¾ inch, per 100 feet	3.75

Rawhide Lace Leather

By the side (about 20 square feet), per square foot ..... $ .35



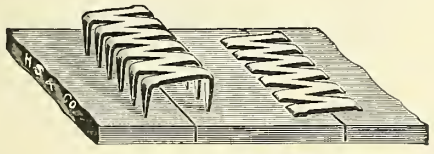
Kerr Improved Metallic

This Lacing makes a flexible joint that is no thicker than any other part of the belt, conforms itself perfectly to the pulley and prevents any lost contact of the belt to the pulley where it is joined. Belts may be made up of a number of small pieces (as many as there are laps in a belt), and each joint will round the pulley without any uneven motion, and as noiseless as the lap, as there is no overdraw or extra strain on the belt at the joint while rounding the pulley.

No. 00	For light single belts up to 1 inch. Per 100 feet	$2.00
No. 0	For single belts under 3 inches wide. Per 100 feet	2.00
No. 1	For single belts 3 to 5 inches wide. Per 100 feet	2.00
No. 2	For wide single and narrow double belts. Per 100 feet	2.00
No. 3	For all double belts above 6 inches wide. Per 100 feet	2.00

Bristols Steel

Staggered Points



Ready to Apply. Finished Joint

Packed regularly in assorted widths, but will also be furnished, packed to order, all one width, if so specified. Each box contains enough to lace 100 inches in width of belt.

Thickness and Kind of Belt

No. 1100 For all kinds of belts from 1/16 to ⅛ inch thick. Split leather and lightest rubber and cotton belts. Packed in assorted widths. List price per box 100 inches ..... $ .90

No. 110 For all kinds of belts from ⅛ to 3/32 inch thick. Split leather and light rubber and cotton belts. Packed in assorted widths. List price per box 100 inches 1.00

No. 110½ For all kinds of belts from 3/32 to ¼ inch thick. Ordinary single leather and two-ply rubber and cotton belts on small pulleys. Packed in assorted widths. List price per box 100 inches 1.25

No. 111 For all kinds of belts from 3/16 to ¼ inch thick. Ordinary single leather belts and three-ply rubber and cotton belts. Packed in assorted widths or regular widths from 1 inch to 3 inches. List price per box 100 inches $1.50

No. 112 For all kinds of belts from ¼ to 5/16 inch thick. Extra heavy and wide single leather belts and four-ply rubber and cotton belts. Packed in assorted widths. List price per box 100 inches 2.00

No. 113 For all kinds of belts from 5/16 to ⅜ inch thick. Double leather belts and five-ply rubber and cotton belts. Packed in assorted widths. List price per box 100 inches 2.50

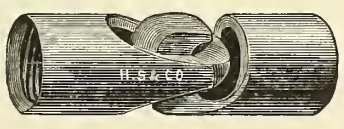
No. 114 For all kinds of belts from ⅜ to 7/16 inch thick. Heavy double leather belts and six-ply rubber and cotton belts. Packed in assorted widths. List price per box 100 inches .. 3.00

No. 115 For all kinds of belts from 7/16 to 9/16 inch thick. Extra heavy double leather belts and seven-ply rubber and cotton belts. Packed in assorted widths. List price per 100 inches. 3.50

No. 117 For all kinds of belts from ½ to ⅝ inch thick. Conveyor belts and extra double heavy rubber and cotton belts. Packed in assorted widths. List price per box 100 inches ... 4.95

No. 119 For all kinds of belts from ⅝ to 13/16 inch thick. Ten-ply and extra heavy conveyor belts. Packed in assorted widths. List price per box 100 inches 6.05

Steel Belt Couplings

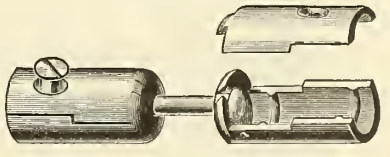


Measurements given are outside diameters

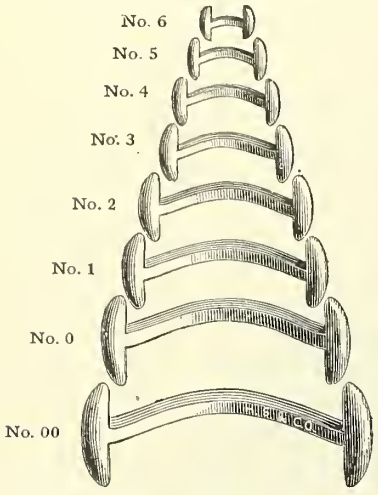
Inch	⅛	3/32	3/16	¼	5/16	⅜	9/16	⅝	11/16	¾	⅞
Dozen	$3.00	3.00	2.50	2.00	2.50	3.00	5.00	6.00	7.50	9.00	13.00

Rope Couplings

Malleable Iron



For ⅝-inch rope, dozen $3.20
For ¾-inch rope, dozen 3.50



Belt Studs

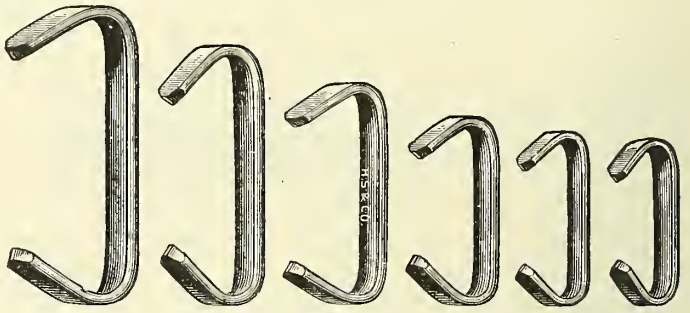
Blake Improved

Shaped so that each head has a retaining or holding surface on the belt of ⅜ to ⅝ of an inch, so does not pull at ends of belt or tear out. Put up in boxes of 100, with full directions on box. No. 00 is for the heaviest double leather and 5 or 6 ply rubber belt; No. 6 is for the thinnest sewing machine belt which needs to run very smoothly. Intermediate sizes in proportion.

Numbers	00	0	1	2	3	4	5	6
Per 100	$2.50	2.00	1.65	1.25	.90	.80	.70	.60

Pointed Belt Hooks

Full Size Cuts



Bright Steel

Number	1	2	3	4	5	6	7
Per 100	$3.00	2.00	1.60	1.40	1.10	.85	.60
Number	8	9	10	11	12	13	14	15
Per 100	$ .50	.40	.35	.30	.28	.26	.24	.20



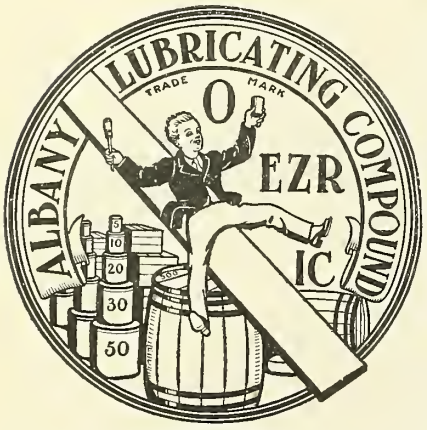


Sewing Machine Belt Hooks

Style B

No. 15 for $\frac{5}{16}$ inch belting, per 1000..... $2.50
No. 16 for ¼ inch belting, per 1000..... 2.25

Albany Grease



This Grease will not drip nor gum. Prevents hot boxes and will not freeze. All grades and numbers are the same quality—the differences being in the consistency—to make them suitable for various purposes and climates.

No. 0 is very soft. For use in extreme cold weather and on exposed journals.

No. 1 is harder than No. 0, and is for use on ordinary journals in cold weather, or on very cold or slow running journals, also elevator slides.

No. 2 is harder than No. 1, and is the grade ordinarily used in moderate and warm weather and general shafting.

No. 3 is adapted to the use of all stationary, marine and tug-boat engines; also shafting in warm weather, dynamos, general electrical and high-speed machinery.

No. X is a grade of extra hardness, which will lubricate journals with entire satisfaction, when no oil or lubricant of any other kind would work.

No. XX is a grade of extra hardness, and made to stand a higher degree of melting point than the X grade.

No. XXX is a grade made for unusual conditions of circumstances. Very hard, and will stand a higher degree of melting point than the XX grade.

In cans containing 5–10–25 pounds, per pound	$ .20
In cans containing 50 pounds	.18
In kegs containing about 125 pounds, per pound	.14
In half-barrels containing about 200 pounds, per pound	.13
In barrels containing about 400 pounds, per pound	.12

Waterproof Graphite Grease

Dixon



In all respects a high grade lubricant for loose, open bearings, gears, slides, etc. It possesses great adhesiveness and tenacity and will not be thrown from gears, chains, wire ropes, sprocket chains and the like, traveling at a high speed.

It contains no soluble ingredients and cannot be washed off by fresh salt or alkaline water or by acid. These properties highly commend its use upon wire ropes and chains, gears, cranes, derricks, dredges, steam shovels, pile drivers, winches, hoisting engines, quarrying and mining machinery, railroad switch and signal mechanism and every sort of machinery exposed to water or the weather.

5-pound tin can (10 in case), per pound	$ .18
10-pound firkin (6 in case), per pound	.15
25-pound firkin, per pound	.14
50-pound keg, per pound	.13
100-pound keg, per pound	.12
Half-barrel, per pound	.11
Barrel of about 400 pounds, per pound	.10

Flake Graphite

Dixon



Flake Graphite has many valuable applications as a lubricant for cylinders, valves and bearings, either alone or mixed with oils and greases. It is also nearly indispensable to engineers and mechanics for coating gaskets and packing, for pipe-fitting, etc.

Flake Graphite is the standard dry lubricant used in factories, engine rooms, locomotive and railroad work-shops, etc.

It coats all bearing surfaces, fills up all roughness or abrasions, and soon has the surfaces so smooth and shiny that they run together with almost no friction or heating.

Will lubricate wood as well as metal, and its uses are almost endless.

632	1-pound paper can (36 in case), per pound	$ .25
633	5-pound tin can (10 in case), per pound	.20
634	10-pound tin can (5 in case), per pound	.20
644	25-pound box, per pound	.15
645	50-pound box, per pound	.15
646	100-pound keg, per pound	.14½
646½	200-pound keg, per pound	.14
647	400-pound barrel, per pound	.12

Glue

Genuine Peter Cooper

All Peter Cooper glue is carried in flake. Numbers 1¼, 1½ and 1⅝ are also carried ground.

Number	A Extra	1 Extra	1	1x	1¼
Per pound	$ .22	.19	.18	.16½	.16

Number	1⅜	1½	1⅝	1¾	1⅞	2
Per pound	$ .15	.14	.13	.12	.11½	.10½

Coignet

Imported French

Star Extra, pound	$ .22
Coignet Extra, pound	.19

Noodle Shape

No. D B 1, pound	$ .23
No. 64 N	.18

Le Page Liquid



For manufacturers, carpenters and mechanics who require a first quality glue on large work.

In Bottles

1 ounce bottles, 1 dozen in box, gross $12.75

In Self-sealing Collapsible Tubes

Small size, 1 dozen in box, gross ... $12.75

In Tin Cans

Half gill, 1 dozen in box, dozen	$1.65
One gill, 1 dozen in box, dozen	2.20

Cement

Ever-Ready

Is always ready for use, no heating being necessary and will not harden or deteriorate in the tube. Will mend glass, china, metal, wood, rubber, marble, ivory, leather, jewelry, paper mache, etc., and after drying will stand in any temperature—extreme heat or cold, and is not affected by water.

In small tubes, per dozen	$ .90
½ pint cans, each	.45
1 pint cans, each	.60
1 quart cans, each	1.15
1 gallon cans, each	4.15

Tin Cans for Mechanics and Manufacturers

Half pints, 2 dozen in case, per dozen	$3.25
Pints, 1 dozen in case, per dozen	5.40
Quarts, 1 dozen in case, per dozen	9.50
Half gallons, ½ dozen in case, per dozen	18.50
Gallons, ½ dozen in case, per dozen	36.00
5 gallon cans, boxed, per gallon	2.80

Iron Cements

Smooth-On

In 1, 5, 10 and 25 Pound Tins

No. 1 is Quick Hardening

No. 2 is Slow Hardening and Hydraulic

Made in powder form for repairing leaks or breaks in castings and for making connections in steam or hydraulic work, withstands fire, water, steam or petroleum and very high pressures. Must be applied as paste or putty to cold metal.

Pound ..... $ .50

No. 3 for Engineers

Prepared in paste form to stop leaks on all seams of boilers or tanks; also for repairing fine cracks; making screw thread joints and for boiler patching, in combination with No. 1. Applied as paint, paste or putty to hot or cold metal.

Pound ..... $ .50

No. 4, Fine-Grained, for Foundry Men

In powder form, suitable for repairing blemishes blowholes or defects in fine grained iron or steel castings. Applied as a putty to cold metal.

Pound ..... $ .50

No. 4 B, Coarse Grained, for Foundry Men

Same as No. 4A, except for coarse-grained castings.

Pound ..... $ .50

Carborundum Grains and Powders



Produced by crushing and grinding the crude crystals, washing and separating by sieves into various sizes. These are numbered, the same as emery, in accordance with the number of threads per lineal inch of the sieve through which they have passed. Made in following numbers: 6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 40, 50, 60, 70, 80, 90, 100, 120, 150, 180, 220.

Powders are the grains too fine to size by ordinary sieving. They are graded by floating in water.

F, FF, FFF powders are graded in a stream of flowing water. They include in their numbers all grades of fineness from F, the next finest after No. 220, to FFF, which contains the very finest dust.

List

In 5-pound tin cans, per pound ..... $ .25

Washington Mills Emery

We are agents, and are prepared to quote quantity prices upon receipt of specifications.

Number	4 to 46	54 to 220	F and FF	Crocus
In kegs of about 350 pounds, per pound	$. 5½	.06	.04	
In ½ kegs of about 150 pounds, per pound	.05¾	.06¼	.04¼	
In ¼ kegs of about 90 pounds, per pound	.06	.06½	.04½	
In 10 pound tin cans	.09	.09	.07½	.09

Valve Grinding Compound



Carborundum

Is far superior to powdered glass or emery for all classes of valve-grinding, Carborundum being faster cutting, more uniform, harder and sharper than any other materials used for such work.

The coarser compound is used first in grinding the valve. It quickly removes all pits or masses of any foreign matter. The finer compound is then used in giving the valve seat a perfectly true, polished surface.

One-pound tin Carborundum Compound, coarse or fine	$ .50
Three-pound tin Carborundum Compound, coarse or fine	1.25
Five-pound tin Carborundum Compound, coarse or fine	2.00
Tubes Carborundum Compound, coarse or fine	.25

Wood Cements

(Stick Shellac)

The deterioration of American wood has made these Wood Cements in sticks practically indispensable.

These cements will not chip out or soften. Surfaces where blemishes have been remedied with our Wood Cements can be sanded, pumiced or polished, showing no defects in the original wood.

Light Oak, Antique Oak, Mahogany, Walnut, Ebony, Cherry, Mission.

Dozen sticks	$ .90
Transparent, dozen sticks	1.00

Parafine Wax

White.	10 pound lots, pound	$ .15
White.	Less than 10 pound lots, pound	.18

Polishing Wax

Genuine "Butcher"

Genuine "Butcher" is excellent for polishing floors, interior woodwork and furniture and will give equally good results when used on surfaces that have been treated with shellac or varnish.

In one-pound cans, per can	$ .55

Pure Beeswax

Yellow.	Full cakes, 1 to 4 pounds, pound	$ .40
Yellow.	Less than full cakes, pound	.44

Ceresine Wax

Orange.	Full cake, 15 to 20 pounds, pound	$ .18
Orange.	Less than full cake, pound	.22

Rubbing and Polishing Felts

Mexican White, Hard

36x36 inches, ¼, ⅜, ½ and ⅝ inch thick, pound	$1.45

Mexican Gray, Hard

36x36 inch, ¼, ⅜, ½ and ⅝ inch thick, pound	1.25

Chamois Skins

No. B	Small size, each	$ .80
No. C	Medium size, each	1.00
No. D	Large size, each	1.20

In kips (30 skins), prices quoted on application.

Furniture Polish

"Ching Fow"

"Ching Fow" Furniture Polish is a superior renovator that contains no varnish and will not gum. It quickly restores the polish on old furniture and dries immediately after using. It removes finger marks, scratches, fly specks, etc. Full directions for applying accompany each bottle.

Eight-ounce bottles, dozen	$2.25
Half-gallon bottles, gallon	2.00

Hy-Pol

After years of experience Hy-Pol was placed on the market. A most perfect polish for furniture, pianos, floors, interior woodwork, automobiles, carriages, all varnished or waxed surfaces and all kinds of leather.

It is non-acid and may be used without fear of injury to the finest piano finish.

It brings a brilliant lustre to the finish, and is a perfect solvent for dirt and grease.

List	Each
One-gallon cans	$2.75
One-half-gallon cans	1.50
One-fourth-gallon cans	1.00
Twelve-ounce cans	.50
Five-ounce cans	.30

Paint and Varnish Remover

Ad-el-ite

This wonderful material will take off any thickness of paint, varnish, shellac or enamel, clean to the bare wood almost instantly and leave the wood in perfect condition for refinishing.

Ad-el-ite Remover is free of acids, alkalies or water, and will positively not bleach or raise the grain of the finest wood or veneer. It is the only remover manufactured from imported material, which is the principal reason why it possesses greater solvent properties than any other brand.

A practical test will demonstrate that it will take off more old finish per gallon and perform its mission cheaper and more satisfactorily than any other remover. Ad-el-ite Remover is also strongly recommended for cleaning old paint brushes, painted glass surfaces and for softening old putty.

List	Each
One-gallon cans	$2.50
Half-gallon cans	1.35
Quarter-gallon cans	.70

Rubbing Cloth

54 inches Wide, $\frac{3}{16}$ inch Thick

No. 183	Gray, about 96 ounces to yard	$5.50
No. 184	Gray, about 104 ounces to yard	6.00

Where any particular quantity, finish or color is to be matched, it is necessary to submit a fair-sized sample (about 4 inches square) for examination and comparison.

We are prepared to furnish a great variety of Felts and Cloths and will quote prices upon receipt of samples.

Cotton Waste

We carry only the best qualities of white cotton waste. Prices on application.

Rust Preventive

Never-Rust

Never-Rust contains no acid or harmful ingredients. It is easily applied and removed. It is not inflammable and does not burn. It never gets hard, gums or becomes rancid. Rain, sun or dampness has no effect on metal coated with Never-Rust.

The merits of Never-Rust are well known among manufacturers of large and small machinery, polished bars and rod steels, shafting and tools of all description and is invaluable in preventing tarnish or corrosion on brass and nickel, polished surfaces, etc.

Barrels containing about 360 pounds, per pound	$ .07½
Half barrels containing about 200 pounds, per pound	.09
Cans containing about 50 pounds, per pound	.12½
Cans containing about 25 pounds, per pound	.15
Cans containing about 10 pounds, per can	1.75
Cans containing about 5 pounds, per can	1.00

Polishing Compounds

Tripoli No. 1 XXX (T-5), per pound	$ .10
Red Rouge (SSS), per pound	.20

Metal Polishes

For Brass, Nickel, Copper, etc.

Borsums Putz Liquid

Color, Red

½ pint cans, per dozen cans	$2.00
Gallon cans, per gallon	2.00

Mexoline Liquid

Color, White

½ pint cans, per dozen cans	$1.00
Gallon cans, per gallon	1.00

Universal Putz—Pomade or Paste

Color, Red

Household, per dozen cans	$ .50
½ pound cans, per dozen cans	1.60
Pound cans, per dozen cans	3.00

United States Paste

Color, Gray

3 oz. cans, per dozen cans	.60
½-pound cans, per dozen cans	1.75

Argentala Paste

Color, White

A high grade polish for silver

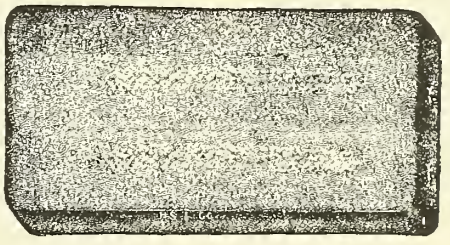
In glass jars, per dozen	$2.50

Liquid "B," the medium grade in liquid form, is used for small fine tools of all kinds, also used for piano wire.

Paste "X" (medium grade in paste form) is used extensively by cutlery, saw, tool, sewing machine manufacturers, etc. In fact for everything that is packed in boxes, or stored in a warehouse.

Steel Polish

H. S. & Co.



No. 1045 For removing rust from steel. Used as an ordinary rubber eraser, dozen $1.00

Lubricating Oils

Pike

Pike Oil is perfectly pure, acidless, and non-drying. It will not gum, nor will it corrode the most highly polished metal. It is an oil that can be recommended with greatest safety for all purposes where a thin, pure oil is required as a lubricant or rust preventive. It is also used with a high degree of success for cleaning and polishing all kinds of wood and metal surfaces.

May be used for cleaning, polishing or lubricating any of the following articles:

Typewriters	Reels	Music Boxes
Guns	Sewing Machines	Adding Machines
Clocks	Knitting Machines	Addressing Machines
Bicycles	Coffee Mills	Musical Instruments
Revolvers	Golf Clubs	Tools of all kinds
Razors	Skates	Furniture
Razor Hones	Locks	Metal Surfaces
Cutlery	Hinges	Apple Parers
Oilstones	Phonographs	Potato Parers
	Monotype Machines	Linotype Machines

Two-ounce bottles, per dozen	$ 1.20
Six-ounce bottles, per dozen	3.00
Six-ounce cans, per dozen	3.00

Three in One

A perfect lubricant and rust preventive for the finest and most delicate mechanism, instruments, cutlery, etc. A polish and cleaner for all smooth surfaces, such as glass, tile, metal, wood, etc. Excellent for use on hones and razor strops; restoring worn typewriter ribbons, etc.

Small size bottle containing 1 ounce, each	$ .10
Large size bottle containing 3 ounces, each	.25
Factory size bottle containing 8 ounces, each	.50
Handy oil can containing 3½ ounces, each	.25



Boxes contain about 5 pounds each

Self-Lubricating Packing

Palmetto

Designed especially to meet the exacting conditions of high pressure super heated steam, air and ammonia pressures. It is made of a material that cannot char or burn and, owing to our peculiar method of lubrication, it does not get hard in service.

In Sizes

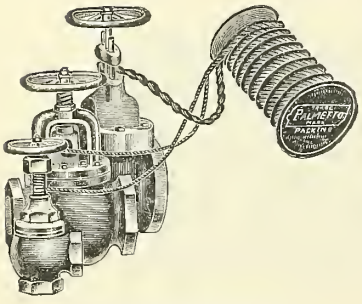
$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $\frac{15}{16}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$, $1\frac{5}{8}$, $1\frac{3}{4}$, $1\frac{7}{8}$ and 2 inches.

Square or Round, Per Pound, $1.00

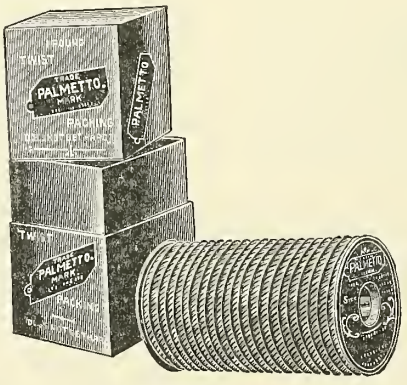
Twist Packing

Palmetto

An Ideal Packing for Globe Valves, Blow-off Cocks, Injectors, etc.



On One Pound Spools



Owing to the nature of the materials of which Palmetto Twist is made it cannot char or burn, and its perfect lubrication prevents it from becoming hard. Has high tensile strength and is far more economical and satisfactory than Asbestos Wick or Braid.

Can be Unstranded and Used for any Size

Size, inch	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
To one pound, feet	120	75	50

Per Pound, $1.00

Pump and Throttle Packing

Palmetto

For Railroad Service

Air Pump Packing

For Westinghouse Pumps



For N.Y. Duplex Pumps

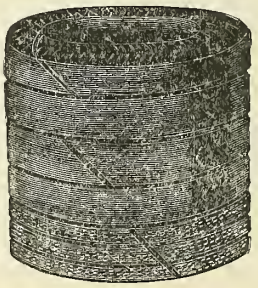


In sets ready to apply

For 8 and 9½-inch pumps, per set	$ .44
For 11-inch pumps, per set	.88
8½-inch Cross Compound per set	1.76
For Nos. 1 and 2 pumps, per set	$ .88
For No. 5 pump, per set	2.20
For No. 6 pump, per set	.88

Throttle Packing

High Pressure



Cut in sets ready to apply to locomotive throttle valves.
Designed to meet the exacting conditions of locomotive throttle service.

Per Pound, $2.00

Cotton Wick

Patrol, in 2 ounce balls, per pound ..... $ .30

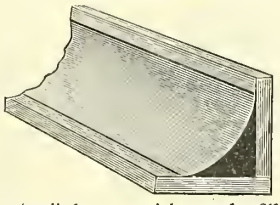
Pattern Shop Supplies

Flexible Leather Fillet-Belding Patent

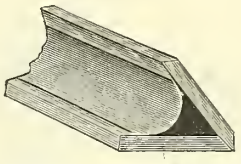
For the Pattern Shop and Foundry



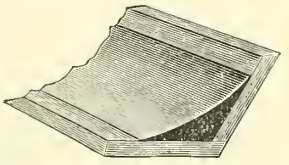
Exact shape of fillet when shipped. Being cut with special designed machines, each piece is absolutely uniform in size.



Applied as a right angle fillet. When applied in this manner the two curved sides become straight and the flat side becomes a perfect arc of a circle.



Applied as an acute angle fillet. Fits perfectly and is quickly, easily and accurately attached.



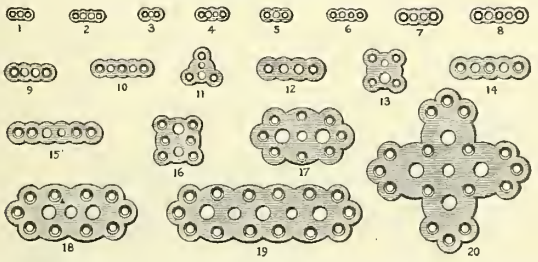
Applied as an obtuse angle fillet. Fits the angle perfectly and the fine feather edges adhere tightly to the pattern.

Almost all patterns require a fillet of some kind, and this flexible leather is so designed and cut that it may be applied to single, compound or irregular curves.

Number	1	2	3	4	5	6	8	10	12	14	16
Angle measure, inches	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Width of face (flat), inch.	$\frac{3}{32}$	$\frac{3}{16}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{31}{32}$	$1\frac{5}{32}$	$1\frac{3}{8}$	$1\frac{9}{16}$
Per 100 feet	$2.00	2.00	3.00	4.00	5.00	6.00	8.00	10.00	12.00	14.00	16.00

Rapping Plates

Malleable Iron



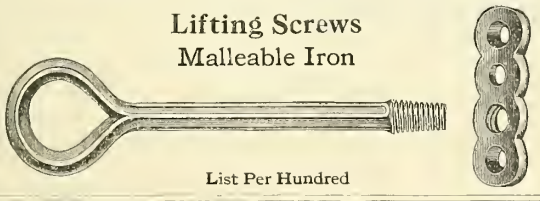
These Rapping Plates are made of best quality malleable iron; are smooth, with sharp and clean-cut edges. Every plate is a perfect casting; none warped out of shape. Provided with rapping holes, tapped draw and countersunk screw holes. Edges tapered. All gates ground off and finished ready to set into pattern.

List Per Hundred

Number	Size Inches		Number	Size Inches	
1	$\frac{5}{8}$x1$\frac{1}{2}$	$2.50	11	2$\frac{1}{4}$x2$\frac{1}{4}$	$5.50
2	$\frac{5}{8}$x2	3.00	12	1$\frac{1}{4}$x3$\frac{3}{4}$	8.00
3	$\frac{3}{4}$x1$\frac{1}{4}$	2.50	13	2$\frac{3}{8}$x2$\frac{3}{8}$	8.00
4	$\frac{3}{4}$x1$\frac{3}{4}$	3.00	14	1$\frac{1}{4}$x4$\frac{1}{2}$	9.00
5	$\frac{3}{4}$x1$\frac{3}{4}$	3.00	15	1$\frac{1}{4}$x5$\frac{3}{8}$	12.00
6	$\frac{3}{4}$x2$\frac{1}{4}$	3.50	16	2$\frac{3}{4}$x2$\frac{3}{4}$	12.00
7	$\frac{7}{8}$x2$\frac{5}{8}$	4.00	17	3 x5$\frac{1}{2}$	20.00
8	$\frac{7}{8}$x3$\frac{1}{4}$	4.50	18	3 x7$\frac{1}{4}$	30.00
9	1 x3	5.00	19	3 x10$\frac{3}{4}$	40.00
10	1 x3$\frac{1}{2}$	5.50	20	7 x 7	55.00

Lifting Screws

Malleable Iron



List Per Hundred

Size Inch	Length Inches	Tapped for Plates	
$\frac{3}{8}$	6	Nos. 1 to 6 inclusive	$15.00
$\frac{1}{2}$	7	Nos. 7 to 11 inclusive	18.00
$\frac{5}{8}$	8	Nos. 12 to 17 inclusive	20.00
$\frac{3}{4}$	9	Nos. 18 to 20 inclusive	25.00

White Metal Letters and Figures

Sharp Face Gothic



To be fastened to patterns with a solution of best quality gum shellac.

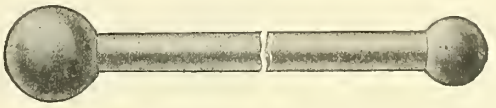
The surface to which they are to be applied should first be shellaced and allowed to dry. Then place letters in position, properly spaced, and apply to face of letters for a moment a warm soldering iron, which melts the shellac. When the warm iron is lifted the shellac dries and the letters adhere tightly to pattern. Do this carefully and the letters will need no shifting after once arranged. Avoid overheating the soldering iron. Apply it to letters but a few seconds to avoid melting them.

List Per Hundred

$\frac{3}{16}$-inch	$2.00	$\frac{3}{4}$-inch	$5.00
$\frac{1}{4}$-inch	2.00	$\frac{7}{8}$-inch	6.00
$\frac{5}{16}$-inch	2.00	1 -inch	7.00
$\frac{3}{8}$-inch	2.50	1$\frac{1}{4}$-inch	10.00
$\frac{1}{2}$-inch	3.00	1$\frac{1}{2}$-inch	15.00
$\frac{5}{8}$-inch	4.00		

Face measurements, center to center.

Fillet Tools



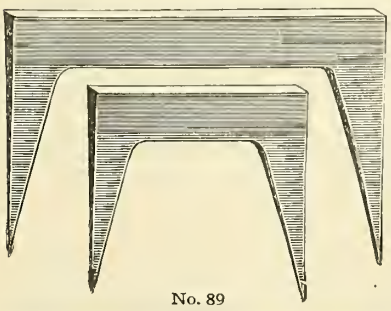
For applying leather fillet. Made of steel, highly polished. Complete set consists of four tools (Nos. 1, 2, 3, 4), suitable for applying all sizes of leather fillet.

List

Order by Number	For Applying Leather Fillet	Length Inches	Each
No. 1	Nos. 1 and 2	6	$ .15
No. 2	Nos. 3 and 4	6$\frac{1}{2}$	.30
No. 3	Nos. 5 and 6	7	.45
No. 4	Nos. 8 and larger	8	.60

Pinch Dogs

Forged From Bar Steel



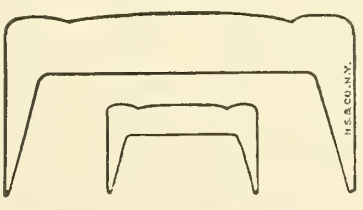
No. 89

For pattern and cabinet makers. Corners over the legs are square, making easy driving.

Number	Size of Steel Inch	Length Inches	Dozen
00	$\frac{3}{16}$	$\frac{3}{4}$	$2.00
1	$\frac{1}{4}$	1$\frac{1}{4}$	1.50
2	$\frac{1}{4}$	2	2.00
3	$\frac{5}{16}$	2$\frac{3}{4}$	2.50
4	$\frac{5}{16}$	3	3.00

Intermediate sizes take price of next larger size.

Acme

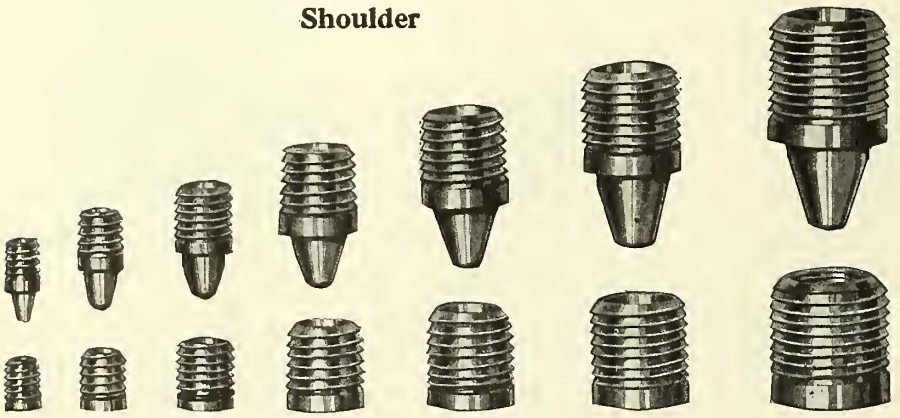


These Dogs are rough, case hardened and exceptionally low in cost. They pinch hard.

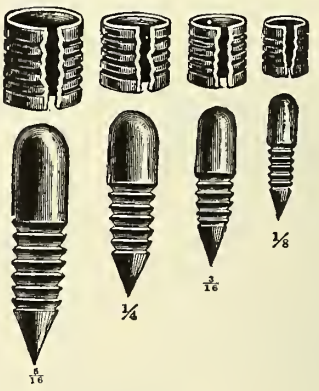
Size	$\frac{3}{4}$	1	1$\frac{1}{2}$	2	2$\frac{1}{2}$	3	3$\frac{1}{2}$	4	5	6
Dozen	$ .60	.80	1.00	1.20	1.60	2.20	2.80	3.60	4.60	6.00

Brass Dowels

Shoulder



Peg and Tube



Per Gross

Diameter, inch	1/8	3/16	1/4	5/16
Gross	$2.50	3.00	3.50	4.50

The sockets in the above cut are shown reversed in order to illustrate the thread to better advantage.

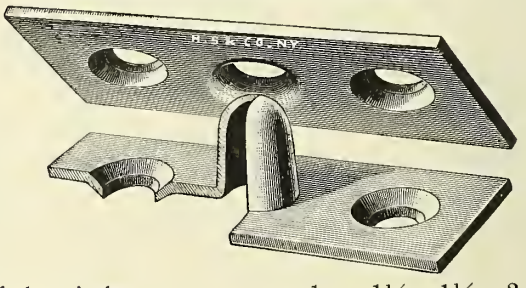
Order by Number

Number	Diameter of Pin Inch	Size of Bit Inch	Per Hundred Pairs
1	1/8	3/16	$2.50
1½	3/16	1/4	3.00
2	1/4	5/16	3.50
3	5/16	7/16	5.50
3¼	3/8	9/16	7.00
4	7/16	5/8	8.00
5	1/2	11/16	11.00

Are made with a special screw or ratchet thread, slightly tapered toward the end and are easily withdrawn from the pattern whenever necessary. Also made with more bearing surface than formerly, allowing the dowel to fit accurately, although one or both of the different parts are accidently driven below the surface of the pattern. Our dowels are **close fitting**, a feature of the utmost importance and without which they are of little value for the purpose for which they were intended. As the different parts fit correctly they are of necessity interchangeable and also accurately centered.

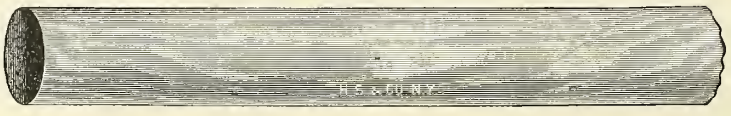
Plate

Illustration is full size of the 2½-inch plate.



Length of plate, inches	1	1¼	1½	2	2½
Per gross	$5.00	5.75	6.50	10.00	15.00

Wood Dowels



Genuine white birch and maple, we carry a large stock and can ship promptly

List Per 1000

Diameter Inches	Quantity in a Bundle	Approximate Weight per 1000 of 36-inch Birch Pounds	Smooth White Birch 18-inch	Smooth White Birch 24-inch	Smooth White Birch 30-inch	Smooth White Birch 36-inch	Smooth White Birch 42-inch	Smooth White Birch 48-inch	Grooved White Birch 36-inch	Smooth Maple 42-inch	Smooth Maple 48-inch
3–16	1,000	26	$3.70	$5.00	$6.80	**$8.40**	$9.60	$11.00			
1–4	500	48	3.70	5.00	6.80	**8.40**	9.60	11.00	....	**$15.75**	
5–16	500	70	4.00	5.30	7.40	**9.20**	10.40	11.80	....	**18.30**	
3–8	200	100	4.60	6.10	**8.90**	**10.70**	**12.60**	**14.30**	**$12.80**	**21.50**	**$27.00**
7–16	200	135	5.20	6.80	**10.20**	**12.20**	**14.20**	15.20	**14.60**	**24.70**	
1–2	200	170	5.70	7.60	**11.40**	**13.70**	**16.00**	**18.30**	**16.40**	**28.40**	**35.80**
9–16	100	225	6.30	8.40	11.60	**15.30**	16.30	18.60	....	**32.80**	
5–8	100	260	7.70	10.30	14.30	**18.70**	**21.80**	**24.90**	....	**37.10**	**46.60**
11–16	100	330	9.10	12.20	16.90	**22.30**	23.60	27.00	....	**42.00**	
3–4	100	400	10.30	13.70	19.00	**25.20**	**29.40**	**33.60**	....	**47.20**	**59.00**
7–8	50	600	16.50	22.00	30.60	**40.30**	**47.00**	49.00	....	**59.20**	
1	50	800	20.00	26.60	36.90	**49.00**	**57.30**	**65.50**	....	**72.50**	

Prices in heavy faced type represent the sizes of Dowels carried regularly in stock in our New York Warehouse and these are all F. O. B. New York.
Prices in light faced type represent sizes carried at our Portland Warehouse and are all F. O. B. Portland, Maine.

Selected

Dowels which have been specially chosen because they are straight and practically free from knots and other blemishes are called "Selected Dowels." Prices upon application.

Short Lengths

We always have on hand at mill quantities of various diameters in "short lengths" (under 36 inches).

Sandpaper and Cloth

General Abrasives

Flint, Emery, Garnet, Metalite, Durite and Durundum—Troy Brand

In offering you Troy Brand products, we do so with our full guarantee of their quality and endurance.

It is particularly gratifying to us to know we can guarantee our friends perfect satisfaction in sandpapers, an item about which nearly all are so particular.

The spirit of success-at-all-costs so impregnates the Manning Sandpaper Company, the manufacturers of Troy Brand products, and they are so thoroughly equipped, financially and otherwise, to produce unequalled goods, that, with your proper co-operation, we can fully guarantee to give you the greatest possible service and value, not only in sandpapers, but in abrasive papers and cloths in general.

All we ask of you is that full co-operation necessary to give us a correct understanding of your true wants.

Troy and Hudson Flint Paper

Sheets 9 x 11 Inches

Nos.	Per Ream
4–0 to ½	$6.25
1	6.75
1½	7.25
2	7.75
2½	8.25
3	9.50
3½	10.75
4	11.75
*Assorted	7.25

Packed in Bundles for Shipment as follows:

No.	4–0	3–0	2–0	0	½	1	1½	2	2½	3	3½	4	Assorted
Reams	5	5	5	5	4	3½	3	2½	2	1½	1½	1	2½

480 Sheets to Ream. Smallest Package ½ Ream.

The Hudson, which is a lighter, more flexible sheet than the Troy, is furnished only in sizes from 00 to No. 3.

Troy flint is furnished in odd sizes for special industries.

Troy Flint Finishing Paper

Single-faced, per ream, 9x11 inches
Double-faced, per ream (240 sheets) 9x11 inches
Double-faced, per roll, 11 inches x 60 yards
} $3.00 net

Packed in Bundles for Shipment as follows:

Flint	Numbers	5–0	4–0	3–0	2–0	0	½
	Reams	10	10	10	5	5	5

Mohawk Flint Paper

Sheets 8¾ x 10½ Inches

Nos.	Per Ream
2–0 to ½	$4.25
1, 1½, 2	4.75
2½ and 3	5.25
*Assorted	4.75

Packed in Bundles for Shipment as follows:

Numbers	2–0	0	½	1	1½	2	2½	3	Assorted
Reams	5	5	4	3½	3	2½	2	1½	2½

480 Sheets to Ream. Smallest Package ½ Ream.

***Assorted Packages**

The several grits are packed in this proportion

Numbers	0	½	1	1½	2	2½	3
Per cent	10	10	20	20	20	10	10

Troy Roll Flint Paper

Per Roll of 50 Yards

Width Inches	3–0 to ½	1	1½	2	2½	3	3½
2⅜	$1.10	$1.15	$1.20	$1.25	$1.30	$1.45	$1.55
3⅜	1.30	1.40	1.45	1.50	1.60	1.75	1.90
4	1.45	1.55	1.60	1.70	1.80	2.00	2.15
6	2.05	2.15	2.30	2.50	2.65	2.90	3.15
8	2.60	2.75	3.00	3.15	3.30	3.70	4.10
9	3.15	3.25	3.40	3.50	3.65	4.00	4.40
10	3.30	3.50	3.65	3.80	4.10	4.40	5.00
12	3.75	4.05	4.30	4.55	4.85	5.40	6.00
15	4.85	5.10	5.40	5.65	5.95	6.50	7.35
18	5.95	6.20	6.50	6.80	7.05	7.60	8.50
20	6.35	6.75	7.15	7.65	8.15	8.95	9.90
24	6.75	7.25	7.75	8.50	9.25	10.25	11.25
30	9.00	9.50	10.00	10.50	11.00	12.00	14.00
36	11.00	11.50	12.00	12.50	13.25	14.25	16.50
40	13.25	13.75	14.25	14.75	15.50	16.75	19.00
42	14.25	14.75	15.25	15.75	16.50	18.00	20.00
48	16.50	18.00	18.50	19.25	20.00	22.00	25.50

Troy Flint Cloth

Per Roll of 50 Yards

Width Inches	3–0 to ½	1	1½	2	2½	3	3½
2⅜	$2.55	$2.75	$2.85	$2.95	$3.15	$3.35	$3.50
3⅜	3.35	3.65	3.80	3.90	4.20	4.45	4.70
4	3.85	4.20	4.35	4.50	4.85	5.20	5.40
5	5.20	5.60	5.80	6.05	6.50	6.90	7.30
6	5.60	6.10	6.35	6.60	7.10	7.55	8.00
7	6.60	7.20	7.50	7.80	8.35	8.90	9.35
8	7.40	8.00	8.35	8.70	9.30	9.95	10.40
9	8.40	9.10	9.50	9.90	10.60	11.35	12.00
10	9.35	10.10	10.50	10.90	11.70	12.35	13.30
12	11.20	12.20	12.70	13.20	14.20	15.10	15.45
14	12.00	13.00	13.75	14.50	15.50	16.50	17.50
16	14.80	16.00	16.70	17.40	18.60	19.90	20.50
18	16.80	18.20	19.00	19.80	21.20	22.70	23.75
20	18.70	20.20	21.00	21.80	23.40	24.70	26.25
24	21.85	23.65	24.80	26.00	27.85	29.60	30.60
28	24.00	26.00	27.50	29.00	31.00	33.00	35.00

Widths of Rolls not shown above are charged at the prices of the next greater width.

Heavy non-stretching cloth backing is supplied for flat belt work in numbers from 000 to 3½.

Light, flexible cloth backing is furnished for moulding work in Nos. 000 to 1½.

Sandpaper and Cloth

General Abrasives

Flint, Emery, Garnet, Metalite, Durite and Durundum

Troy Brand (Continued)

Metalite and Durite Cloth Discs

Metalite Discs are coated with the same artificial abrasives as Metalite Cloth, but are made much heavier and more rigid to withstand the severe work of disc grinding. For the grinding of steel and hard metals, Metalite Cloth Discs are recommended. For soft metals, or light work, the Durite Discs should be used.

Single Coated Discs

Per Disc

Diameter Inches	180 to 90	80	70	60	50	40	36	30	24	20	16	12
6	$ .06	$ .07	$ .07	$ .07	$ .08	$ .08	$ .09	$ .09	$ .10	$ .11	$ .11	$ .13
8	.07	.07	.08	.08	.08	.09	.09	.10	.11	.12	.13	.15
10	.09	.09	.10	.11	.12	.12	.12	.13	.14	.15	.16	.19
12	.12	.14	.16	.17	.19	.19	.20	.21	.22	.22	.23	.27
14	.16	.17	.19	.20	.21	.23	.24	.25	.26	.27	.30	.33
15	.19	.20	.22	.23	.25	.26	.27	.28	.30	.30	.31	.37
16	.22	.22	.23	.25	.27	.27	.28	.29	.30	.32	.34	.41
18	.24	.25	.26	.27	.28	.30	.31	.32	.36	.40	.42	.51
20	.34	.36	.38	.41	.44	.45	.46	.47	.49	.54	.59	.70
22	.43	.47	.51	.55	.59	.60	.62	.64	.66	.72	.78	.90
23	.45	.49	.53	.57	.61	.63	.65	.67	.69	.76	.82	.94
24	.47	.51	.55	.59	.62	.64	.66	.68	.70	.78	.86	.98
25	.49	.53	.57	.61	.65	.67	.69	.72	.74	.82	.90	1.01
26	.51	.55	.59	.62	.66	.68	.70	.74	.78	.86	.94	1.05
27	.52	.56	.60	.64	.69	.72	.73	.77	.80	.89	.97	1.09
30	.66	.70	.74	.82	.86	.88	.90	.96	1.01	1.11	1.21	1.40
40	1.36	1.44	1.52	1.64	1.76	1.80	1.84	1.88	1.96	2.16	2.36	2 80
48	1.88	2.04	2.20	2.36	2.48	2.55	2.64	2.72	2.80	3.12	3.44	3.92
53	2.08	2.24	2.40	2.56	2.76	2.88	2.92	3.08	3.20	3.56	3.88	4.36
60	2.60	2.80	2.92	3.12	3.36	3.52	3.64	3.88	4.12	4.52	4.84	5.60

Double Coated Discs

Per Disc

Diameter Inches	180 to 90	80	70	60	50	40	36	30	24	20	16	12
6	$ .09	$ .11	$ .11	$ .11	$ .12	$ .12	$ .17	$ .17	$ .18	$ .20	$ .20	$ .24
8	.11	.11	.12	.12	.12	.14	.17	.18	.20	.22	.24	.27
10	.14	.14	.15	.17	.18	.18	.22	.24	.26	.27	.29	.35
12	.18	.21	.24	.26	.29	.29	.36	.38	.40	.40	.42	.49
15	.29	.30	.33	.35	.38	.39	.49	.51	.54	.54	.56	.67
16	.33	.33	.35	.38	.41	.41	.51	.53	.54	.58	.62	.74
18	.36	.38	.39	.41	.42	.45	.56	.58	.65	.72	.76	.92
20	.51	.54	.57	.62	.66	.68	.83	.85	.89	.98	1.07	1.26
22	.65	.71	.77	.83	.89	.90	1.12	1.16	1.19	1.30	1.41	1.62
23	.68	.74	.80	.86	.92	.95	1.17	1.21	1.25	1.37	1 48	1.70
24	.71	.77	.83	.89	.93	.96	1.19	1.23	1.26	1.41	1.55	1.77
25	.74	.80	.86	.92	.98	1.01	1.25	1.30	1.34	1.48	1.62	1.82
26	.77	.83	.89	.93	.99	1.02	1.26	1.34	1.41	1.55	1.70	1.89
27	.78	.84	.90	.96	1.04	1.08	1.32	1.39	1.44	1.61	1.75	1.97
30	.99	1.05	1.11	1.23	1.29	1.32	1.62	1.73	1.82	2.00	2.18	2.52
40	2.04	2.16	2.28	2.48	2.64	2.72	3.32	3.40	3.56	3.92	4.28	5.04
48	2.84	3.08	3.32	3.56	3.72	3 84	4.76	4.92	5.04	5.64	6.20	7.08
53	3.12	3.36	3.60	3.84	4.16	4.32	5.28	5.56	5.76	6.44	7.00	7.88
60	3.96	4.20	4.44	4.92	5.16	5.28	6.48	6.92	7.28	8.00	8.72	10.08

In ordering give grade number, outside diameter and diameter of hole.

Durite Paper

This name applies to our abrasive products coated with the artificial mineral silicon carbide—a highly crystalline material made at very high temperatures in an electric furnace. This abrasive is exceedingly hard, and on breaking gives very sharp cutting edges. Durite is an ideal abrasive for leather under nearly all conditions and also meets a wide range of requirements for metal finishing, particularly on soft metals, such as copper, brass, etc.

	Sheets					Webster Shape	
Grits	9x11 Inches Per Ream	9x11½ Inches Per Ream	9x12 Inches Per Ream	12x12 Inches Per Ream	12x14 Inches Per Ream	4 Inches Per Ream	7 Inches Per Ream
180 to 90	$6.50	$7.00	$7.50	$11.00	$13.25	$5.00	$7.50
80	7.00	7.50	8.00	12.00	14.25	5.25	8.00
70	7.50	8.00	8.50	12.75	15.00	5.50	8.50
60	8.00	8.50	9.00	13.50	16.00	5.75	9.00
50	9.50	10.00	10.50	16.00	18.75	6.00	10.50
40	11.00	11.50	12.00	18.50	21.50	7.00	12.00
36	12.00						
30	13.50						
24	15.00						
20	16.50						

Sheets packed in bundles for shipments as follows: Reams

	Webster Shape			Sheets					
Grits	D	F	E	A	B	C	D	F	E
180	2½	2½	2½	5	5	5	4	4	4
150	2½	2½	2½	5	5	5	4	4	4
120	2½	2½	2½	5	5	4	3½	3½	3½
100	2½	2½	2½	...	...	4	3½	3½	3½
90	2½	2½	2½	...	...	...	3½	3½	3
80	...	2½	2½	...	...	...	...	3	3
70	...	...	2½	...	...	...	...	...	2½
60	...	...	2½	...	...	...	...	...	2½
50	...	...	2	...	...	...	...	...	2
40	...	...	2	...	...	...	...	...	2
Relative Weights of Backing				30	40	55	70	85	100

480 Sheets to Ream. Smallest Package ½ Ream.

Per Roll of 50 Yards

Width Inches	180 to 90	80	70	60	50	40	36	30	24	20
3	$1.00	$1.05	$1.10	$1.15	$1.35	$1.55	$1.70	$1.85	$2.05	$2.25
3½	1.15	1.25	1.30	1.40	1.60	1.80	1.95	2.20	2.40	2.60
4	1.35	1.40	1.50	1.60	1.80	2.10	2.25	2.50	2.75	3.00
6	1.95	2.10	2.20	2.35	2.70	3.10	3.35	3.70	4.10	4.45
8	2.55	2.70	2 90	3 05	3 55	4.05	4.40	4.90	5.40	5.90
9	2.80	2.95	3.15	3.35	3.90	4.45	4.85	5.40	5.95	6.55
10	3.10	3.30	3.50	3.70	4.35	4.95	5.40	6.00	6.65	7.25
12	3.75	4.00	4.25	4.50	5.25	6.00	6.50	7.25	8.00	8.75
15	4.50	4.85	5.15	5.45	6.40	7.35	7.95	8.90	9.85	10.75
16	4.75	5.10	5.40	5.75	6.75	7 75	8.40	9.40	10.40	11.40
18	5.35	5.70	6.10	6.45	7.60	8.70	9.45	10.60	11.70	12.85
20	5.95	6.40	6.80	7.20	8.50	9.70	10.55	11.80	13.05	14.30
24	7.00	7.50	8.00	8.50	10.00	11.50	12.50	14.00	15.50	17.00

Durite Cloth

Sheets 9 x 11 Inches

Grits	Per Ream	Grits	Per Ream
180	$14.50	60	$17.00
150	14.50	50	18.25
120	14.50	40	19.50
100	14.50	36	20.75
90	14.50	30	22.00
80	15.75	24	23.50
70	16.50	20	24.75

480 Sheets to Ream

Per Roll of 50 Yards

Width Inches	180 to 90	80	70	60	50	40	36	30	24	20
3	$1.80	$2.00	$2.15	$2.20	$2.30	$2.50	$2.75	$2.95	$3.10	$3.35
3½	2.30	2.60	2.75	2.80	2.95	3.25	3.50	3.75	4.00	4.25
4	2.40	2.70	2.80	2.90	3.05	3.40	3.60	3.90	4.15	4.40
5	3.20	3.60	3.80	3.90	4.10	4.50	4.85	5.25	5.55	5.95
6	3.50	3.95	4.20	4.30	4.50	4.95	5.35	5.80	6.15	6.55
7	4.10	4.60	4.85	5.00	5.25	5.75	6.20	6.75	7.15	7.65
8	4.65	5.25	5.55	5 70	6.00	6.60	7.10	7 70	8 15	8.70
9	5 10	5 75	6.10	6.25	6.60	7.25	7.85	8.50	9.00	9.65
10	5.80	6.00	6.90	7.15	7.50	8 25	8 85	9.60	10.15	10.90
12	7.00	7.90	8.30	8.50	9.00	9.85	10.60	11.50	12.15	13 00
14	8.55	9.65	10.25	10.55	11.05	12.20	13.20	14.30	15.15	16.30
18	10.20	11.50	12.20	12.50	13.20	14.50	15.70	17.00	18.00	19.30
20	11.45	12.95	13.70	14.05	14.80	16.30				
24	13.75	15.55	16.40	16.85	17.75	19.55				
27	15.25	17.25	18.25	18.75	19.75	21.75	23.50	25.50	27.00	29.00

Light Cloth furnished in 180 to 70. Heavy Cloth furnished in 180 to 20

Sandpaper and Cloth

General Abrasives

Flint, Emery, Garnet, Metalite, Durite and Durundum

Troy Brand (Continued)

Troy Garnet Paper

Number	Sheets 9x11 Inches Per Ream	Sheets 9x11½ Inches Per Ream	Sheets 9x12 Inches Per Ream	Webster Shape 4 Inches Per Ream	Webster Shape 7 Inches Per Ream
4–0 to ½	$6.50	$8.00	$8.50	$5.75	$8.00
1	7.00	8.50	9.00	6 00	8.50
1½	7.50	9.00	9.50	6.25	9.00
2	8.00	9.50	10.00	6.50	9.50
2½	8.50	10.00	10.50	7.00	10.00
3	9.75	11.00	11.50	7.50	11.00
3½	11.00	12.00	12.50		

Per Roll of 50 Yards

Width Inches	4–0 to ½	1	1½	2	2½	3	3½
2⅜	$1.15	$1.20	$1.25	$1.30	$1.35	$1.40	$1.45
3⅜	1.30	1.35	1.40	1.45	1.50	1.70	1.90
4	1.50	1.55	1.60	1.70	1.80	1.95	2.15
6	2.10	2.15	2.25	2.35	2.50	2.80	3.25
8	2.75	2.85	2.95	3.15	3.30	3.70	4.25
9	3.20	3.35	3.45	3 60	3.75	4.00	4.50
10	3.50	3.65	3.80	4.00	4.20	4.55	5.25
12	4.05	4.20	4.30	4.60	[4.90	5.40	6.20
15	5 20	5.45	5.75	6.05	6.25	6.80	7.85
18	6.20	6 50	6.75	7.00	7.30	7.80	8.85
20	7.30	7.60	7.90	8.10	8.40	8.90	10.25
24	7.50	7.75	8.00	8.50	9.25	10.25	12.00
30	9.75	10.25	10.75	11.25	12.00	13.00	15.25
36	12.00	12.50	13 00	13.50	14.00	15.25	17.25
40	14.00	14.50	15.25	15.75	16.25	17.25	20.00
42	16.25	16.75	17.25	17.75	18.25	20.00	21.75
48	20.00	21.00	21.50	22.00	23.75	27.00	31.00

Width of Rolls not shown above are charged at the prices of the next greater width.

Troy Garnet Finishing Paper

Single-faced, per ream, 9x11 inches.....
Double-faced, per ream (240 sheets) 9x11 inches..... } $3.50 net
Double-faced, per roll, 11 inches x 60 yards.....

Packed in Bundles for Shipment as Follows:

Garnet	5–0	4–0	3–0	2–0	0	½	1
Numbers.....							
Reams.....	10	10	5	5	5	5	5

Troy Garnet Cloth

Per Roll of 50 Yards

Width Inches	4–0 to ½	1	1½	2	2½	3	3½
2⅜	$2.90	$3.10	$3.20	$3.25	$3.35	$3.45	$3.55
3⅜	3.80	4.00	4.10	4.25	4.40	4.55	4.65
4	4.20	4.55	4.70	4.90	5.00	5.15	5.25
5	5.80	6.25	6.50	6.70	6.90	7.15	7.25
6	6.45	7.25	7.70	7.95	8.30	8.55	8.65
7	7.25	7.80	8.05	8.30	8.60	8.85	9.00
8	8.40	9.00	9.35	9.60	9.95	10.25	10 50
9	9.35	10.00	10.35	10.75	11.00	11.50	11.95
10	11 60	12.50	13.00	13.40	13.80	14.30	14.40
12	12.75	13.65	14.20	14.55	15.10	15.50	15.75
14	14.00	15.00	15.50	16.00	16.50	17.00	17.50
16	16.80	18.00	18.70	19.20	19.90	20.50	20.70
18	18.20	19.55	20.20	20.90	21.50	22.15	23.35
20	20.00	21.00	21.50	22.00	22.50	23.00	26.00
24	25.20	27.00	28.05	28.80	29.85	30.75	31.50
28	28.00	30.00	31.00	32.00	33.00	34.00	35.00

Heavy cloth backing is supplied for flat belt work in numbers from 3–0 to 3½. A flexible cloth with light backing is supplied for moulding work in numbers from 3–0 to 1½.

Troy Garnet Combination

(Paper Cloth) Per Roll of 50 Yards

Width Inches	3–0 to ½	1	1½	2	2½	3	3½
2⅜	$2.30	$2.45	$2.55	$2.60	$2.70	$2.80	$2.90
3⅜	3.00	3.15	3 20	3.30	3.40	3.60	3.70
4	3.50	3.65	3.75	3.90	4.00	4.10	4.20
5	4.65	5.00	5.20	5.35	5.55	5.75	6.00
6	5.00	5.50	5.60	5.75	5.95	6 10	6.30
7	5.80	6.25	6.45	6.65	6.90	7.10	7.20
8	6.70	7.20	7.40	7.70	7.90	[8.10	8.25
9	7.50	8.00	8.30	8.60	8.80	9.20	9.45
10	9.30	10.00	10.40	10.75	11.00	11.45	11.70
12	10.00	10.80	11.15	11.50	11.90	12.00	12.35
14	11.70	12.55	12.90	13.30	13.90	14.20	14.40
16	13.30	13.95	14.70	15.15	15.60	16.10	16.30
18	14.90	16.00	16 45	17.00	17.50	18.00	18.85
20	16.50	17.70	18.40	18.90	19.50	20.00	21.00
24	19.20	20.60	21.25	21.95	22.65	23.35	24.50
28	22.40	24.00	24.80	25.60	26.40	27.20	28.00

Widths of Rolls not shown above are charged at the prices of the next greater width.

Belts

Prices will be named on application for Garnet Belts, glued and ready for use and for Special Belts for small vertical sanding machines. These belts are supplied with a bevel cut instead of a straight cut, therefore running very much smoother on the machiue.

Durundum

The Durundum products listed here are made of another electric furnace or artificial mineral—refined and fused aluminum oxide. This abrasive while not so hard as Durite, is somewhat tougher. It finds its greatest application for the heavier work in leather and metal finishing. The selection of Durundum, Durite or Metalite for different conditions can best be determined by actual trial.

Durundum Paper

Grits	Sheets 9x11 Inches Per Ream	Sheets 9x11½ Inches Per Ream	Sheets 9x12 Inches Per Ream	Sheets 12x12 Inches Per Ream	Sheets 12x14 Inches Per Ream	Webster Shape 4 Inches Per Ream	Webster Shape 7 Inches Per Ream
120 to 90	$6.50	$7.00	$7.50	$11.00	$13.25	$5.00	$7.50
80	7.00	7.50	8.00	12.00	14.25	5.25	8.00
70	7.50	8.00	8.50	12.75	15.00	5.50	8.50
60	8.00	8.50	9.00	13.50	16.00	5.75	9 00
50	9.50	10.00	10.50	16.00	18.75	6.00	10.50
40	11.00	11.50	12.00	18.50	21.50	7.00	12.00

Durundum Roll Paper

Sold at same prices as Durite Roll Paper (on preceding page) but only in grits 120 to 40.

Durundum Paper is furnished only on F Paper Backing for grits 120 to 80 and on E Paper Backing for grits 120 to 40, and packed for shipment same as Durite F and E.

Durundum Paper Discs

Attractive prices furnished on application.

Durundum Cloth

Grits	Sheets 9x11 Per Ream	Per Roll of 50 Yards 9 Inches	18 Inches	27 Inches
120 to 90	$14.50	$5.10	$10.20	$15.25
80	15.75	5.75	11.50	17.25
70	16.50	6.10	12.20	18.25
60	17.00	6.25	12.50	18.75
50	18.25	6.60	13.20	19.75
40	19.50	7.25	14.50	21.75

Furnished only on heavy cloth backing.

Durite and Durundum Combination

(Paper Cloth)

Per Roll of 50 Yards

Grits	24 Inches	28 Inches	Grits	24 Inches	28 Inches
150 to 90	$14.50	$17.00	60	$16.00	$18.50
80	15.00	17.50	50	16.50	19.25
70	15.50	18.00	40	17.50	20.50

Troy Emery Paper

Numbers	Sheets 9x11 Inches Per Ream	Per 50-Yard Roll 24 Inches
3–0 to ½	$10.25	$11.00
1	12.00	12.75
1½	12.75	13.25
2	13.50	13.75
2½	15.50	15.75
3	18.25	19.25
3½	21.25	22.00
4	24.25	25.25
Assorted	12.75	

Packed in Bundles for Shipment as Follows:

Numbers	3–0	2–0	0	½	1	1½	2	2½	3	3½	Assorted
Reams	4½	4½	4	3½	3	2½	2	1½	1½	1½	2½

480 Sheets to Ream. Smallest Package ½ Ream.

Troy Emery Cloth

Numbers	Grits	Sheets 9x11 Inches Per Ream	Per Roll of 50 Yards 9 Inches	18 Inches	27 Inches
3–0 to ½	180–90	$26.50	$9.25	$18.50	$27.75
1	80	28.50	10.50	21.00	31.50
1½	70	29.75	11.00	22.00	33.00
2	60	30.75	11.50	23.00	34.50
2½	54	33.00	12.00	24.00	36.00
3	46	35.25	13.25	26.50	39.75
3½	40	37.50	14.25	28.50	42.75
4	36	40.00	15.75	30.50	45.75
4½	30	42.50	16.25	32.50	48.75
5	24	45.00	17.50	35.00	52.50
Assorted	..	28.50			

Packed for Shipment as Follows:

Numbers	3–0	0	100	½	1	1½	2	2½	3	3½	Assorted
Reams	2½	2½	2	2	1¾	1½	1¼	1	¾	¾	2

480 Sheets in Ream. Smallest Package 1 Quire.

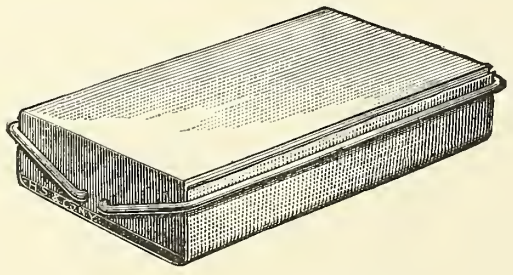
Crocus Cloth

Per Ream 480 Sheets 9x11 inches $26.50

2 Reams to the Bundle

In the manufacture of our Emery Paper and Cloth we use only the highest quality of Turkish Emery.

Perfection Sandpaper Holder



With the use of this device the sandpaper will always be held securely in place, by means of the wire clamps. The heavy felt with which the holder is covered and over which the sandpaper is placed will prevent the surface of articles from being scratched.

The sand or emery paper can be attached quickly and holds No. 00 up to No. 3. Size 4½x2¾x1 inch.

Each holder is covered with a piece of sandpaper.

Dozen $2.00

Shark or Fish Skins

Used by skilled carvers, instead of sandpaper. When wet, will fold snugly over a cork or other holder and after drying, does perfect abrasive work. Does not leave any grit to dull the tools.

No. 43 Dozen $20.00

Each 2.00

Also cut in small pieces ready for use

Metalite Cloth

As its name implies, this abrasive material is intended primarily for metal finishing work. It is made from artificial abrasives—products of the high temperature electric furnace.

Under many of the conditions encountered in shop work, Metalite has been found to give better results than emery. On hard and tough metals particularly it exhibits unusual endurance and cool cutting qualities.

This Cloth is specially treated so as to be very flexible, a very important feature.

Sheet and Rolls

Sheets 9 x 11 Inches Per Ream

3–0 to ½	1	1½	2	2½	3	3½	4
$26.50	$28.50	$29.75	$30.75	$33.00	$35.25	$37.50	

Rolls of 50 Yards

Width Inches							
3	3.40	3.85	4.05	4.20	4.40	4.85	5.25	5.60
3½	4.35	4.95	5.20	5.45	5.65	6.25	6.70	7.20
4	4.50	5.15	5.40	5.65	5.85	6.50	6.95	7.45
5	6.10	6.95	7.25	7.60	7.90	8.75	9.40	10.05
6	6.80	7.70	8.05	8.45	8.80	9.70	10.45	11.20
7	7.90	9.00	9.40	9.85	10.25	11.35	12.20	13.05
8	9.05	10.25	10.75	11.25	11 75	12.95	13.95	14.90
9	9.25	10.50	11.00	11.50	12.00	13.25	14.25	16.75
10	11.30	12.85	13.45	14.05	14.65	16.20	17.45	18.65
12	13.55	15.40	16.15	16.85	17.60	19.40	20.90	22.40
14	15.25	17.35	18.15	19.00	19.80	21.85	23.55	25.20
18	18.50	21.00	22.00	23.00	24.00	26.50	28.50	30.50
20	22.60	25.65	26.90	28.10	29.35			
24	27.10	30.80	32.25	33.75	35.20			
27	27.75	31.50	33.00	34.50	36.00	39.75	42.75	46.00

Handy Rolls

Rolls of 50 Yards wound on Spools

Width Inches	3–0 to ½	1	1½	2	2½	3	3½
¼	$ .70	$ .75	$ .80	$ .85	$ .90	$ .95	$1 00
½	90	.95	1.00	1.05	1.10	1 15	1.20
¾	1.15	1.25	1.35	1.40	1.45	1.50	1.60
1	1.45	1.55	1.65	1 70	1.75	1.90	2.05
1½	1.85	2.05	2.15	2.20	2.30	2.50	2.65
2	2.65	2.95	3.10	3.20	3.35	3.65	3.90
2½	3.35	3.75	3.95	4.10	4.25	4.70	5.00

Corresponding Grit Numbers and Bundles for Shipment

Numbers	3–0	2–0	0	100	½	1	1½	2	2½	3	3½
Grit	180	150	120	100	90	80	70	60	50	36	24
Reams	2½	2½	2½	2	2	1¾	1½	1¼	1	¾	¾

480 Sheets to Ream

Sandpaper Corks

Inches	1⅛x3x4	1½x4x6	1½x4x12
Dozen	$1.80	4.32	8.64

Steel Wool and Shavings

Are masses of sharp cut steel fiber; being soft and pliable will reach every corner and crevice; is rapid in action and will not clog or gum.

In packages containing 1 pound net.

Steel Wool

No. 00 For very high finish and fine work, particularly adapted for rubbing down piano cases. 1 pound package $1.25

No. 0 Substitute for pumice stone, etc., in rubbing down successive coats of varnish, etc., 1 pound package ..... .75

No. 1 Equivalent of sandpaper No. 0 ..... .60

No. 2 Equivalent of sandpaper Nos. ½ and 1 ..... .55

No. 3 Equivalent of sandpaper Nos. 1½ and 2 ..... .50

Also Nos. 1, 2, 3 and "Fine" in small papers, each ..... .10

Steel Shavings

"Fine," coarser than No. 3 steel wool.

"Medium," coarser than fine shavings

"Coarse," coarser than medium shavings.

All grades, 1 pound package ..... $ .40

Roofing

Black Diamond Tar



Two-ply consists of two sheets of the best quality of tarred felt (AA) cemented together with one layer of coal tar pitch (B).



Three-ply consists of three sheets of the best quality of tarred felt (AAA) cemented together with two layers of coal tar pitch (BB).

Enlarged Sectional Diagram

Made 32 Inches Wide

A combination of tarred felt and coal tar pitch, for roofing and water-proofing. The above sectional diagrams clearly indicate of what Black Diamond Roofing is made and illustrate the only difference between two and three-ply—the quality of materials used being the same in both. These materials are carefully combined by the original old-fashioned but practical method into a solid, flexible fabric.

1-ply rolls contain 324 square feet.
2-ply rolls contain 108 square feet.
3-ply rolls contain 108 square feet.
Prices upon application.

Ru-ber-oid

Ru-ber-oid consists of a felted fabric which is saturated and coated with flexible Ru-ber-oid gum.

There is no secret about the foundation of this fabric. It is the best roofing felt procurable. The only secret lies in the process of making Ru-ber-oid Gum. This gum is waterproof and as flexible as new rubber. Yet, unlike rubber, it retains these qualities when exposed to the elements. Rubber rots after slight exposure. Ru-ber-oid retains its life and flexibility under the severest weather conditions.

Ru-ber-oid is inexpensive to buy, costs little to lay and requires very little attention. It is in the end the cheapest roofing known.

Ru-ber-oid contains no rubber or tar. It is not "asphalt" roofing. It is tasteless and odorless, and may be used on roofs from which drinking water is gathered.

It is an effective insulator, for it excludes both heat and cold. It is fire-resisting. Hot coals thrown on it do not set fire to the roofing or to the sheathing beneath.

Roofings of metal, slate, tile, etc., have no advantage over Ru-ber-oid in insurance rating. All are placed in the same class by fire underwriters.

Two-ply for dwellings, warehouses, stores, etc.
Three-ply for factories, foundries, etc.

2-ply, per square	$3.25
3-ply, per square	4.00

While each square is charged for at the rate of 100 square feet, 8 extra square feet are included to allow for two-inch laps. Each roll, also, includes Ru-ber-ine Cement, heavily zinc-coated nails—everything needed to lay the roofing.

Asbestos Sheet Mill Board

Especially adapted for fireproof lining of floors, partitions, etc. Also for packings, fire screens, lining for ranges, stoves, grates, gas backs, etc.

Made from pure asbestos fiber and is fire and acid-proof.

In thicknesses of $\frac{1}{16}$ or $\frac{1}{8}$ inch, sheets 40x40 inches or 20x40 inches, $\frac{1}{16}$ weighs 4 pounds and $\frac{1}{8}$ weighs 8 pounds, per 40x40 inches sheet, per pound	$ .05

Building and Sheathing Papers

Nox-em-all

A red rosin-sized sheathing. These are tough, strong, durable papers, damp and moisture-proof, air-tight, well calendered and thoroughly rosin-sized.

They are made from selected rag and jute stock and afford all the service a sheathing paper can possibly offer. There is no shrinkage or waste.

Nox-Em-All Sheathings are made 36 inches wide.

Nox-Em-All No. 12—A three-ply red. 12 square feet to the pound. Rolls contain approximately 500 square feet and weigh about 40 pounds.

Nox-Em-All No. 16—A three-ply red. 16 square feet to the pound. Rolls contain approximately 500 square feet and weigh about 30 pounds.

Nox-Em-All No. 20—A three-ply red. 20 square feet to the pound. Rolls contain approximately 500 square feet and weigh about 25 pounds.

Prices on application.

Insulating Paper

Standard P and B

Treated with P. & B., a preservative and insulative compound, which renders it thoroughly air-tight, moisture-proof and resistant to the action of acids and alkalies. Contains no tar, oil, or other ingredients that will be affected by exposure or by changes of temperature, and is entirely free from taste or odor. Is suitable for lining ice-boxes, etc., and also used as a sheathing paper and for construction work where excellent quality is desired.

In rolls containing 500 square feet.

Ply	1	2
Weight of 500 square feet, pounds	15	25
Price of 500 square feet	$3.50	3.90

Deadening Felt

Tomb Brand

Made of soft woollen rags, which not only have remarkable deadening qualities but add greatly to the warmth of the structure.

Made 36 inches wide and put up in measured rolls containing 50 lineal yards—450 square feet.

Made in one quality and three weights, as follows:
1 pound to square yard, or 9 square feet to pound.
1½ pounds to square yard, or 6 square feet to pound.
2 pounds to square yard, or 4½ square feet to pound.
Prices on application.

Roofing Tins



1¼ inches in diameter. For fastening all roofing papers to the sheathing boards. The cap is used as a washer for the head of the nail, preventing the nail from cutting the felt or pulling through. A 1 or 1½ inch No. 12 barbed wire nail will answer all purposes. We will not send nails with tins unless so specified in order.

Per pound	$ .08

Wire Cloth

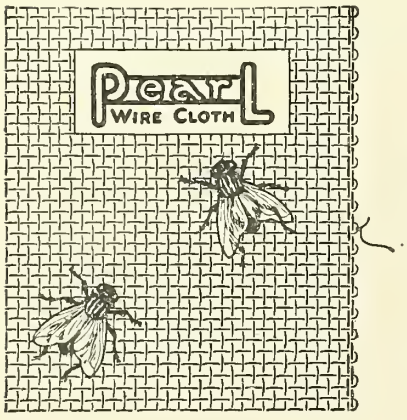
When ordering Wire Cloth be careful to state the exact length and width desired

Mesh

The size of any mesh in wire cloth is the distance from center to center of its parallel wires—not the clear space between these wires. The numeral which precedes this word in the description of cloth indicates the number of openings it has in one lineal inch. Thus, 14 mesh means that the cloth has 14 openings per lineal inch.

Wire Gauges

The recognized standards for gauging wire fabrics are the Washburn & Moen gauge for iron, steel, galvanized, tinned and coppered wire, and the Old English gauge for brass, copper and bronze wire.



14 Mesh No. 34 Wire

Pearl

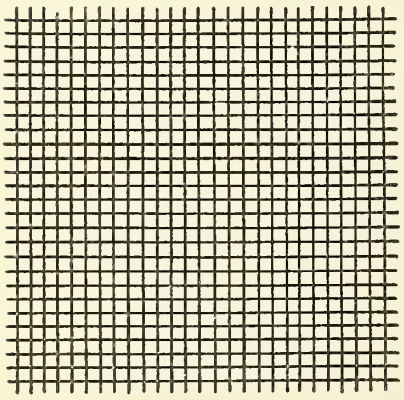
Is made of steel wire of unusual hardness protected by a metallic finish, which is the result of years of experiment. This imparts to the cloth remarkable durability and smoothness.

The metallic finish, at first lustrous—similar to silver—turns, after short exposure, to a shade of gray, rendering the wire almost invisible.

The cost of screening a building with Pearl Wire Cloth is but little more than if the ordinary painted material is used and the expense and annoyance of frequently repainting and replacing the wire is avoided.

In Rolls of 100 Linear Feet

Carried in stock in widths 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 48 inches. List per square foot ..... $ .06



14 Mesh No. 31 x 32 Wire

"Pompeiian" Bronze

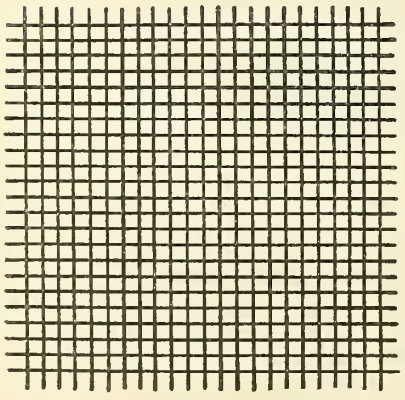
This Bronze Wire is an alloy of non-corrodible metals of which copper represents about 90 per cent., and tests have proven it to be more durable than pure copper when used for window and door screens.

Requiring no paint, lacquer or other protective coating, light and air have an unobstructed passage through these fabrics. Exposure to the weather simply darkens the color, rendering the cloth nearly invisible.

We specially recommend Pompeiian Bronze Wire Cloth in cases where exposed to salt air.

In Rolls of 100 Linear Feet

Carried in stock in widths of 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 48 inches. List per square foot ..... $ .08



12 Mesh No. 33 x 34 Wire

Black Painted

The paint used on this cloth is a special mixture which practical testing has proven to be perfectly adapted to all requirements. It is composed of white lead, boiled linseed oil, turpentine varnish and color pigments of best quality, and produces an elastic and durable coating which is essential to the life of painted screen cloth and which cannot be produced with inferior materials.

The painting is done by power machines of delicate adjustment, which thoroughly cover every wire with a coat of paint of the proper thickness.

As the cloth leaves the painting machine it passes into drying ovens which are maintained at the temperature required for slow and thorough drying of the paint.

In Rolls of 100 Linear Feet

Carried in stock in widths of 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 48 inches. List per square foot ..... $ .02

Galvanized Steel Wire Cloth

When ordering Wire Cloth be careful to state length and width, as well as mesh and size of wire wanted

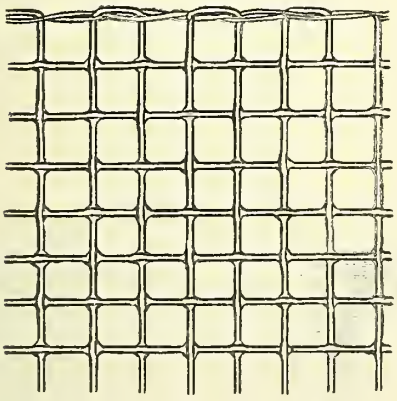
Mesh

The size of any mesh in wire cloth is the distance from center to center of its parallel wires—not the clear space between these wires. The numeral which precedes this word in the description of cloth indicates the number of openings it has in one lineal inch. Thus, 4 mesh means that the cloth has 4 openings per lineal inch, each measuring ¼ inch from center to center of its parallel wires.

Wire Gauges

The recognized standards for gauging wire fabrics are the Washburn & Moen gauge for iron, steel, galvanized, tinned and coppered wire, and the Old English gauge. for brass, copper and bronze wire.

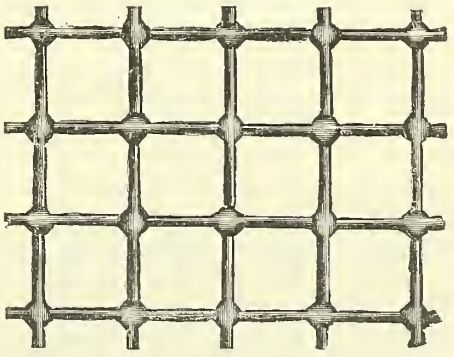
Square Mesh



No. 4 Mesh. Standard
No. 23 Wire

In rolls of 100 linear feet. Carried in stock in widths of 24, 30, 36, 42 and 48 inches.

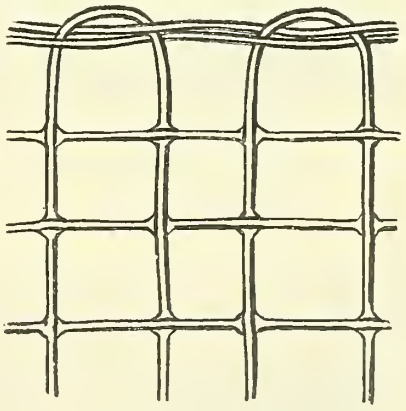
List per square foot..... $ .08



No. 2 Mesh. No. 14 Wire

In rolls of 100 linear feet. Carried in stock in widths of 36, 42 and 48 inches.

List per square foot..... $ .17



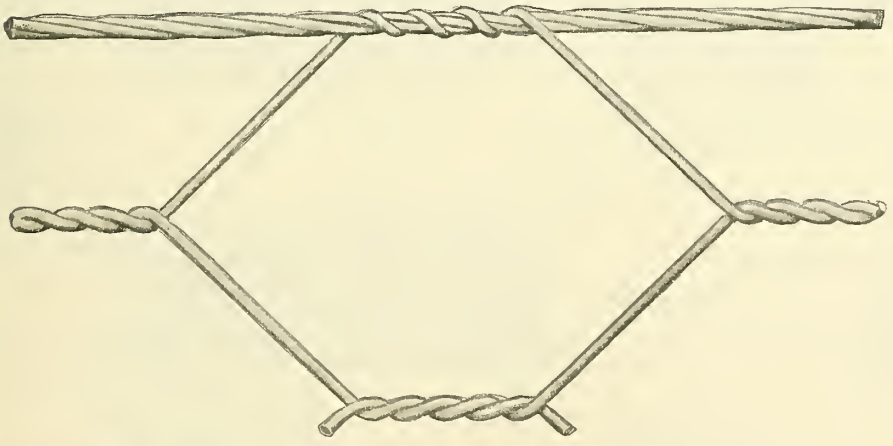
No. 2 Mesh. Standard
No. 19 Wire

In rolls of 100 linear feet. Carried in stock in widths of 24, 30, 36, 42 and 48 inches.

List per square foot..... $ .08

Galvanized Poultry Netting

In Rolls of 75 or 150 Linear Feet

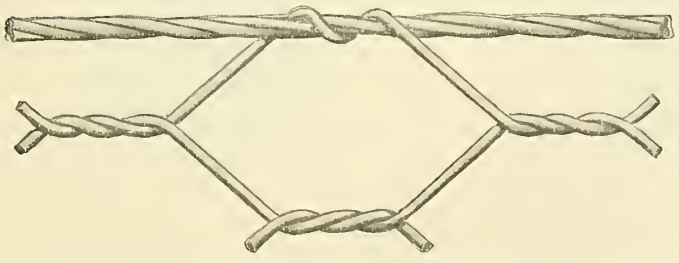


2-Inch Diamond Mesh. No. 19 Wire

Carried in stock in widths of 24, 30, 36, 42, 48, 60 and 72 inches.

Per square foot, in widths of 24, 30, 36 and 42 inches..... $ .02½

Per square foot, in widths of 48 and 60 inches..... .03½



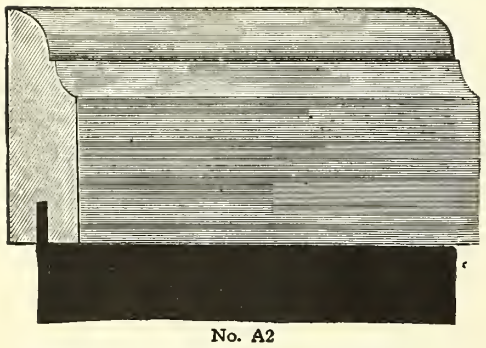
1-Inch Diamond Mesh. No. 20 Wire

Carried in stock in widths of 24, 30, 36, 42, 48, 60 and 72 inches.

Per square foot..... $ .05½

Weather Strips

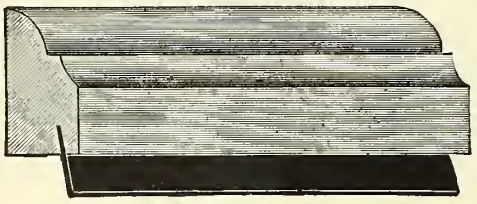
Wood, with Strip Rubber Insert



No. A2

For use on the bottoms of light inside doors, the rubber to press gently on the sill. Close the door before applying. Use 1¼-inch finishing nails or 1-inch screws.

Red cherry or hazel, plain, per foot... $ .10



No. A3

For use on the lower sash of lift windows, making them air-tight and entirely preventing their rattling. Close the sash and brad to the stop bead at the sides and bottom so that it will press gently against the sash. It may also be used in the same manner for the upper sash, applying it outside. Use ¾-inch brads or finishing nails.

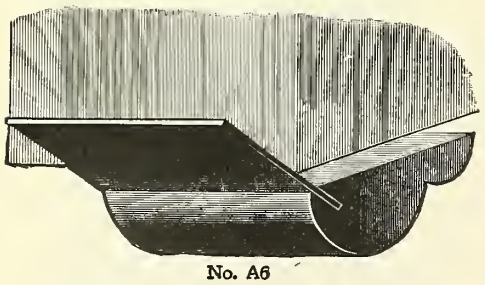
Red cherry or hazel, plain, per foot ....$ .05



No. A5

For use on the upper sash of lighting windows, making them air-tight and also preventing them from rattling. Cut a little of the meeting rail of the lower sash before applying, so as to allow sash to move freely over the weather strip. Close the sash and brad to the parting strip with rubber pressing gently against the sash. Use ¾-inch brads or finishing nails.

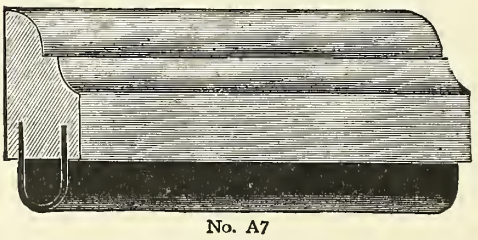
Red cherry or hazel, plain, per foot....$. 05



No. A6

An effective device for closing the joint between the two sashes. For lift windows apply to the under side of the upper sash, with rubber projecting over the lower one. Use 1-inch brads or finishing nails.

Hazel or red cherry, plain, per foot... $ .07

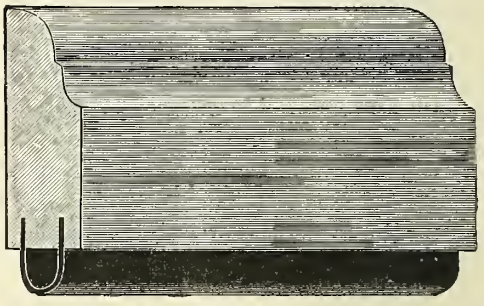


No. A7

The cushion shape makes it more elastic, and consequently more effective in its operation than any other form.

It is applicable to double and single doors and French windows. Close the door and brad the strips to the jamb or frame outside, so that the cushion rubber presses very gently against the door.

Hazel or red cherry, plain, per foot... $ .05



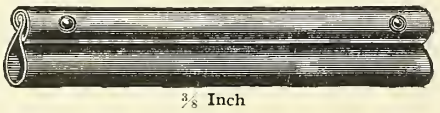
No. A8

Extra heavy cushion strips. For use on heavy doors, or in cases where too much warped to allow use of No. 7.

Red cherry or hazel, plain, per foot... $ .10

Metallic, with Strip Rubber Insert

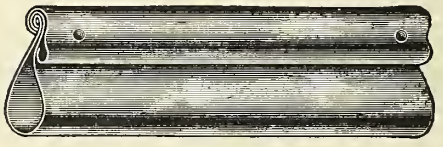
In 7 foot lengths



⅜ Inch

For windows with narrow parting strips.

⅜ inch wide, plain zinc, per foot ..... $ .06



⅝ Inch

For the sides and tops of doors.

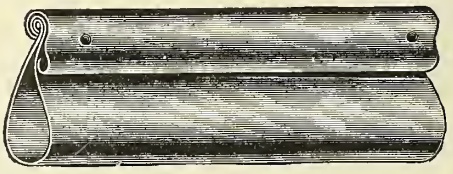
⅝ inch wide, plain zinc, per foot..... $ .07



½ Inch

For ordinary lift windows.

½ inch wide, plain zinc, per foot..... $ .06



¾ Inch

For light inside door bottoms.

¾ inch wide, plain zinc, per foot ..... $ .08

Elastic Rubber

Put up in boxes of 50 feet each



Full Size, ½ Inch

Size, inch	⅜	½	¾	1
Per foot	$ .05	.06	.08	.10

Fire Pails

Galvanized



Painted Red Outside

Quarts	12	14
Inches	11x9½	11½x10½
Dozen	$3.60	3.90
Covers to fit, per dozen	1.65	1.80

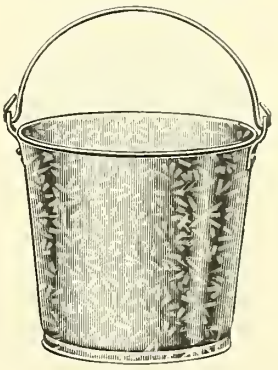


Painted Red Outside

Quarts	12	14
Inches	10½x11½	11x12¼
Dozen	$4.20	4.80
Covers to fit, per dozen	1.65	1.80

Water Pails

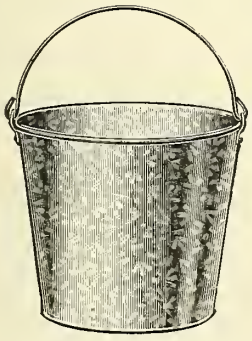
Galvanized—Heavy



Quarts	12	14	16
Inches	11x10	11½x10½	12¾x11¼
Dozen	$3.90	4.20	5.00
Covers to fit, per dozen	1.75	2.00	2.50

Water Pails

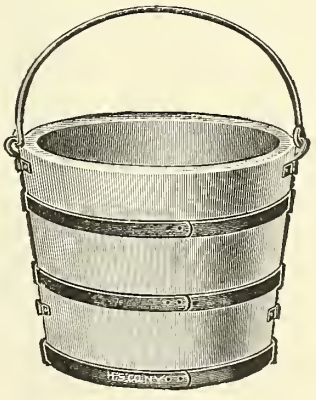
Galvanized



Quarts	12	14	16
Inches	11x9½	11½x10¼	12¾x11¼
Dozen	$2.85	3.15	3.90
Covers to fit, dozen	1.65	1.80	2.25

Stable Pails

Flush Bottoms

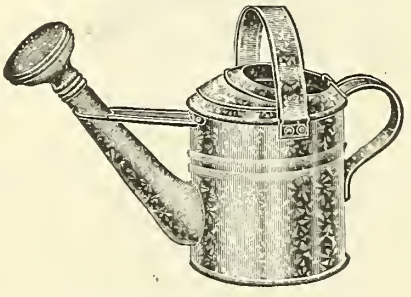


J. I. C.

Oak, galvanized hoops and straps, dozen $12.00

Watering Pots

Galvanized



New York Pattern with Zinc Roses

Number	116		118
Quarts	6		8
Dozen	$7.20		8.10
Number	120	122	126
Quarts	10	12	16
Dozen	$9.90	10.80	12.96

Cuspidores

Agate Nickel Steel



Self-righting

Number	9
Inches	7¾x4⅝
Dozen	$10.00

Measures

Galvanized



Number	03	04	05	06
Measure, quarts	½	1	2	4
Dozen	$2.15	2.95	4.30	5.50

Funnels

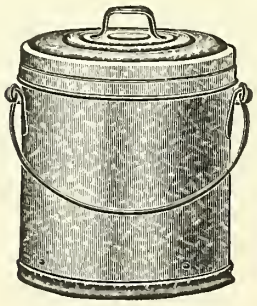
Galvanized



Number	03	04	05	06
Capacity, quarts	½	1	2	4
Dozen	$1.80	2.25	3.20	4.00

Garbage Cans

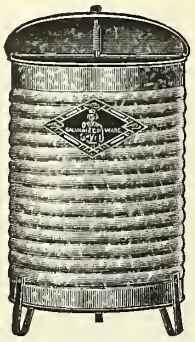
Bailed Flat Bottoms
Deep Seamless Cover, Fits Over Outside



Number	Capacity Gallons	Dimensions Inches	Dozen
02	6½	13x12½	$9.75
03	8½	14x14	11.35
04	9	14x15½	13.00

Oily Waste Cans

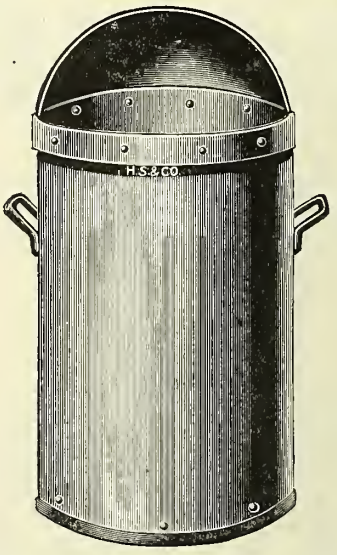
New York Pattern
With Spring Covers



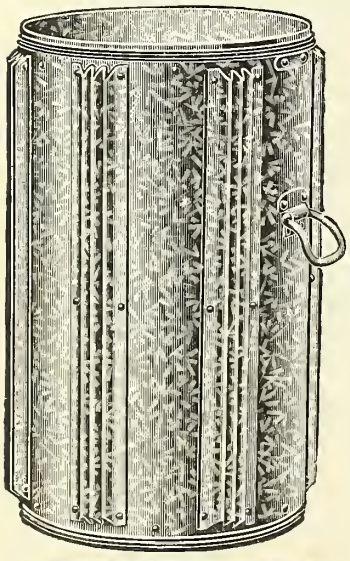
Number	Dimensions Inches	Height From Floor	Dozen
1	11¼x11¼	2½	$18.00
2	11¾x15½	2½	27.00
3	12⅞x17½	2½	36.00
4	14 x19¼	2½	45.00
5	14⅞x21¼	2½	54.00
6	18½x23½	3	81.00
7	20½x28½	3	108.00
8	23½x33¼	3	142.20

Waste Paper or Rubbish Cans

Japanned Green Heavy Half-Hood Stationary Handles



Number..... 1
Dimensions, inches..... 20½x30
Dozen..... $72.00



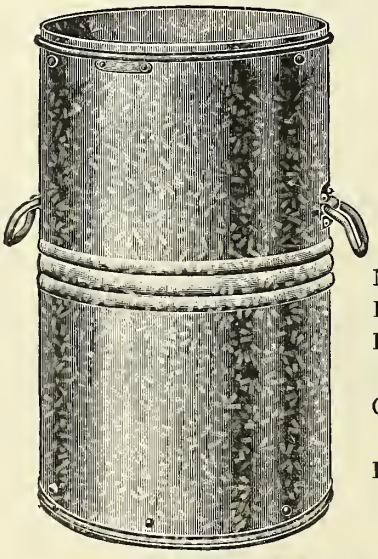
Ash Cans

Galvanized Steel Ribbed
Without Covers

Number	17	18
Inches	15x26	17x26
Dozen	$34.20	36.90
Number	19	20
Inches	18x26	20x26
Dozen	$40.50	47.70

Covers to fit:

Number	3	4	5	6
Dozen	$3.85	4.50	5.40	6.45



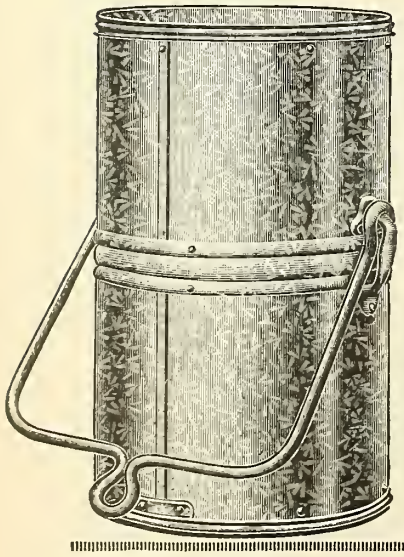
Ash Cans

Galvanized
Without Covers

Number	2½	3	4
Inches	14x17¾	15x26	17x26
Dozen	$20.70	23.40	27.00

Covers to fit:

Number	2	3	4
Dozen	$2.70	3.85	4.50



Ash Cans

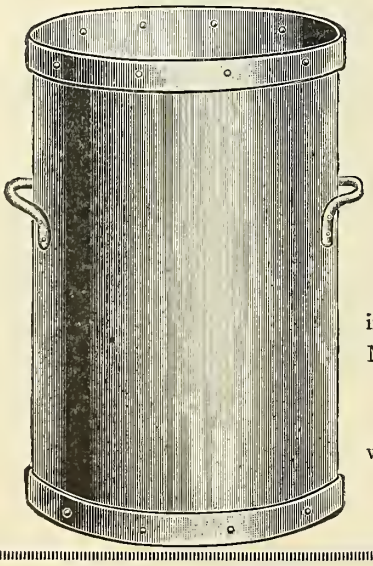
Galvanized Bailed Extra Heavy for Hoisting

Without Covers

Number	103	104	105	106
Inches	15x26	17x26	18x26	20x26
Dozen	$41.00	46.00	51.00	56.00

Covers to fit:

Number	3	4	5	6
Dozen	$3.85	4.50	5.40	6.45



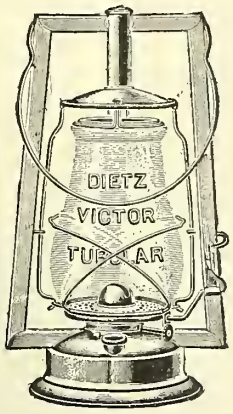
Engineers Ash Cans

Made of heavy wrought iron, japanned.
No. 2 18x24 inches, each $8.00

Loose hoist hooks supplied when ordered.

SEE DISCOUNT SHEET

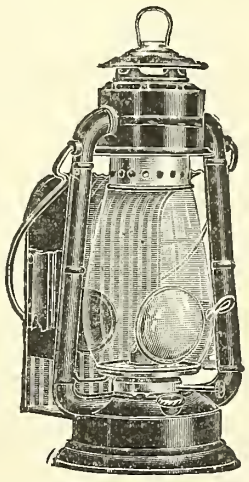
Lanterns



Victor No. 0

The crank at the side raises and lowers the globe and securely locks the burner in place when down. Bright tin. For use with kerosene. ⅝ inch wick.

With white globe, dozen $6.50
With red globe, dozen 8.15
Extra white globes, dozen 1.50
Extra red globes, dozen 3.40



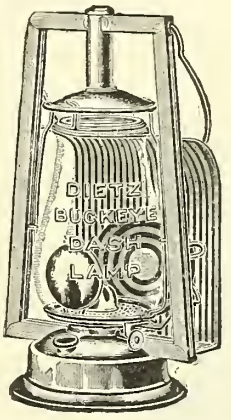
"Junior" Side

The Dietz "Junior" Side Lamp is designed to meet all requirements of the state and city laws regulating night lights on horse-drawn vehicles. It is compact and handy, and by means of our patent combination socket taking any round or flat bracket, may be located on the side of the vehicle, or at the side of dash, lighting the road and at the same time showing a red danger signal to the rear.

The "Junior" Side Lamp has a bright corrugated tin reflector and a bullseye lens, also a 2¼-inch ruby rear lens. Has a safety oil well and all the latest lantern improvements.

It may also be used as a hand lantern.

With white globe, dozen $14.00
Extra white globes, dozen 1.50

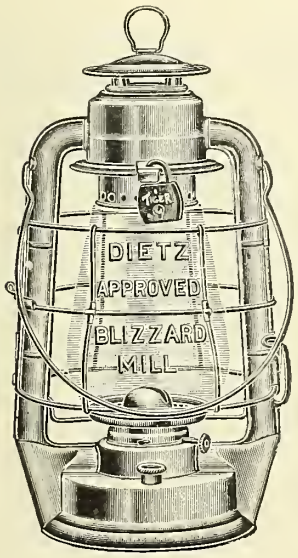


"Buckeye" Dash

Has a dash clip spring, a bail for use as a hand-lantern, and also serves as a wall lamp.

The "Buckeye" is black enamel, equipped with a bright, corrugated tin reflector and a bullseye lens. It has a large oil filler, patent safety wing-lock burner, positive locking globe lift, dome-shaped solderless oil fount with safety oil well, and security standing bail hooked into patent brass eyelets.

With white globe, dozen $10.00
Extra white globes, dozen 1.50

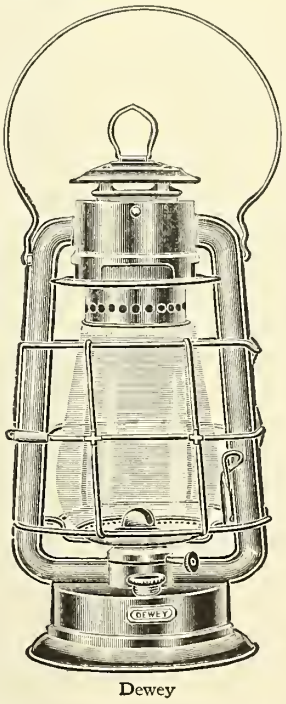


Blizzard Mill No. 2

Approved by insurance inspection department.

These lanterns represent the highest type of watchman's lanterns on the market. They give a light of 10 candle-power and embody every modern lantern improvement, bright tin, having special reinforced frames braced to founts, hinged guards, safety oil wells, and a locking attachment to prevent tampering with the flame. Sold without padlock.

With white globe, dozen $33.00
Extra white globes, dozen 2.00

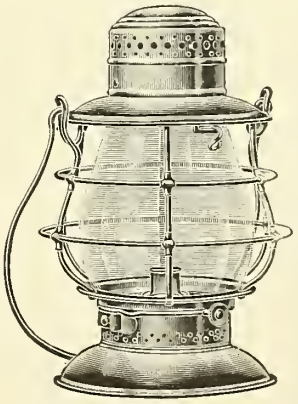


Dewey

Has attachment for locking frame to prevent tampering with the flame. Weighted slide in oil reservoir automatically presses against wick and shuts off oil supply in case lantern is overturned, thereby preventing fire.

The lantern is bright tin, substantially built and is of the cold blast type. A high-grade watchmans lantern.

Dozen $40.00



Railroad No. 39

Hinge top, removable globe, double guard, casts no shadow. For use with railroad signal oil. Bright tin.

With white globe, dozen $13.50
Extra white globes, dozen 2.00
Extra red globes, dozen 5.30

Fire Extinguishers

Accurate



Capacity, 2½ Gallons

Simple to operate. No experience required. Throws stream 50 feet and will instantly extinguish an oil, tar, naphtha or gasoline fire

Besides the great strength of the "Accurate," there are other advantages embodied in its construction, among them being the following:

I. Moisture-proof acid bottle, because top is ground true and lead stopper has a true bearing surface, thus the acid retains its full strength.

II. Side handle fastened on cylinder instead of on dome and four heavy rivets used.

III. Acid bottle cage made of hard rolled brass, coated, with heavy rolled copper tops.

IV. Chemical charge securely packed inside the extinguisher for shipment (see right hand cut). Charges are never lost or damaged in transit, making user always certain of the correct charges for use.

V. The general finish and appearance of the "Accurate" is unusually fine, and it is guaranteed absolutely dependable. 2½ gallons capacity, tested to 350 pounds pressure. Passed by the underwriters laboratories.

Each $10.00
Extra re-charges, dozen 5.00



Showing method of packing chemical charges in Accurate Fire Extinguishers.

Choke Fire

A Dry Chemical



A well coated metal tube, strongly made. It is 24 inches in length and contains chemical fire-killing ingredients of the highest grade. These chemicals are in powder form, ground extremely fine, and are therefore much more efficient because of the greater amount of carbonic acid gas that is immediately generated when the powder comes in contact with the fire. It is a well-known fact that carbonic acid gas is a very powerful agent in extinguishing fire.

Choke Fire may be used to best advantage where objection might be made to water or a fluid chemical stream. Fires starting from electric causes may frequently be extinguished with less damage by using Choke Fire than by any other means, if attacked in their incipiency.

Choke Fire should be regarded as invaluable as a "first aid," but is not intended to take the place of the liquid chemical extinguishers.

Dozen $10.00

Pyrene

Pyrene is a combination of powerful gases in liquid form, absolutely devoid of moisture, thus rendering it a non-conductor of electricity. When this liquid is brought into contact with a temperature of 200 degrees or over it is instantly converted into a heavy gas blanket which, surrounding the fire, excludes oxygen, and extinguishes the fire without damaging surrounding property.



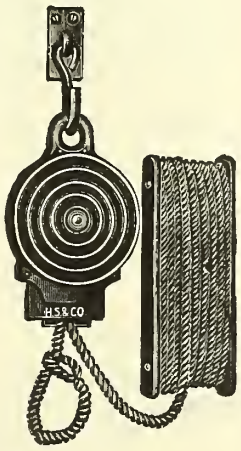
Pyrene will not freeze at a temperature of 50 degrees below zero, does not deteriorate with age, or corrode metals, no matter how long a period may elapse, thus eliminating cost of maintenance and care. It is equally efficient on all classes of incipient fires, and is the only extinguisher that will effectually extinguish burning Gasoline, Turpentine, Varnish, Paint Remover, Oil-soaked Waste, Shavings, Calcium Carbide, and all other highly inflammable materials.

Size is three inches in diameter, fourteen inches long and weight is about six pounds. Is especially adapted for car shops, barns, power houses, for the home and for any automobile or railroad car. Passed by the underwriters laboratories.

Brass polished, each $7.00
Brass nickel-plated, each 8.00
Extra re-charges, each 1.00
Enameled brackets, each ..... .50
Brass brackets, each ..... .75

Fire Escapes

Wilson Portable Automatic



Complete with Wall Hook and Rope.

No. 1 Travelers size, with 60 feet of rope, each	$5.00
No. 2 Residence and hotel size, with 75 feet of rope, each	8.00
No. 3 Fire department size, with 100 feet of rope, each	12.00
Extra rope, per foot	.03
Extra hooks, each	.25
Belts, if desired, each	1.50

Consists of a rope with a loop at each end, which passes through a simple mechanical device hung at the window. This device controls the speed of the moving rope absolutely without any human assistance. It is not made to lower a specified weight, but adjusts itself to any weight. A person weighing two hundred and fifty pounds will descend approximately at the same rate of speed as one weighing ninety pounds. It can be conveniently packed in a trunk

The mechanism is simple and thoroughly durable. It has no ratchet, cog gearing or spring liable to stick or get out of adjustment.

The reel or coil of rope. which should be of sufficient length to reach the ground, is thrown out of the window and the ring on uncoiling device must be attached to suitable and substantial hook

With the loop at the end of the rope at the window a slip noose is made and slipped over the head and under the arms. The person may then descend without holding or controlling the rope in any way

It is not necessary for the second or succeeding persons to draw the rope up again. It is ready for them, as there is a loop at each of the rope.

Suitable for use in residences, hotels, apartments, factories, retail and wholesale stores and by travelers

American Chain Ladder



A safe, practical, indestructible fire escape, suitable for use in schools, colleges, private residences etc. To install and prepare ready for use requires only the fastening of the chain anchors to baseboard and floor. This is done with 12 steel screws without disfigurement to interior or exterior of building. To use, drop out of the window.

It is constructed of weldless link, non-kinkable, high carbon steel chain side supports, to which are attached at intervals of 12 inches, seamless cold drawn steel tube rungs, 15 inches in length.

Every ladder will support a strain of 2,000 pounds and is assembled without drilling, denting or otherwise weakening the rungs. All parts are heavily galvanized, which renders the ladder impervious alike to fire and water.

Each ladder is packed in oxidized case, which may be used as a permanent container, set under window ready for instant use (see illustration).

Length of ladder, feet	10	15	20	25	30	40
Each	$12.00	15.00	16.50	18.00	20.00	22.50
Length of ladder, feet	50	60	70	80	90	100
Each	$25.00	30.00	35.00	39.00	44.00	48.00

Extra for waterproof roof or balcony case $6.50

Fire Guards

A Protection for Gas Lights or Electric Lamps

Gas Jet

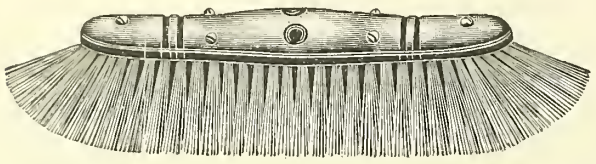
No. 200 7 inches in diameter, made of wire and retinned, dozen . $3.00

Electric Lamp

No. 201. Made of wire, extra heavy, with clamp screw. Lamp may be removed and replaced without detaching guard.

Dozen $5.00

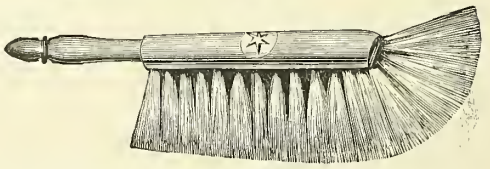
Floor Brooms



Brooms are made on polished double threaded hole blocks. Threaded handle supplied with each broom.

No. 6 16-inch block, made of Russian bristle, dozen..... $50.00
No. 116 16-inch block, black middle, white outside, dozen.. 33.75

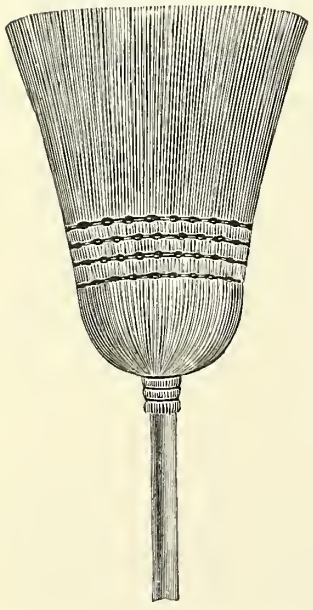
Bench Dusters



No. 10* 5-inch block, white bristles, dozen..... $5.00
No. AH3 10-inch block, white and gray bristles, dozen..... 8.00
No. 2 Boston 9-inch block, gray bristles, dozen..... 10.00
No. 2 Extra Boston 9-inch block, gray bristles cased with white, dozen..... 12.00

*Our regular manual training-school duster.

Factory Brooms



All corn, smooth stock. Strongly made, heavy weight. Extra quality.

No. 7 Dozen $8.00
No. 8 Dozen 8.50

Feather Dusters



Black polished handles, full feathers, and well made.

No. 14 Ostrich feathers, dozen..... $25.00
No. 14 Turkey feathers, dozen..... 10.00

Broom Holders



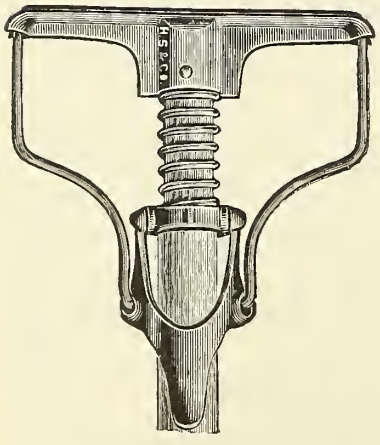
Handy

Made of heavy nickeled wire, dozen..... $ .80



No. 215 Stamped steel, coppered, dozen. $1.00

Mop Handles



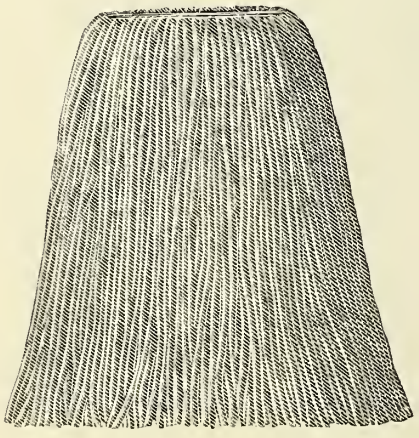
These Mop handles are made of selected hardwood and polished.

The heads and levers are made of extra heavy sheet steel. They do not break in shipment or in use.

Metal parts galvanized.

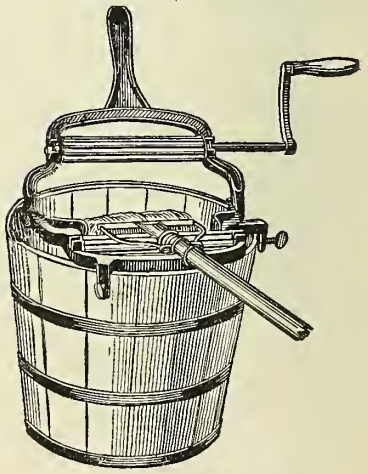
Dozen..... $2.00

Cotton Mops



No. 2 Cotton Twine, dozen..... $3.00

Mop Wringers



No. 1 Japanned

With galvanized rolls (as illustrated).
Each..... $1.25

Whites

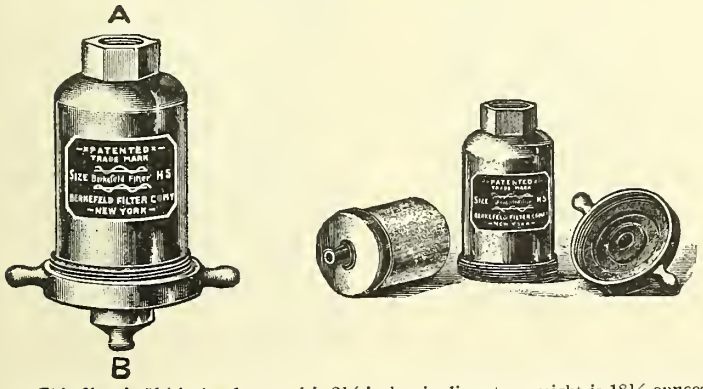
With this Wringer the mop is squeezed dry between two boards without muss. It is the best of its kind.
Each..... $2.10

Filters

Berkefeld

The Berkefeld Filtering Medium is made of infusorial earth found in the kieselguhr (fossil meal) mines in Hanover, Germany. The peculiar properties and microscopic construction of this earth (composed of the silicious skeletons of diatoms) render it peculiarly suitable for the purpose of filtration. The form of these minute skeletons (ladder like and interlacing) gives an enormous number of tiny pores, thus affording a free passage for the liquid and at the same time stopping all suspended matter. The great difficulty to be overcome has been the formation of a solid substance of this deposit thoroughly annealed together. These filters include this feature in a hollow filtering cylinder completely closed at one end and the other end fitted into a metal headpiece. The water passes through the walls from the outside to the interior, leaving all impurities on the outer surface. The accumulated impurities can be removed with a sponge or soft brush. At each cleaning a thin surface layer of the medium will be brushed off, thus reopening all the pores and regaining the original filtering capacity. The entire cylinder may be sterilized by boiling in water for one hour.

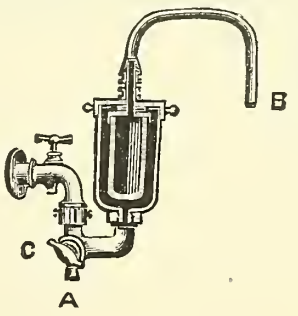
No. H-5 Nickel-plated



This filter is 5½ inches long and is 2½ inches in diameter; weight is 18½ ounces and its capacity is 1 gallon in 6 minutes at 40 pounds pressure. Designed to be attached to any regular ¾-inch hose bibb faucet of the main supply pipe at A, as shown in cut. Where there is no thread, use No. 1 hose ends.

Each $4.50
Extra filtering cylinders, each 1.50

No. H-2 Upward, Nickel-plated

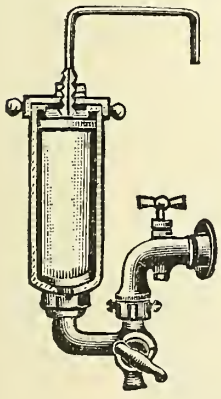


Similar to No. H-5 but larger. Is 6½ inches long, and 2¾ inches in diameter; weight is 1 pound and 7 ounces and its capacity is 1 gallon in 4 minutes, at 40 pounds pressure. This style is recommended for houses where the faucet is placed too low to allow pitchers, etc., under the filter to collect the filtered water.

Each, complete as shown, with two-way cock $6.00
Extra filtering cylinders, each 2.25

Nos. H-2B and H-4

These filters, having a larger filtering surface, naturally require less frequent cleaning than the smaller sizes. The proper place for the filter is on the off side of the faucet, and not between the hot and cold water faucets, where the space is generally limited. In order to allow this arrangement, the two-way cocks are made either right or left hand, as shown in illustrations. When two-way cock is desired, always specify the number as desired, with "Upward" attached, and advise whether right or left hand is desired.



No. H-2B Upward

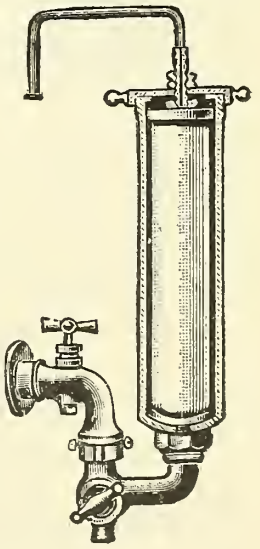
Showing left hand two-way cock and outlet pipe. 9¼ inches high; 2¾ inches in diameter. Weight, 3¼ pounds. Capacity ¾ gallon in two minutes.

Complete as shown $12.00
Filter only 9.00
Extra filtering cylinders, each 3.00

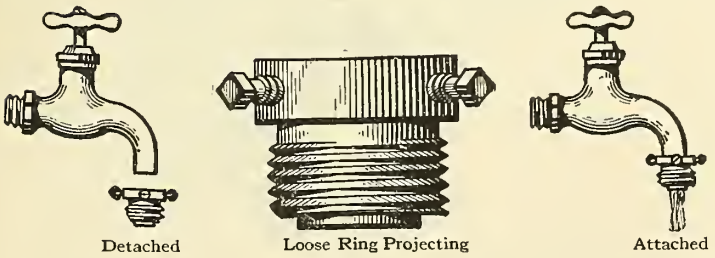
No. H-4 Upward

Showing right hand two-way cock and outlet pipe. 11½ inches high; 2¾ inches in diameter. Weight, 3⅝ pounds. Capacity one gallon in two minutes.

Complete as shown $15.00
Filter only 12.00
Extra filtering cylinders, each 3.75



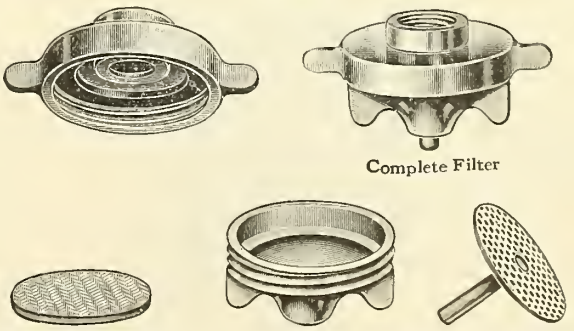
No. 1 Hose End



To attach filters to plain bibb, may easily be attached by anyone. Complete directions with each.

Each, nickel-plated ..... $ .75

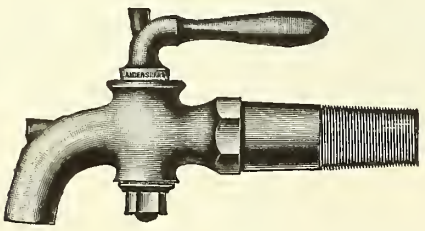
Rex



The discs in this filter are white cotton filter pulp (used largely by breweries) which forms a superior filtering medium for water.

Each with 1 dozen discs $2.50
Extra discs, dozen ..... .25

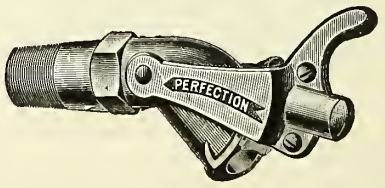
Petroleum Oil Faucets



Made of iron, with brass key. Japanned all over. Lever handle. Screw shank for use in wood.

No. 6 ¾ inch, dozen $16.00

Molasses Gates

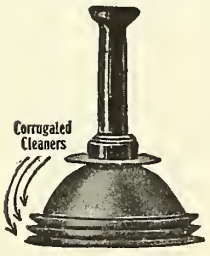


Screw taper shank for use in wood.

Number	51	52	53	54
Inside diameter of discharge, inch	¾	1	1¼	1½
Dozen	$12.00	14.00	16.50	20.00

Rubber Elastic Force Cups

Little Plumber



No. 4	Small, dozen	$4.20
No. 5	Medium, dozen ..	6.00
No. 6	Large, dozen	7.20

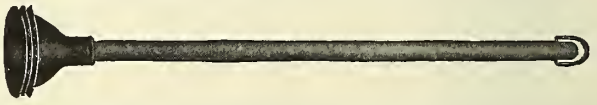
Regular



For cleaning the discharge pipes of wash-bowls, bath tubs, stationary wash-tubs, etc., when they become partially or entirely stopped.

No. 1 3-inch diameter, dozen $2.70
No. 2 3¾-inch diameter, dozen 3.00
No. 3 4½-inch diameter, dozen 3.50

Short Handle



For forcing stoppages out of closets, bowls, sinks, tubs, urinals and soil pipes.

Junior Corrugated Plumbers Friend, each ..... $ .75

Long Handle



For forcing stoppages out of closets, bowls, sinks, tubs, urinals and soil pipes.

Regular, 6-inch cup, dozen $12.00

Battery Connectors



A simple little clip that will never let go. Holds fast no matter how the batteries are jolted. It grips like a vice. Attached and detached in a second.

No. 1026 Box of ten ..... $ .60

Annunciator Wire

Assorted Colors—No. 18

Spools containing, feet	25	50	100
Dozen	$2.50	4.40	7.75
One pound coils, about 160 feet to one pound, pound			$ .40

Flexible Conducting Cords

Cuts Full Size



No. 3868

Composed of two conductors, each having 16 No. 33 Copper Wires in strands with cotton braid, laid together flat, with outer braid of green or red silk.

Double Conductor Flexible Silk-covered Cord, yard ..... $ .24



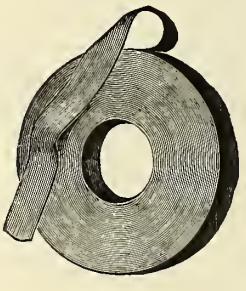
No. 3877

Composed of two conductors, each having 16 No. 33 Copper Wires in strands insulated with silk, covered with green colored silk. This cord is generally used for Pear Shape Push Buttons.

Two Conductor Push Button Cord, yard ..... $ .24

Splicing Tape

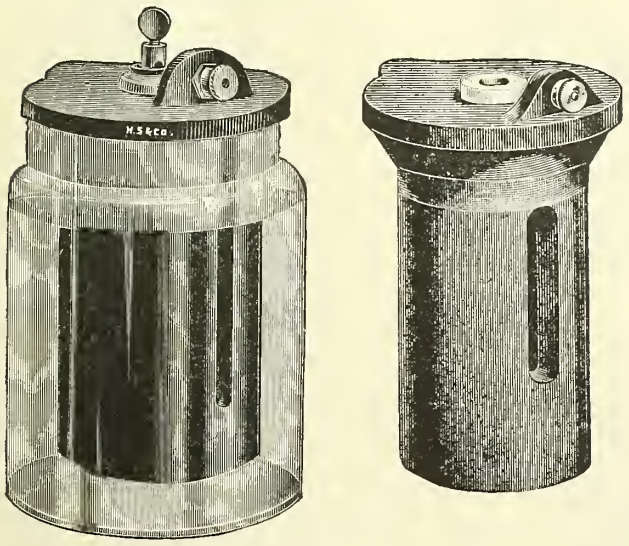
Black



"Special" ¼ pound rolls, roll ..... $ .18
"Regular" ½ pound rolls, roll ..... .30

Batteries

Carbon Cylinder



The carbon element in these batteries is non-exhaustible and is molded in one piece, forming a perfect seal for the battery and preventing evaporation or the climbing of salts.

The zinc is suspended by a porcelain insulator through the center of the carbon cylinder.

No. 3 For open circuit, complete with charge of salamoniac, each ..... $ .45

Zincs

No. 3 Per dozen ..... $ .60

Salamoniac

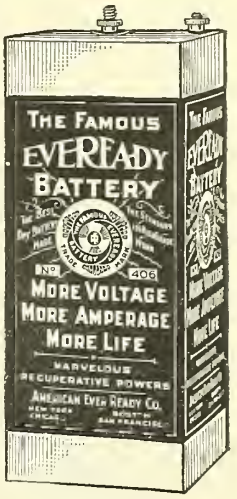
For battery charging, per pound ..... $ .15

Dry Cell

EveReady

The EveReady Ignition Battery produces a hot, fat, snappy spark and gives a service of such unqualified uniformity, that it can be depended upon absolutely to do its part in producing perfect ignition.

It is economical, owing to its high amperage and remarkably long life, and its steady service eliminates trouble that is inevitable with an unreliable battery.



Number	Size in Inches Diameter	Height	Amperage	Volts
406	2½	6	22 to 25	1.6

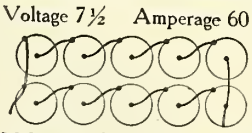
Dozen, $3.00

In Series

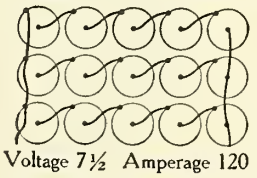


In Series Multiple

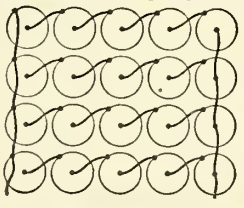
Voltage 7½ Amperage 60



Voltage 7½ Amperage 90



Voltage 7½ Amperage 120



How to Connect

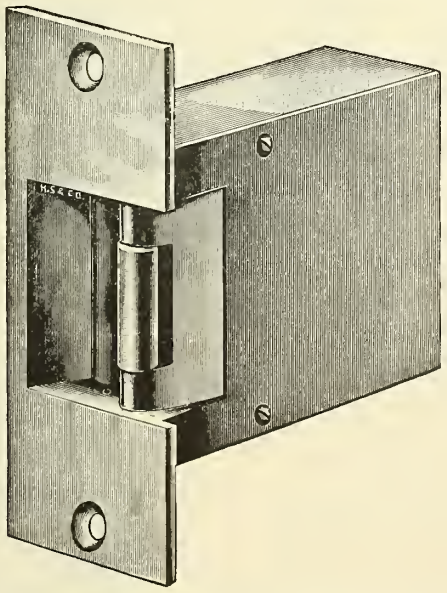
No set rule can be adopted governing the number of cells to be connected in series—nor the number of series to be connected in multiple. The number of cylinders on the engine and the service to which the engines are put, whether heavy or light, must be considered.

The voltage is increased progressively with the addition of each cell connected in series and the amperage increased progressively with each series connected in multiple. In general practice five cells are connected in series.

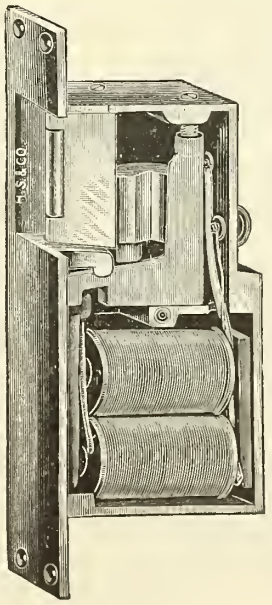
While actual tests show an increased economy in operation with each additional series connected in multiple, want of room for storing the batteries compels the motorist to carry as few cells as possible and seldom are more than two series connected in multiple for automobile ignition. For stationary work which is more or less continuous, three series and even four may be connected in multiple with economy.

That the batteries may have periods of rest in which to recuperate, it is a decided advantage to have two sets of cells, with a combination switch, so that either may be thrown into circuit or both together, in series-multiple. This increases the efficiency of the batteries and also eliminates the necessity of frequent adjustment of coil for weak or strong batteries.

Electric Door Openers

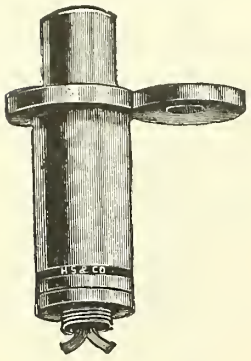


No. 154 Iron back, brass side and front. The patent anti-friction roller enables it to be used for very heavy doors, with small battery power. Each one carefully tested under heavy pressure. 3⅜x1¼ inches front. Complete with pushout spring, each $3.00

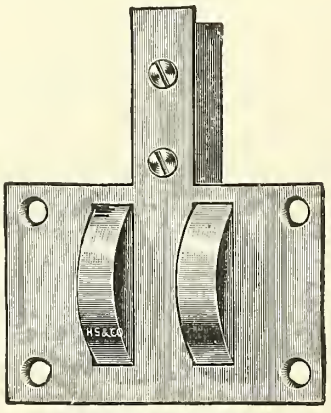


Schneider's, cast bronze. Can be used on either right or left-hand doors. Complete with push-out spring and screws, each $2.00

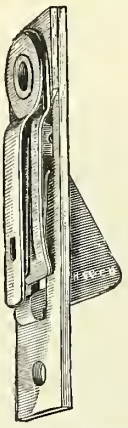
Burglar Alarm Springs



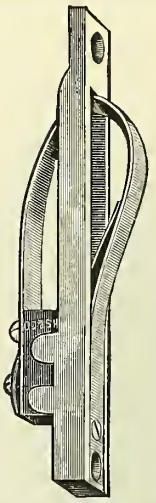
Cylindrical For Doors
Full Size Cut
Dozen..... $3.00



Double For Windows
Size 2½ x 2¾ inches
Dozen..... $3.00



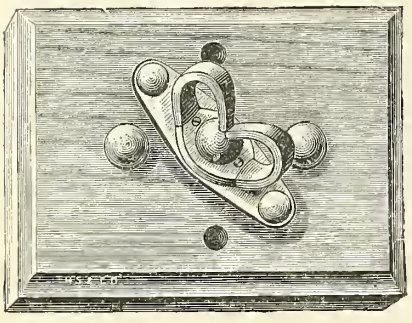
Single Small For Windows
Size ½ x 2½ inches
Dozen..... $2.50



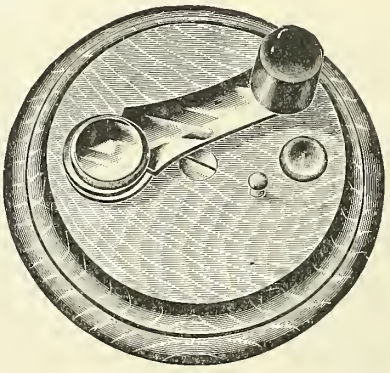
Single Large For Windows
Size ⅝ x 3⅜ inches
Dozen..... $5.00

Switches

Full Size Cuts



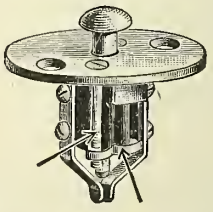
"Crown." Single point, ash or cherry.
Dozen..... $3.00



"Round." One-point, ash or cherry.
Dozen..... $1.75

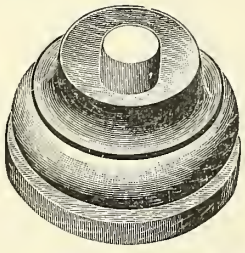
"Round." Two-point, ash or cherry.
Dozen..... 1.95

Floor Push Button

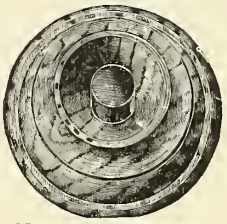


This Push is intended to be inserted in floor, to be operated by the foot of the person giving the signal. Can be used under the diningroom table, under desk, or any other place where a foot press push is desirable. A neat design, very durable and reliable.
No. 1 Plate 2 inches diameter, dozen. $3.90

Wood Push Buttons



No. 49. Ash or Cherry
Base $1\frac{9}{16}$ inches diameter, dozen..... $1.25

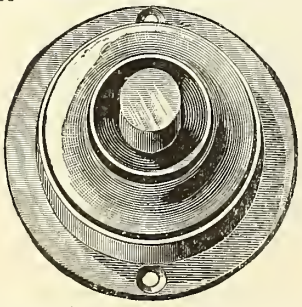


No. 50. Ash or Cherry
Base 2⅛ inches diameter, dozen $1.25



No. 049. "Pear" Ash or Cherry
Length 2½ inches. Dozen $1.80

Metal Push Buttons



No. 229½. Wrought Bronze, Polished
Base $2\frac{5}{16}$ inches diameter, dozen $1.80



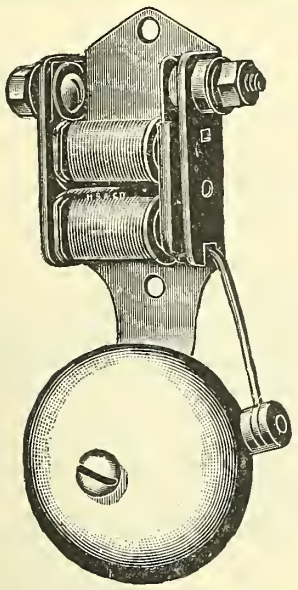
No. 358
Black center, to fit ¾-inch hole, dozen $3.00



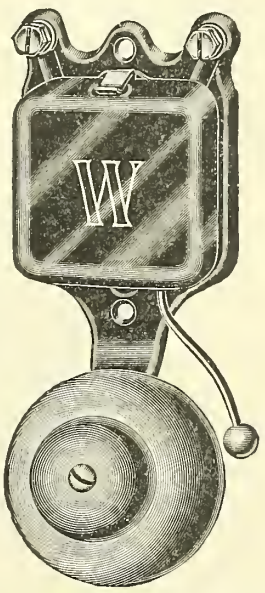
No. 398
Black center, to fit ½-inch hole, dozen $2.00

For other Metal Push Buttons, see index

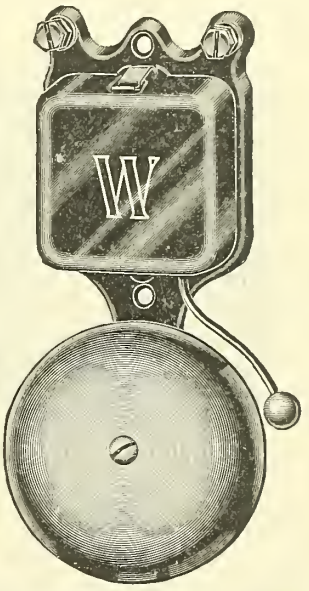
Electric Bells



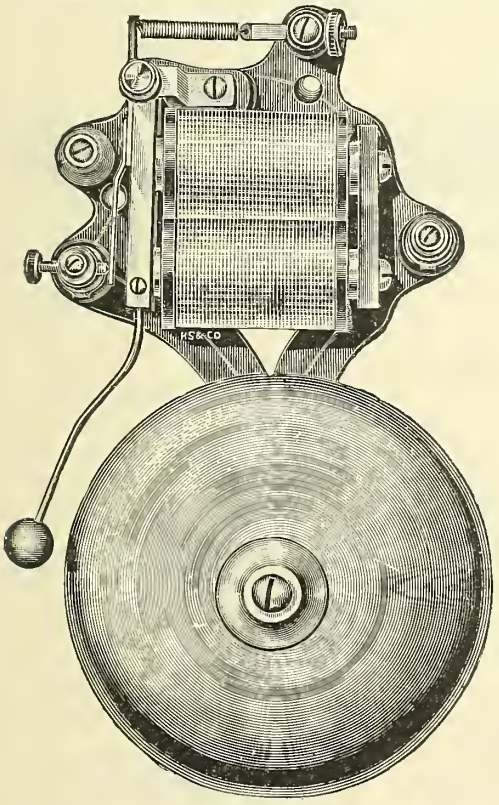
No. 18 1¾-inch nickel-plated box, each..... $ .90



No. 1892 Dome shape; 2½-inch nickel-plated shell, japanned boxes, each. $ .90



No. 189 2½-inch nickel-plated shell, each..... $ .55
No. 189 4-inch nickel-plated shell, each..... .75
Above bells have japanned boxes.

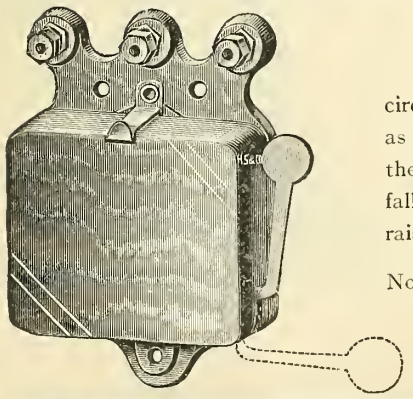


Electric Skeleton Bells

Are well made, strong and substantial. The frames are iron japanned and the shells are cast bell metal. The armature is pivoted and easily adjusted. Are suitable for factories, schools, etc.

No. 6 4-inch nickel-plated shell, each $2.40
No. 6 5-inch nickel-plated shell, each 3.50
No. 6 6-inch nickel-plated shell, each 3.72
No. 6 8-inch nickel-plated shell, each 6.76

Automatic Drops

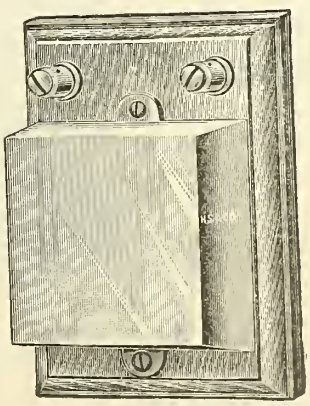


Magneto Circuits

These Drops are used for closing a bell circuit automatically, and keeping it closed as long as desired. When the circuit is closed the drop, operated by an electro-magnet, falls and holds the circuit closed until it is raised again.

No. B26 Each..... $1.25

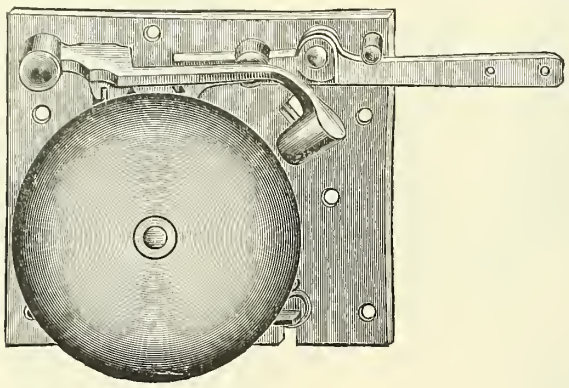
Buzzers





Style D1 Steel, japanned, each..... $1.25
Style H Iron, japanned, each..... .60
Style C Oak base, nickel-plated box, each..... 1.15

Trip Gong Bells



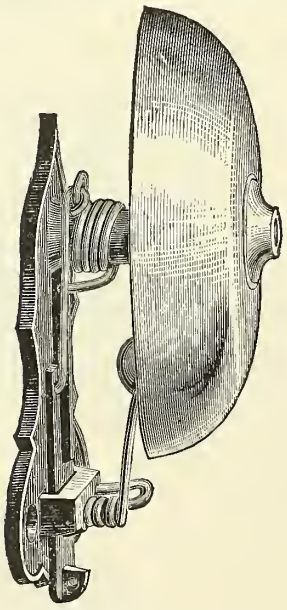
No. 17870

For miscellaneous uses. Polished bell metal shells. Sizes 4 to 6 inches have wrought steel bases which will not crack. Either right or left hand.

4-inch gong, wrought steel base, dozen	$9.90
5-inch gong, wrought steel base, dozen	14.30
6-inch gong, wrought steel base, dozen	18.00
8-inch gong, cast iron japanned base, dozen	49.40
10-inch gong, cast iron japanned base, each	6.60
12-inch gong, cast iron japanned base, each	13.70
14-inch gong, cast iron japanned base, each	17.60
16-inch gong, cast iron japanned base, each	21.60
18-inch gong, cast iron japanned base, each	27.00

Gongs above 12 inches have hardwood hammers.

Gong Bells



No. 20	Bronzed steel shells, 4-inch, dozen	$5.00
No. 30	Polished bell metal shells, 4-inch, dozen	10.00

Bell Slide Pulls

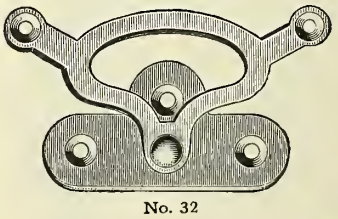


Polished Cast Brass

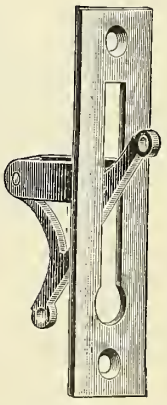
No. 17978 Length 9 inches over all, dozen $10.00

Bell Cranks

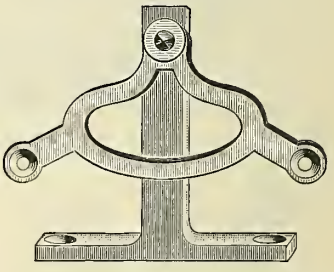
Half Size Cuts



No. 32



No. 11

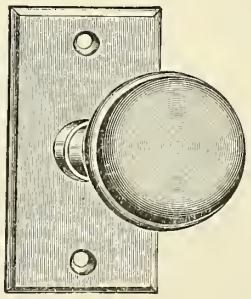


No. 33

No. 11	Iron, painted, dozen	$1.00
No. 32	Iron, japanned, dozen	.80
No. 33	Iron, japanned, dozen	1.15

Bell Pulls

No. 1548 Wrought bronze, polished, knob 1⅝ inches diameter, dozen $10.00

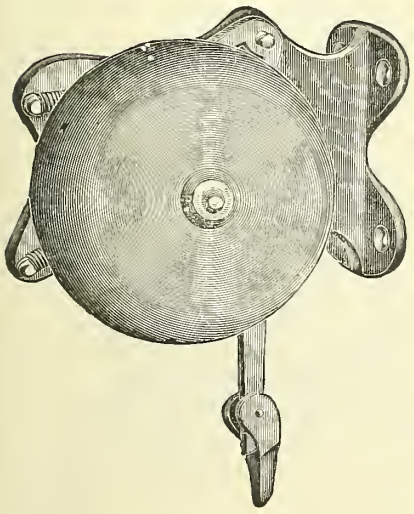


Check Springs



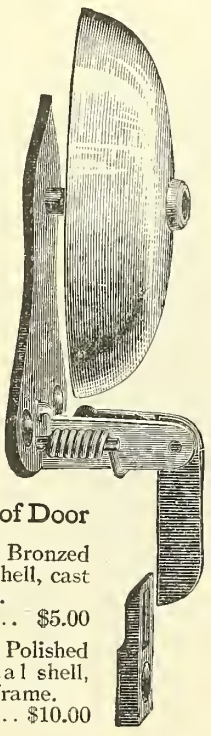
No. 25 5-inch coppered, gross 5.90

Alarm Bells



For Side or Top of Door

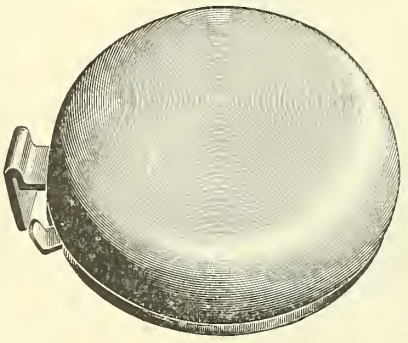
No. 27405 Polished-bell metal shell, cast-iron frame, dozen.. $12.20



For Top of Door

No. 125 Bronzed steel bell shell, cast iron frame.
Dozen..... $5.00

No. 135 Polished bell-metal shell, cast-iron frame.
Dozen..... $10.00



Automatic

Applicable to any door or to wide sash.

When once attached it requires no attention whatever.

The act of closing the door sets the operating mechanism, so that the instant the door is opened the alarm is sounded.

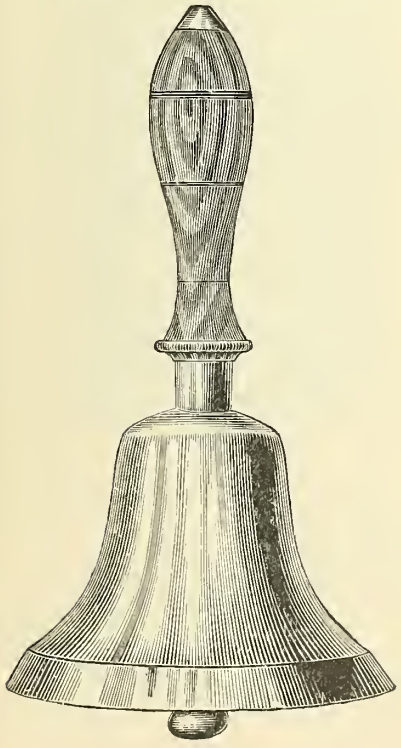
The bell may be rendered silent when desired by the stop mechanism.

Being small, neat, and handsomely finished, it is not obtrusive or objectionable when on the door.

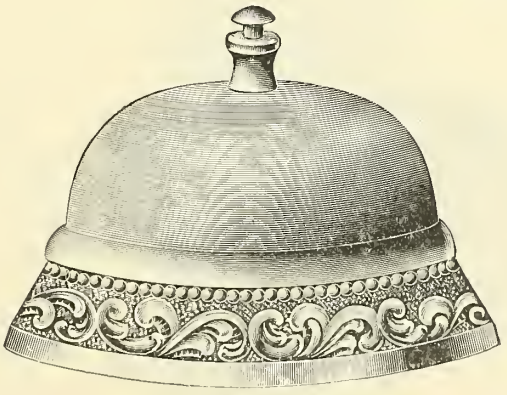
Is applied in a few seconds and never fails to work when the door is opened.

Dozen..... $9.00

Hand Bells

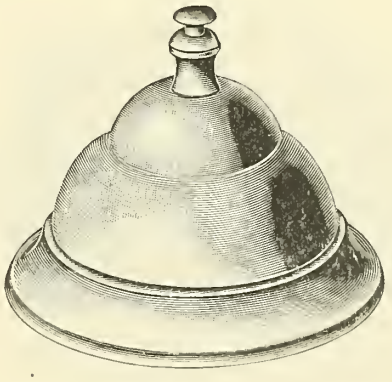


Call Bells



Cast Bell-Metal Shell. Bronzed Base

No. 96 4 inches diameter, nickel-plated, dozen..... $5.00



Base and Shell are Wrought Steel

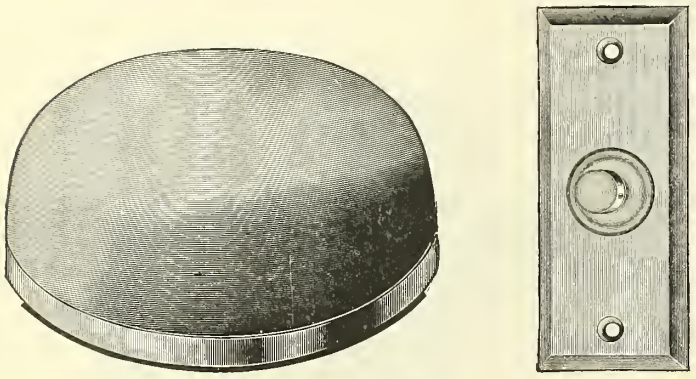
No. 84 3⅜ inches diameter, nickel-plated, dozen..... $2.50

Polished Bell Metal Shells

Wood Handles

Number	4	6	8
Size of mouth, inches	3¼	4	4⅞
Dozen	$6.50	11.25	18.50

Mechanical Door Bells



Push Button Type

Continuous ring gong, made from bell metal. Shell and button plate are old brass finish.

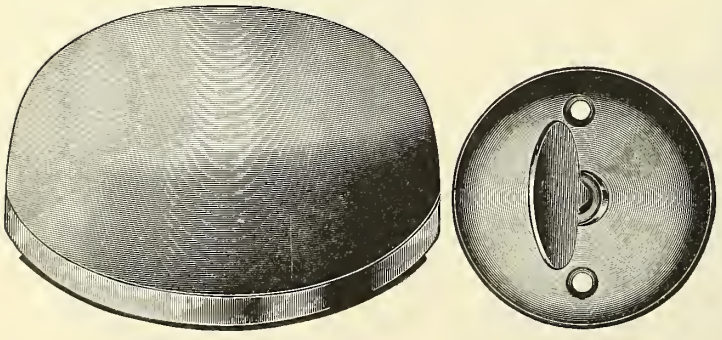
No. 48FX66F Dozen $11.15



Rotary Type

Gong made from wrought steel. Shell and turn and plate are all antique copper finish.

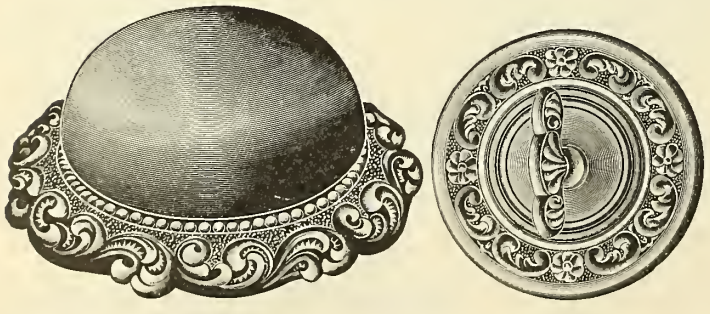
No. 0320CX42 Dozen $5.25



Rotary Type

Gong made from wrought brass. Shell is nickel-plated. Turn and plate are polished bronze.

No. 033NX75B Dozen $7.00

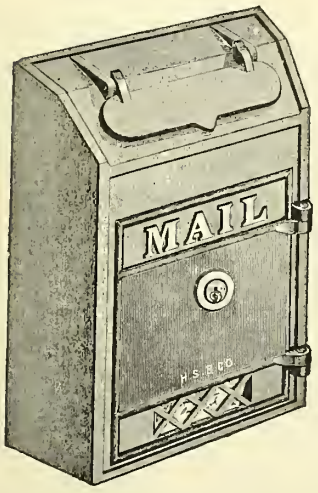


Rotary Type

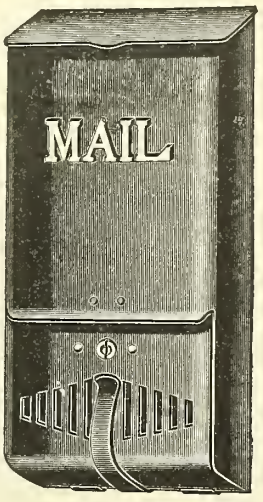
Gong made from wrought steel. Shell is nickel-plated. Turn and plate are bronze-plated.

No. 019NX44B Dozen $4.15

Mail Boxes



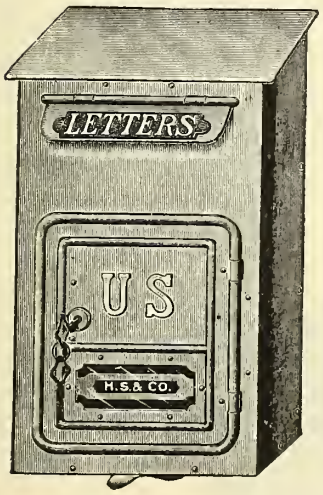
No. 2261 11x7x3¼ inches, cast iron, japanned, with lock and two corrugated keys, each $4.85



No. 2417 11¼x5¼x2¼ inches, wrought steel, black enamel flat keyed lock with two keys, each ..... $ .60



No. 2436 12x5¾x2 inches, aluminum finish, flat keyed lock with two keys, each $1.20



No. 2½ 10½x5½x2¾ inches, wrought steel statuary bronze finish with secure lever lock and 2 keys, each. $2.50

No. 3 Style of No. 2½, but dull black, japanned, each..... 1.90

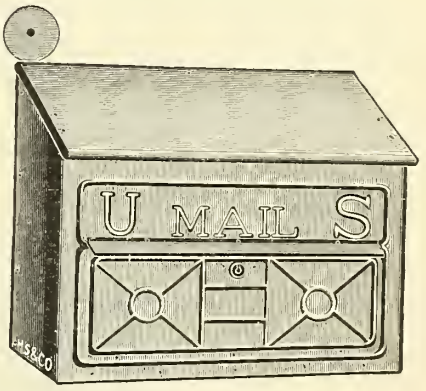
No. 4 Style of No. 2½, but antique copper finish, each..... 2.50

No. 30 Style of No. 2½, but wrought brass, old brass finish, each..... 4.50



No. 2447 12x5¾x2 inches, wrought steel, antique brass finish, glass panel with name-plate for owner's card, flat keyed lock with two keys, each..... $1.50

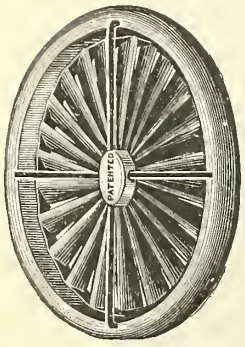
For Rural Delivery



No. 1½ 11x14x4 inches, aluminum finish, with carriers and owners signals and automatic guard device, each..... $3.00

Window Ventilators

Protective Revolving Type



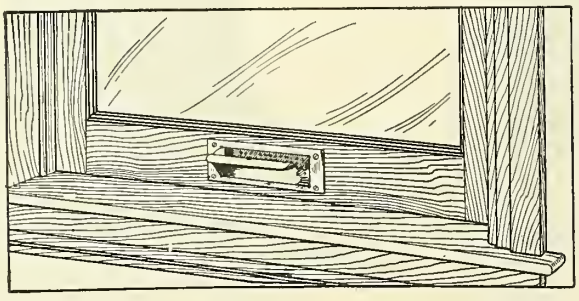
The revolving wheel is the oldest known principle of ventilating; it consists of two currents of air passing in opposite directions—a fresh current of air inward and a foul current of air outward. It also prevents frost or steam on show windows, etc.

Capacity: When motionless the 8½-inch Ventilator has a capacity of 20 cubic feet of air per minute; in a gentle breeze five times that quantity of air passes through the Ventilator. The 6-inch Ventilators have about one-half the above capacity.

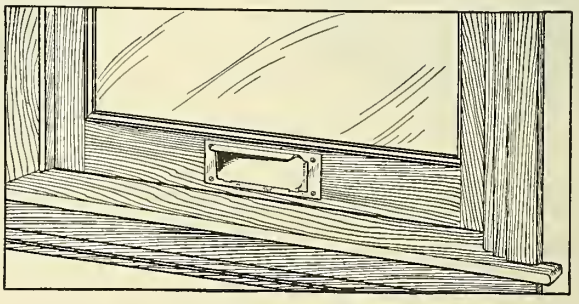
The set-screw adjustment in the construction of these ventilators is an entirely new feature and the strengthening of all the wearing parts together with a solid metal perfectly balanced wheel.

8½-inch gilt (brass), with storm cap, each $3.50
6-inch, gilt (brass), with storm cap, each 2.25

Yawman Sash Lift Type



Open

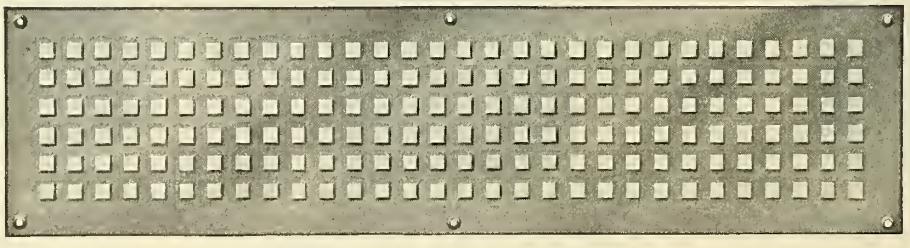


Closed

A sash lift and ventilator combined.
Gives constant ventilation without drafts.
Air currents always under control by opening or closing valve.
The window may be locked at all times, if desired.
Easily installed—simply cut a mortise of proper size in sash rail and attach inner and outer plates.

Polished bronze, dozen $10.00
Brass, old brass finish, dozen 10.00

Grilles



No. 570

For ventilation, indirect heating, inserting in stair risers and many other purposes. They are especially adapted for use on store windows and in other places where ventilation must be good. Ordinarily these grilles are made from either No. 12 or No. 13 gauge metal. For indirect heating in connection with either steam or hot water where a heavy or thick grille is desired this style is recommended. These grilles are furnished with holes in margin drilled and countersunk for flat-head screws.

Width of opening, inches	3	4	5	6	7	8	9	10	11	12
Solid brass or bronze, per lineal foot	$3.85	4.00	4.15	4.35	4.65	5.00	5.40	5.85	6.70	7.15

Can be furnished in any length not exceeding 8 feet, to order only.

Brass Key Tags



No. 0 Diameter, inch 29/32
Per 100 ..... $ .65



No. 1 Diameter, inches 13/32
Per 100 ..... $ .90



No. 1½ Diameter, inches 1⅜
Per 100 ..... $1.20



No. 2 Diameter, inches 3
Per 100 ..... $4.95

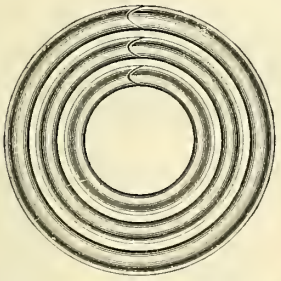


No. 3 Diameter, inches 2
Per 100 ..... $1.80

Above Tags lettered or numbered, per 100 letters or numbers, $ .75

Key Rings

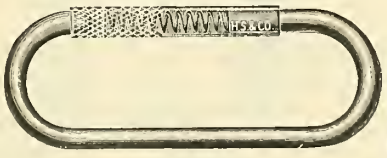
Full Size Cuts

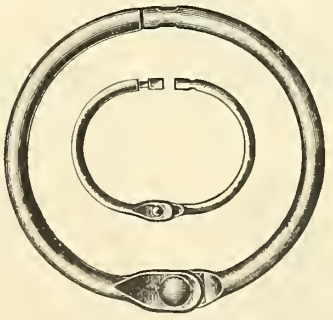


No. 55 Steel, diameter, inches	½	⅝	¾	⅞	1	1⅜	2
Gross ..... $ .38	.75	1.20	1.50	3.00	5.25	11.25	
No. 155 Brass, diameter, inches		⅝		¾		⅞	1
Gross		$ .90		1.15		3.00	3.75

Keys can be slipped on and off easily, and lie flat in the pocket.

Billings Steel, dozen $1.20
Williams Steel, gross 7.20



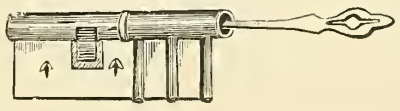


Metal Rings

Used for loose leaf systems, etc. Also used as a key ring.

College—Gross $7.20

Keyhole Guards



Placed in keyhole and locked, thereby plugging same and making it impossible for any one to tamper with lock. For bit key locks only.

Dozen $12.00

Lead Seals



Largely used by express, railway, electrical and gas companies, government inspectors, cigar manufacturers, and other shippers of sealed merchandise to protect their goods from being tampered with.

No. 2 With wires, per 1000 ..... $4.00
No. 2 Without wires, per 1000 ..... 2.75
Seal press for above No. 1, length 10 inches, each .. 1.50

Iron Snaps

Bag



⅜-Inch Round Eye

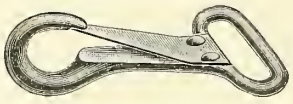
No. 70 Polished, gross $1.80



½-Inch Loop Eye

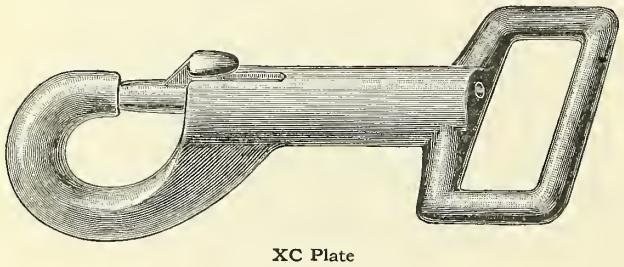
No. 30¼ Polished, gross $1.80

Loop



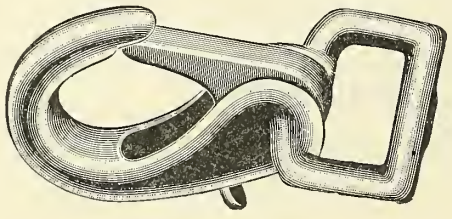
⅝-Inch Loop Eye

No. 40½ Japanned, gross $2.40



XC Plate

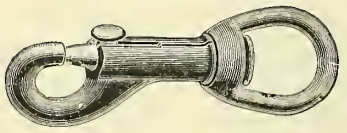
Number	04	08	012	014
Loop Eye, inch	¾	1	1¼	1½
Gross	6.00	6.00	9.88	10.63



1-Inch Loop Eye

No. 1 XC Plate, gross $8.00

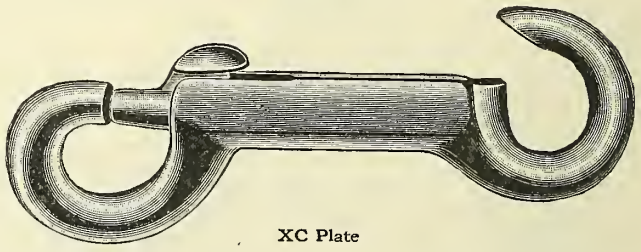
Swivel Eye



XC Plate

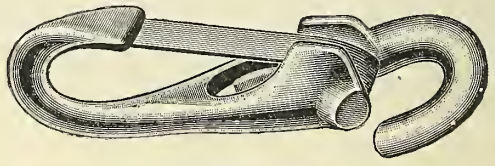
Number	50	50	50
Round Eye, inch	⅝	¾	⅞
Gross	$7.90	$9.00	$11.00

Open Eye



XC Plate

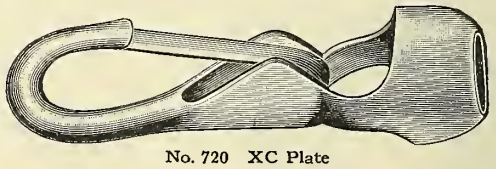
Number	520	522
Round Eye, inch	⅜	½
Gross	$5.20	9.40



⅜-Inch Round Eye

No. 731 XC Plate, gross $3.20

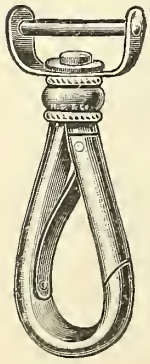
Rope



No. 720 XC Plate

For rope, inch	¼	5/16	⅜
Gross	$3.40	4.20	4.50

Brass Snaps



No. 1733
Style of No. 352



No. 4
Style of Nos. 1, 3, 5 and 7

No. 1	1 inch over all, cast brass, polished, gross	$5.75
No. 3	1 5/16 inches over all, brass, polished, gross	9.20
No. 4	1½ inches over all, brass, polished, gross	10.50
No. 5	1⅝ inches over all, brass, polished, gross	13.15
No. 7	2 inches over all, brass, polished, gross	19.70
No. 352	2¾ inches over all, brass, polished, heavy, dozen	4.00
No. 1733	1¾ inches over all, brass, polished, gross	15.00

Wire Rope Clamps

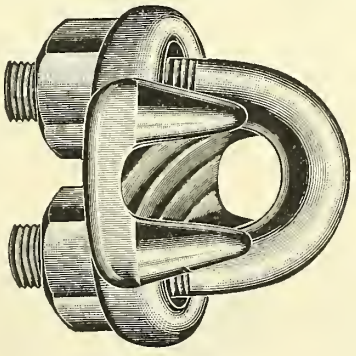


No. 430. Galvanized Iron

For rope, size, inches	$\frac{1}{8}$	$\frac{3}{16}$
Each	$ .25	.30

Wire Rope Clips

Crosby



Galvanized Iron

For rope, size, inch	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
Each	$ .25	.25	.25	.30

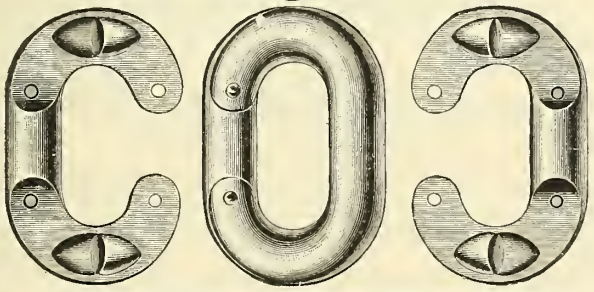
Round Wire Rope Hook Sockets



No. 418. Drop-Forged

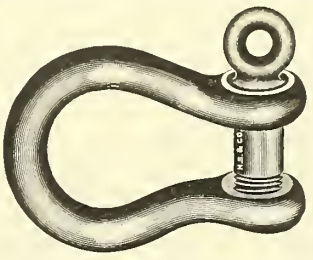
For size, diameter rope	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
Each	$1.30	1.40	1.50	1.95
Size hook	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1

Missing Links



Size Inch	Dozen: Galvanized	Dozen: Self-colored	Outside Dimensions of Links Inches
$\frac{1}{4}$	$1.35	$1.00	$1\frac{1}{2}$x1
$\frac{5}{16}$	1.45	1.10	$1\frac{11}{16}$x$1\frac{3}{16}$
$\frac{3}{8}$	1.60	1.20	$2\frac{1}{16}$x$1\frac{3}{8}$
$\frac{7}{16}$	1.80	1.35	$2\frac{3}{8}$x$1\frac{1}{2}$
$\frac{1}{2}$	2.10	1.50	$2\frac{5}{8}$x$1\frac{3}{4}$
$\frac{9}{16}$	2.55	1.80	3 x$1\frac{15}{16}$
$\frac{5}{8}$	3.00	2.00	$3\frac{5}{16}$x$2\frac{3}{16}$
$\frac{11}{16}$	3.75	2.65	$3\frac{1}{2}$x$2\frac{5}{16}$
$\frac{3}{4}$	4.50	3.35	$3\frac{7}{8}$x$2\frac{1}{2}$
$\frac{7}{8}$	6.50	5.00	$4\frac{7}{16}$x$2\frac{15}{16}$
1	9.00	7.00	$4\frac{7}{8}$x$3\frac{5}{16}$

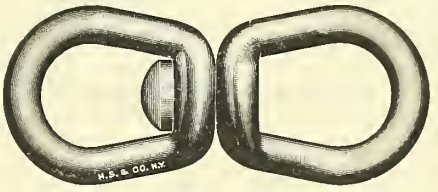
Screw Shackles



No. 209. Drop-Forged Steel, Galvanized

Size Inch	Length Inside Inches	Width Between Eyes Inch	Diameter of Pin Inch	Each
$\frac{3}{16}$	$\frac{7}{8}$	$\frac{3}{8}$	$\frac{1}{4}$	$ .25
$\frac{1}{4}$	$1\frac{1}{16}$	$\frac{1}{2}$	$\frac{5}{16}$	.25
$\frac{5}{16}$	$1\frac{1}{4}$	$\frac{9}{16}$	$\frac{3}{8}$	.25
$\frac{3}{8}$	$1\frac{3}{8}$	$\frac{11}{16}$	$\frac{7}{16}$	.27
$\frac{1}{2}$	$1\frac{7}{8}$	$\frac{3}{4}$	$\frac{9}{16}$	.37

Swivels

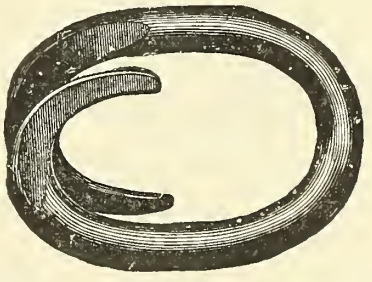


No. 402. Drop-Forged Steel, Galvanized

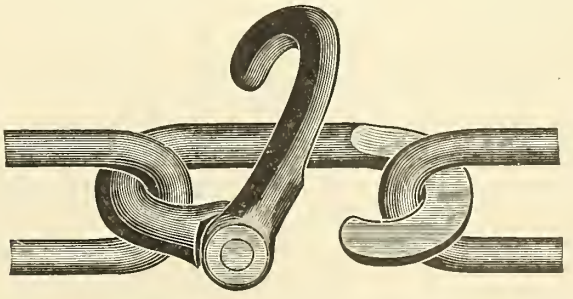
Size Inch	Extreme Length Inches	Width Inside Inches	Each
$\frac{1}{4}$	$3\frac{1}{4}$	$\frac{3}{4}$	$ .35
$\frac{5}{16}$	$4\frac{1}{8}$	1	.35
$\frac{3}{8}$	5	$1\frac{1}{4}$	.40
$\frac{1}{2}$	6	$1\frac{1}{2}$	.50

Repair Links

Wrought Iron

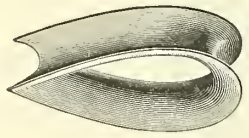


Inside Measurements, Inches	Gross
$\frac{5}{8}$ x 2	$12.00
$\frac{1}{4}$ x 2	12.00



No. 476, $\frac{5}{16}$-inch, hinged $15.00

Wire Rope Thimbles



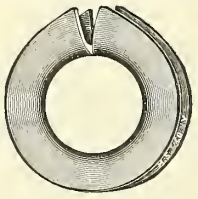
No. 412 Small

Size Inch	Length Inches	Each
1/8	1 1/16	$ .04
3/16	1 1/8	.05
1/4	1 1/4	.05
5/16	1 5/8	.06
3/8	1 7/8	.07

No. 411 Regular

Size Inch	Length Inches	Each
1/2	3	$ .09
5/8	3 1/4	.11
3/4	3 3/4	.13
1	4 3/4	.18

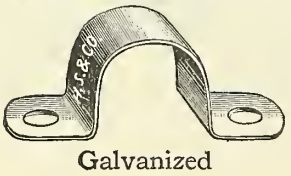
Rope Thimbles



No. 415 Steel, Galvanized

Diameter, inches	1 3/4	2 1/4	2 1/2	3
Size score, inches	3/4	1	1 1/8	1 1/4
Dozen	$ .45	.90	1.10	1.60

Pipe Straps



Galvanized

Size, inch	3/8	1/2	3/4
Dozen	$ .90	1.20	1.50

Hooks and Rope Thimbles



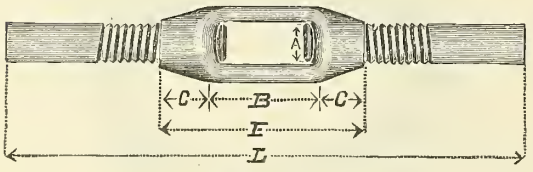
No. 305. Forged Steel, Galvanized

Size, inch	1/2	5/8	3/4
Length, inches	3 5/8	4 5/8	5 7/8
Diameter of eye, inches	31/32	1 7/32	1 15/32
Score of thimble, inch	5/8	3/4	7/8
Each	$ .17	.21	.29

Turnbuckles



Without Stubs, Tapped Right and Left, Style N



With Right and Left Stub Bolt Ends, Style W

List—Each

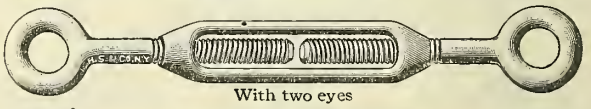
Diameter of Screw A	Inside Opening B 3	6	9	12	15	18	24	36	48	72
1/4	$ .36									
5/16	.38									
3/8	.40	$ .40								
7/16	.42	.42								
1/2	.45	.45	$ .56	$ .68	$ .90					
9/16	.48	.48	.60	.72	.96					
5/8	.50	.50	.63	.75	1.00	$1.25	$1.75			
3/4	.63	.63	.79	.95	1.26	1.58	2.20			
7/8	.75	.75	.94	1.13	1.50	1.88	2.62			
1	.88	.88	1.10	1.32	1.76	2.20	3.08	$3.52		
1 1/8	1.00	1.00	1.25	1.50	2.00	2.50	3.50	4.00	$6.00	$8.00
1 1/4	1.25	1.25	1.56	1.88	2.50	3.13	4.37	5.00	7.50	10.00
1 3/8	....	1.38	1.73	2.07	2.76	3.45	4.83	5.52	8.28	11.04
1 1/2	....	1.50	1.88	2.25	3.00	3.75	5.25	6.00	9.00	12.00
1 5/8	....	1.75	....	2.63	3.50	4.38	6.12	7.00	10.50	14.00
1 3/4	....	2.00	....	3.00	4.00	5.00	7.00	8.00	12.00	16.00
1 7/8	....	2.25	....	3.38	4.50	5.63	7.87	9.00	13.50	18.00
2	....	2.65	....	3.98	5.30	6.63	9.27	10.60	15.90	21.20
2 1/4	....	3.50	....	5.25	7.00	8.75	12.25	14.00	21.00	28.00
2 1/2	....	4.50	....	6.75	9.00	11.25	15.75	18.00	27.00	35.00

Above list applies to turnbuckles either with or without stubs.

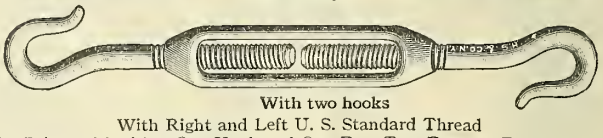
Drop-Forged



With one eye and one hook



With two eyes



With two hooks

With Right and Left U. S. Standard Thread
List Prices with either One Hook and One Eye, Two Eyes, or Two Hooks

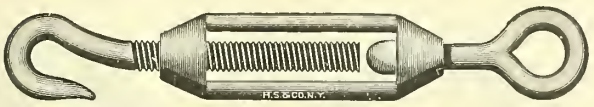
List—Each

Diameter of Screw	Inside Opening B 3	6	9	12	15	18	24	36	48	72
1/4	$ .40									
5/16	.45									
3/8	.65	$ .65								
7/16	.72	.72								
1/2	.72	.72	$ .85	$ .95	$1.15					
9/16	.80	.80	.95	1.05	1.30					
5/8	.80	.80	.95	1.05	1.30	$1.55	$2.05			
3/4	1.10	1.10	1.25	1.40	1.70	2.00	2.65			
7/8	1.35	1.35	1.35	1.70	2.10	2.45	3.20			
1	1.65	1.65	1.85	2.05	2.50	2.95	3.80	$4.25		
1 1/8	2.10	2.10	2.35	2.55	3.05	3.55	4.55	5.05		
1 1/4	2.65	2.65	2.95	3.25	3.90	4.50	5.75	6.40	$8.90	
1 3/8	....	3.15	3.45	3.80	4.50	5.20	6.60	7.25	10.00	
1 1/2	....	3.70	4.05	4.45	5.20	5.95	7.45	8.20	11.20	$14.20
1 5/8	....	4.65	....	5.50	6.40	7.25	9.00	9.90	13.40	16.90
1 3/4	....	5.40	....	6.40	7.40	8.40	10.40	11.40	15.40	19.40
1 7/8	....	6.50	....	7.60	8.75	9.85	12.10	13.25	17.75	22.25
2	....	7.75	....	9.10	10.40	11.75	14.40	15.75	21.00	25.30
2 1/4										
2 1/2										

Above list applies to turnbuckles either Black or Galvanized.

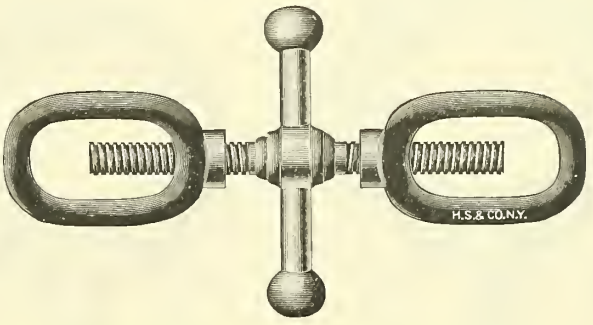
Turnbuckles

Malleable Iron, with Wrought Hooks



Diameter Screw Inch	Length in Clear Inches	Weight Pounds	Black Each	Galvanized Each
3/16	3	1/4	$ .48	$ .55
1/4	3 3/4	5/16	.50	.60
5/16	4 1/4	3/8	.55	.65
3/8	4 3/4	5/8	.70	.85
7/16	5 1/2	1	.90	1.00
1/2	6	1 1/2	1.00	1.25
5/8	8	3 1/4	1.75	1.90

Wire Stretchers



Malleable Iron, 1/4-inch screw, 2 1/2-inch take-up.
Dozen..... $1.20

Eye Bolts



Wrought Steel, Galvanized

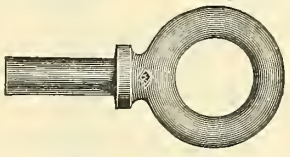
Diameter Rod Inches	No.	Per Dozen Length Overall Inches 3 1/2	4	5	6	8	10	11 1/2
5/16	73	$2.60	$2.70	$2.90	$3.10			
3/8	83	3.00	3.20	3.60	4.00	$4.80	$6.00	
7/16	93	....	3.50	3.90	4.30			
1/2	103	....	....	4.20	4.80	5.30	6.50	
5/8	113	....	.....	....	7.50	8.30	....	$9.50



Wrought Steel, Galvanized

Size rod, inches.....	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Length overall, inches.	3 3/4	4	4 1/2	5 1/4	5 3/4	6 3/4	8 1/4
Length under eye, inches	2 3/8	2 7/8	2 3/4	3	3 1/2	3 3/4	3 3/4
Inside diameter of eye, inches.....	3/4	3/4	7/8	1	1 1/8	1 3/8	1 3/4
No. 102, dozen.....	$1.30	1.70	2.00	2.80	3.40	5.50	9.60

Shoulder Pattern



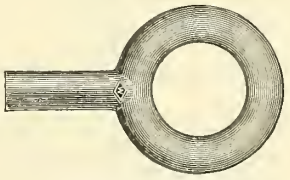
Drop-Forged Weldless

When ordering, please state whether Blank or Threaded are desired; if not specified Blank (shank not threaded) will be sent.

No.	Shank Inches Diameter	Shank Inches Length under Shoulder	Diam. Eye Inches Inside	Diam. Eye Inches Outside	Capacity, Net Tons Safe Working Load	Capacity, Net Tons Average Load at Elastic Limit	Capacity, Net Tons Approximate Breaking Strain	Blank Each	Threaded Each	Extra Length Blank Per Inch or Less Each
21	1/4	1	11/16	1 1/16	.2	.4	1.4	$ .09	$ .14	$ .01
22	5/16	1 1/8	13/16	1 5/16	.3	.6	2.	.10	.15	.01
23	3/8	1 1/4	1	1 9/16	.6	1.3	3.	.11	.16	.02
24	7/16	1 3/8	1 3/32	1 3/4	.8	1.6	4.	.12	.17	.02
25	*1/2	1 1/2	1 1/4	2	1.	2.	5.	.14	.20	.03
26	9/16	1 5/8	1 9/32	2 1/8	1.3	2.5	6.	.17	.24	.03
27	5/8	1 3/4	1 3/8	2 3/8	1.5	3.	8.	.22	.30	.04
28	3/4	2	1 1/2	2 5/8	2.3	4.5	12.	.30	.40	.04
29	7/8	2 1/4	1 21/32	3	3.	6.	13.	.40	.52	.05
30	1	2 1/2	1 13/16	3 3/8	3.5	7.	19.	.55	.69	.06
31	1 1/8	2 3/4	2	3 11/16	4.5	9.	23.	.80	.96	.07
32	1 1/4	3	2 1/8	4	5.5	11.	33.	1.10	1.29	.08
34	1 1/2	3 1/2	2 7/16	4 5/8	7.	13.	42.	1.55	1.80	.10
35	1 3/4	3 3/4	2 3/4	5 1/4	8.	16.	53.	2.60	3.00	.14
36	2	4	3 1/4	6 1/8	10.	20.	68.	3.80	4.50	.18

*When ordering V-Thread state if 12 or 13 threads are wanted.

Plain Pattern



Drop-Forged Weldless

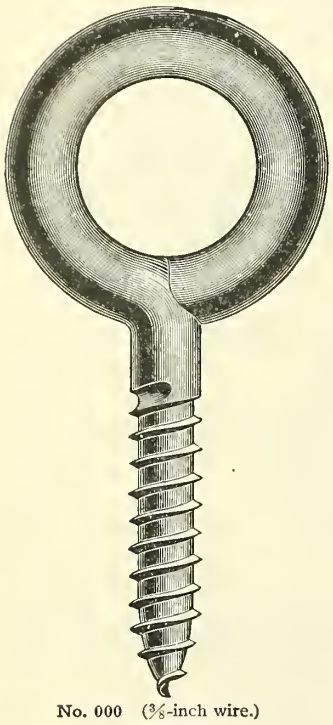
When ordering, please state whether Blank or Threaded are desired; it not specified Blank (shank not threaded) will be sent.

No.	Shank Inches Diameter	Shank Inches Length under Eye	Diameter Eye Inches Inside	Diameter Eye Inches Outside	Capacity, Net Tons Safe Working Load	Capacity, Net Tons Average Load at Elastic Limit	Capacity, Net Tons Approximate Breaking Strain	Blank Each	Threaded Each	Extra Length Blank Per Inch or Less Each
3	3/8	1 1/4	1 1/8	1 7/8	.7	1.4	3.	$ .11	$ .16	$ .02
4	7/16	1 3/8	1 3/16	2 1/16	1.	2.	4.	.12	.17	.02
5	*1/2	1 1/2	1 9/32	2 1/4	1.3	2.5	5.	.14	.20	.03
6	9/16	1 5/8	1 3/8	2 1/2	1.5	3.	6.	.17	.24	.03
7	5/8	1 3/4	1 1/2	2 3/4	2.	4.	8.	.22	.30	.04
8	3/4	2	1 11/16	3 1/8	3.	6.	12.	.30	.40	.04
9	7/8	2 1/4	1 7/8	3 1/2	3.5	7.	16.	.40	.52	.05
10	1	2 1/2	2 1/16	3 15/16	4.	8.	20.	.55	.69	.06
11	1 1/8	2 3/4	2 1/4	4 3/8	5.	10.	23.	.80	.96	.07
12	1 1/4	3	2 7/16	4 7/8	7.5	15.	33.	1.10	1.29	.08
14	1 1/2	3 1/2	2 13/16	5 5/8	9.	18.	42.	1.55	1.80	.10
15	1 3/4	3 3/4	3 1/8	6 1/2	11.	21.	53.	2.60	3.00	.14
16	2	4	3 1/2	7 1/4	13.	25.	68.	3.80	4.50	.18
17	2 1/2	5	4 1/8	8 1/2	16.	32.	85.	6.00	7.50	.28

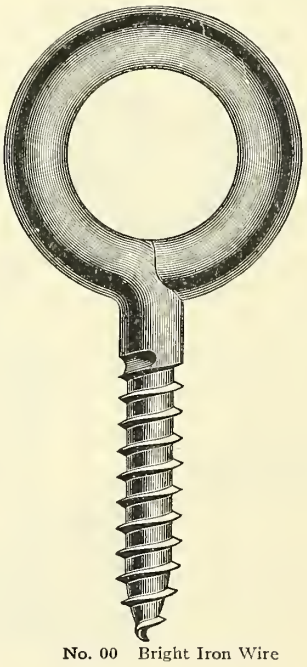
*When ordering V-Thread state if 12 or 13 threads are wanted.

Wire Screw Eyes

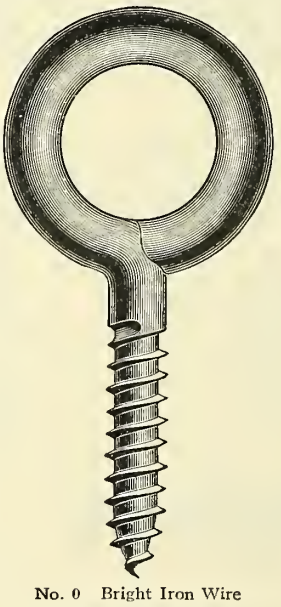
(Full Size Cuts)



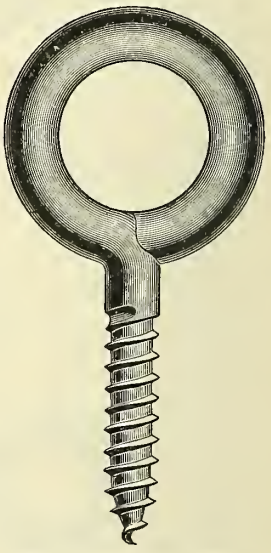
No. 000 (3/8-inch wire.)
Bright Iron



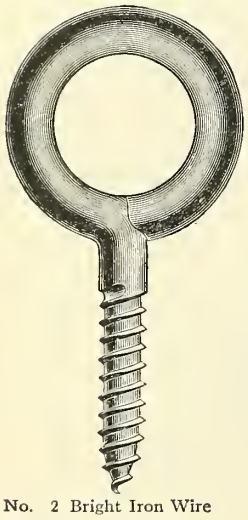
No. 00 Bright Iron Wire



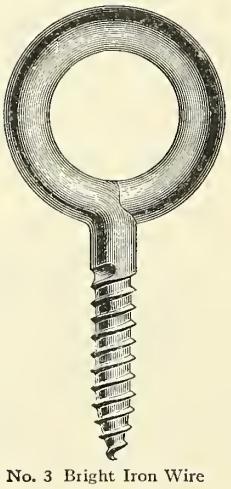
No. 0 Bright Iron Wire
No. 1000 Brass Wire



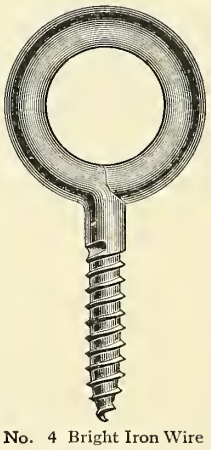
No. 1 Bright Iron Wire
No. 1001 Brass Wire



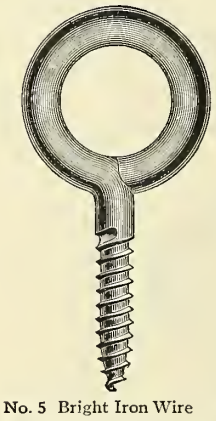
No. 2 Bright Iron Wire
No. 1002 Brass Wire



No. 3 Bright Iron Wire
No. 1003 Brass Wire



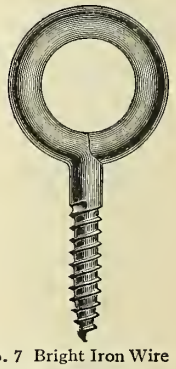
No. 4 Bright Iron Wire
No. 1004 Brass Wire



No. 5 Bright Iron Wire
No. 1005 Brass Wire



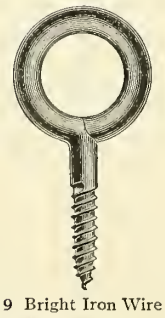
No. 6 Bright Iron Wire
No. 1006 Brass Wire



No. 7 Bright Iron Wire
No. 1007 Brass Wire



No. 8 Bright Iron Wire
No. 1008 Brass Wire



No. 9 Bright Iron Wire
No. 1009 Brass Wire



No. 10 Bright Iron Wire
No. 1010 Brass Wire



No. 11 Bright Iron Wire
No. 1011 Brass Wire



No. 12 Bright Iron Wire
No. 1012 Brass Wire



No. 13 Bright Iron Wire
No. 1013 Brass Wire



No. 14 Bright Iron Wire
No. 1014 Brass Wire

Bright Iron Wire

Number	000	00	0	1	2	3	4	5
Gross	$40.00	30.00	16.00	13.00	11.00	9.00	7.00	5.80
Number	6	7	8	9	10	11	12	13	14
Gross	$4.50	3.80	3.30	2.80	2.50	2.00	1.70	1.50	1.50

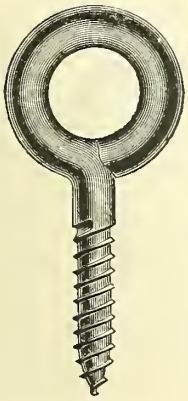
Brass Wire

Number	1000	1001	1002	1003	1004	1005	1006
Gross	$70.00	57.50	48.00	37.00	30.00	26.00	21.00
Number	1007	1008	1009	1010	1011	1012	1013	1014
Gross	$16.00	13.00	10.00	9.00	7.00	5.50	4.50	3.50

SEE DISCOUNT SHEET

Wire Screw Eyes

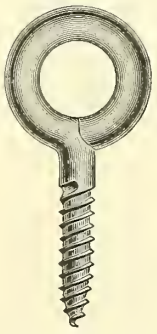
(Full Size Cuts)



No. 104, Bright Iron Wire
No. 1104, Brass Wire



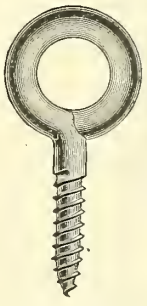
No. 105, Bright Iron Wire
No. 1105, Brass Wire



No. 106, Bright Iron Wire
No. 1106, Brass Wire



No. 107, Bright Iron Wire
No. 1107, Brass Wire



No. 108, Bright Iron Wire
No. 1108, Brass Wire



No. 109, Bright Iron Wire
No. 1109, Brass Wire



No. 110, Bright Iron Wire
No. 1110, Brass Wire



No. 111, Bright Iron Wire
No. 1111, Brass Wire



No. 112, Bright Iron Wire
No. 1112, Brass Wire



No. 113, Bright Iron Wire
No. 1113, Brass Wire



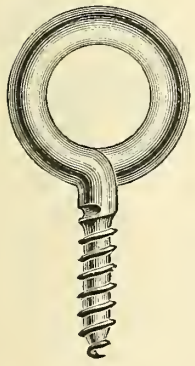
No. 114, Bright Iron Wire
No. 1114, Brass Wire



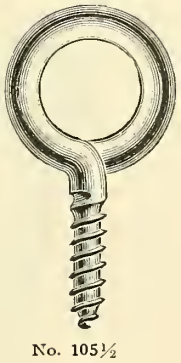
No. 115, Bright Iron Wire
No. 1115, Brass Wire

Bright Iron Wire							Brass Wire						
Number	104	105	106	107	108	109	Number	1104	1105	1106	1107	1108	1109
Gross	$7.00	5.80	4.50	3.80	3.30	2.80	Gross	$30.00	26.00	21.00	16.00	13.00	10.00
Number	110	111	112	113	114	115	Number	1110	1111	1112	1113	1114	1115
Gross	$2.50	2.00	1.70	1.50	1.50	1.50	Gross	$9.00	7.00	5.50	4.50	3.50	3.50

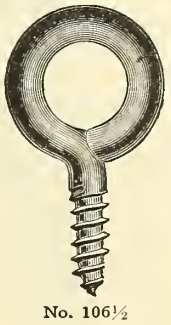
Half size or short shank for picture frame use



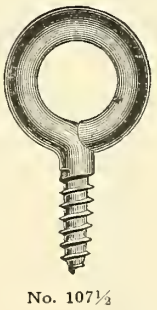
No. 104½



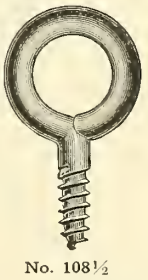
No. 105½



No. 106½



No. 107½



No. 108½



No. 109½



No. 110½



No. 111½



No. 112½



No. 113½



No. 114½, Bright Wire
No. 1114½, Brass Wire

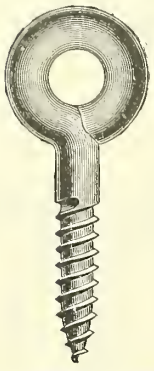


No. 115½, Bright Wire
No. 1115½, Brass Wire

Number	104½	105½	106½	107½	108½	109½	110½	111½	112½	113½	114½	115½	1114½	1115½
Gross	$7.00	5.80	4.50	3.80	3.30	2.80	2.50	2.00	1.70	1.50	1.50	1.50	3.50	3.50

Wire Screw Eyes

Full Size Cuts



No. 204, Bright Iron Wire
No. 1204, Brass Wire



No. 205, Bright Iron Wire
No. 1205, Brass Wire



No. 206, Bright Iron Wire
No. 1206, Brass Wire



No. 207, Bright Iron Wire
No. 1207, Brass Wire



No. 208, Bright Iron Wire
No. 1208, Brass Wire



No. 209, Bright Iron Wire
No 1209, Brass Wire



No. 210, Bright Iron Wire
No. 1210, Brass Wire



No. 211, Bright Iron Wire
No. 1211, Brass Wire



No. 212, Bright Iron Wire
No. 1212, Brass Wire



No. 213, Bright Iron Wire
No. 1213, Brass Wire



No. 214, Bright Iron Wire
No. 1214, Brass Wire



No. 215, Bright Iron Wire
No. 1215, Brass Wire

Bright Iron Wire

Number	204	205	206	207	208	209
Gross	$7.00	5.80	4.50	3.80	3.30	2.80
Number	210	211	212	213	214	215
Gross	$2.50	2.00	1.70	1.50	1.50	1.50

Brass Wire

Number	1204	1205	1206	1207	1208	1209
Gross	$30.00	26.00	21.00	16.00	13.00	10.00
Number	1210	1211	1212	1213	1214	1215
Gross	$9.00	7.00	5.50	4.50	3.50	3.50

Half Size or Short Shank

For Picture Frame Use



No. 204½
Bright Iron Wire



No. 205½
Bright Iron Wire



No. 206½
Bright Iron Wire



No. 207½
Bright Iron Wire



No. 208½
Bright Iron Wire



No. 209½
Bright Iron Wire



No. 210½
Bright Iron Wire



No. 211½
Bright Iron Wire



No. 212½
Bright Iron Wire



No. 213½
Bright Iron Wire



No. 214½
No. 1214½



No. 214¾
No. 1214¾



No. 215½
No. 1215½



No 216½
No. 1216½



No. 217½

Bright Iron Wire

Number	204½	205½	206½	207½	208½	209½	210½	211½
Gross	$7.00	5.80	4.50	3.80	3.30	2.80	2.50	2.00
Number	212½	213½	214½	214¾	215½	216½	217½	
Gross	$1.70	1.50	1.50	1.50	1.50	1.50	1.50	

Brass Wire

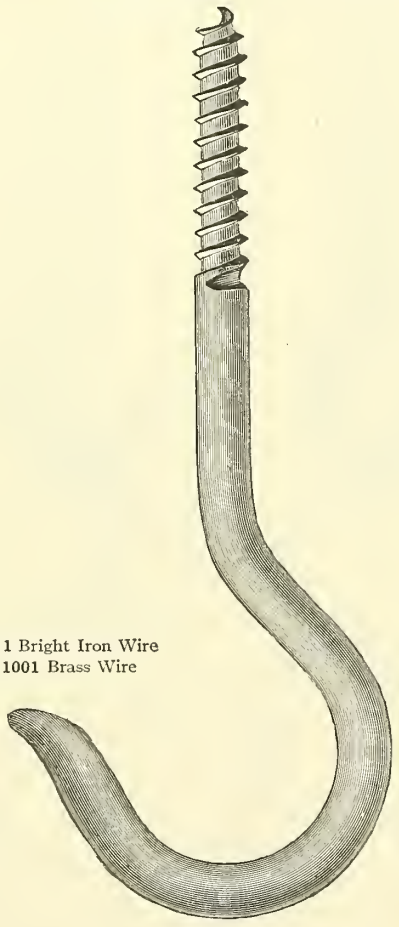
Number	1214½	1214¾	1215½	1216½
Gross	$3.50	3.50	3.50	3.50

Wire Screw Hooks

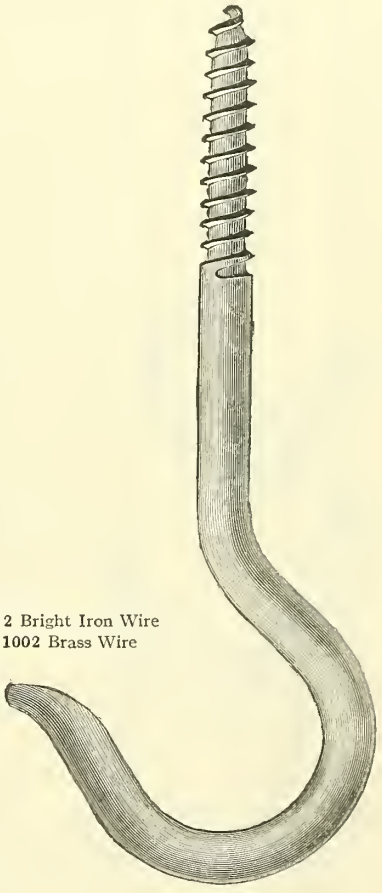
Full Size Cuts



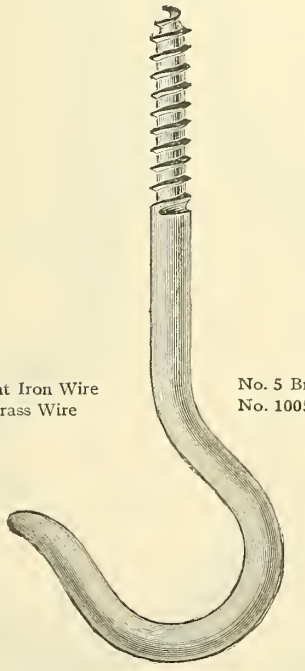
No. 0 Bright Iron Wire
No. 1000 Brass Wire



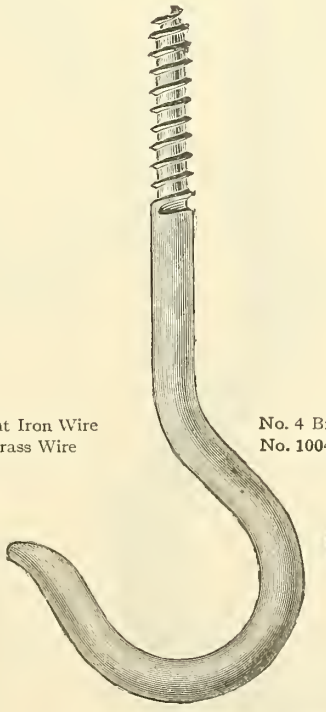
No. 1 Bright Iron Wire
No. 1001 Brass Wire



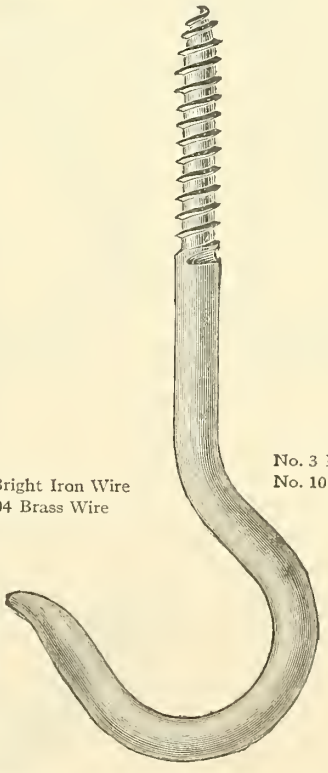
No. 2 Bright Iron Wire
No. 1002 Brass Wire



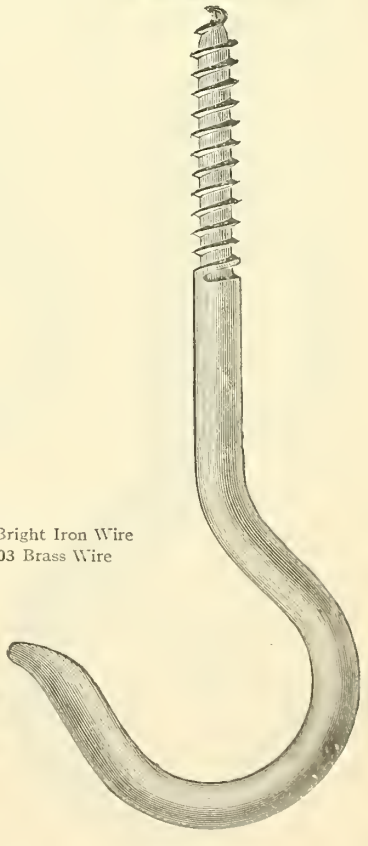
No. 6 Bright Iron Wire
No. 1006 Brass Wire



No. 5 Bright Iron Wire
No. 1005 Brass Wire



No. 4 Bright Iron Wire
No. 1004 Brass Wire



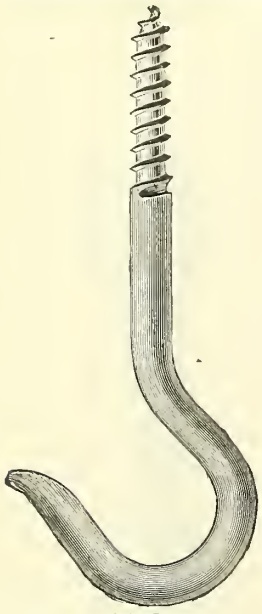
No. 3 Bright Iron Wire
No. 1003 Brass Wire

See next page for listing and illustrations of other sizes

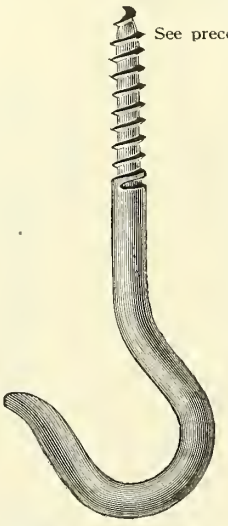
Wire Screw Hooks

Full Size Hooks

See preceding page for illustrations of larger sizes



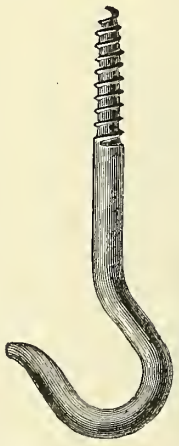
No. 6½ Bright Iron Wire
No. 1006½ Brass Wire



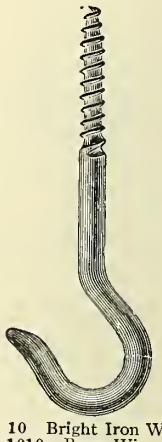
No. 7 Bright Iron Wire
No. 1007 Brass Wire



No. 8 Bright Iron Wire
No. 1008 Brass Wire



No. 9 Bright Iron Wire
No. 1009 Brass Wire



No. 10 Bright Iron Wire
No. 1010 Brass Wire



No. 11 Bright Iron Wire
No. 1011 Brass Wire



No. 12 Bright Iron Wire
No. 1012 Brass Wire



No. 13 Bright Iron Wire
No. 1013 Brass Wire



No. 14 Bright Iron Wire
No. 1014 Brass Wire

Bright Iron Wire

Number.	0	1	2	3	4	5	6	6½	7
Gross....	$21.00	18.00	15.00	12.50	10.00	8.00	6.00	5.30	4.50

Number.....	8	9	10	11	12	13	14
Gross.....	$4.00	3.50	3.00	2.80	2.50	2.30	2.00

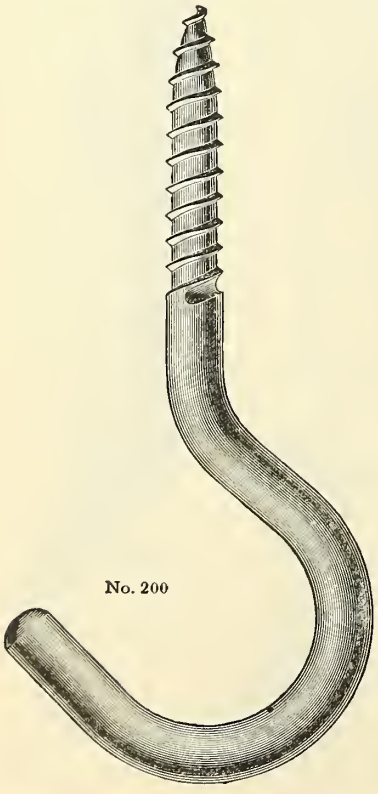
Brass Wire

Number.....	1000	1001	1002	1003	1004	1005	1006	1006½
Gross.....	$125.00	105.00	85.00	65.00	45.00	37.00	30.00	26.00

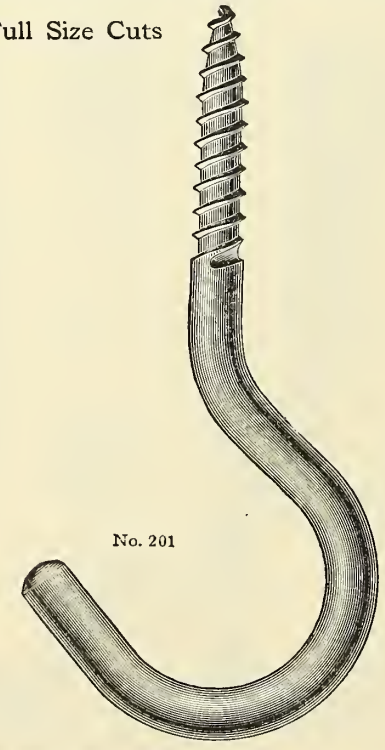
Number.....	1007	1008	1009	1010	1011	1012	1013	1014
Gross.....	$21.00	15.00	12.00	10.00	8.00	6.50	5.00	4.00

Bright Iron Blunt Screw Hooks

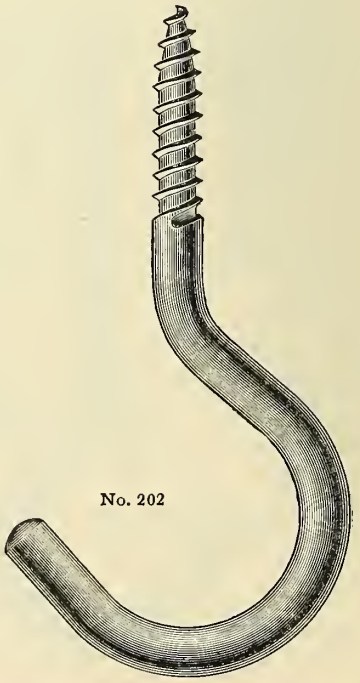
Full Size Cuts



No. 200



No. 201

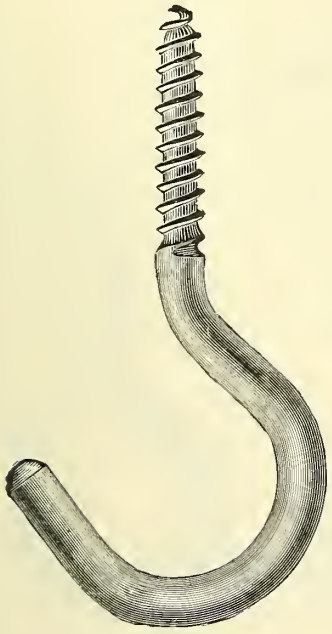


No. 202

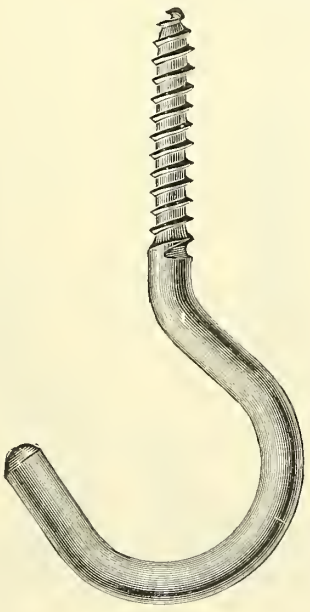
See next page for listing and illustrations of other sizes.

Bright Iron Wire Blunt Screw Hooks

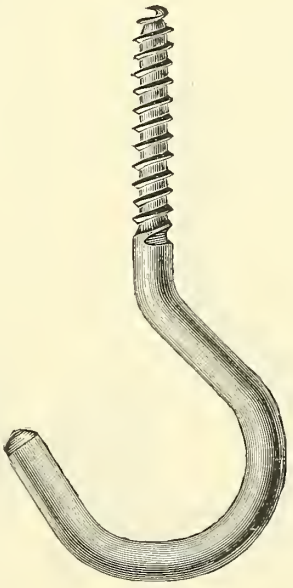
Full Size Cuts.



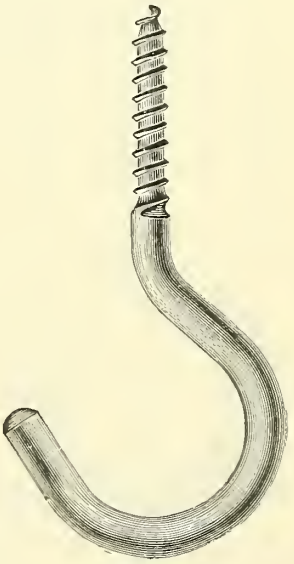
No. 203



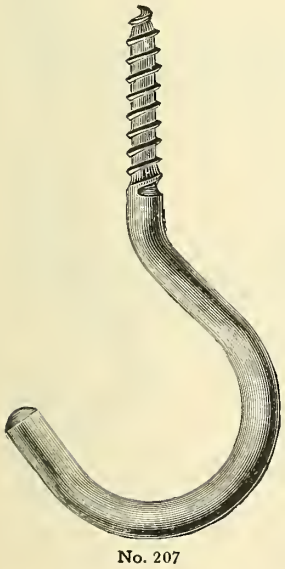
No. 204



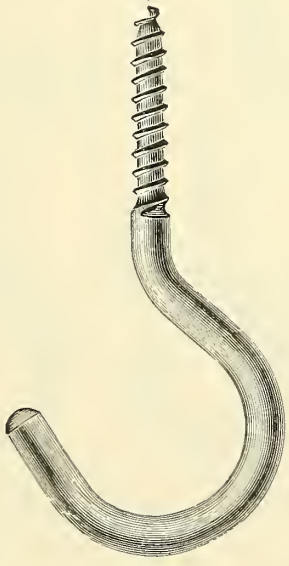
No. 205



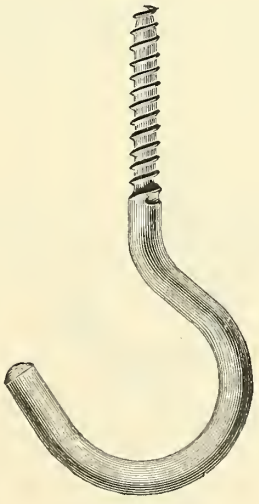
No. 206



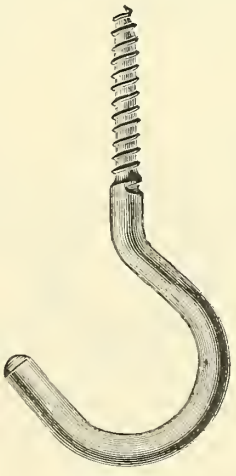
No. 207



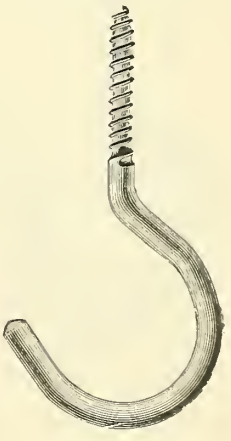
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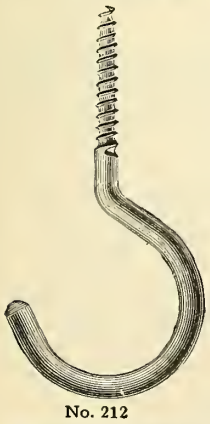
No. 209



No. 210



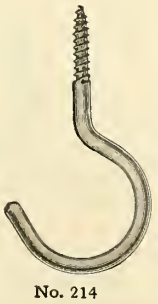
No. 211



No. 212



No. 213



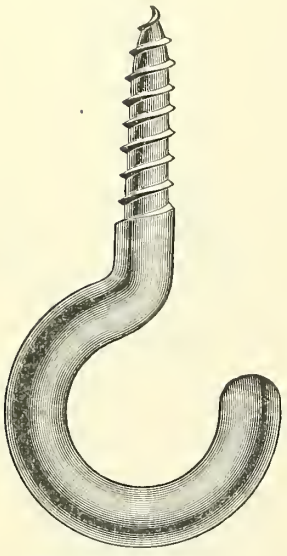
No. 214

Number	200	201	202	203	204	205	206
Gross	$21.00	18.00	15.00	12.50	10.00	8.00	6.00
Number	207	208	209	210	211	212	213	214
Gross	$4.50	4.00	3.50	3.00	2.80	2.50	2.30	2.00

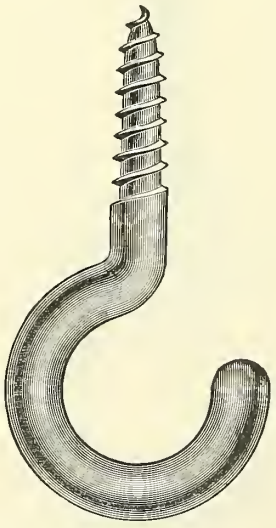
See preceding page for illustrations of larger sizes

Wire Cup Hooks

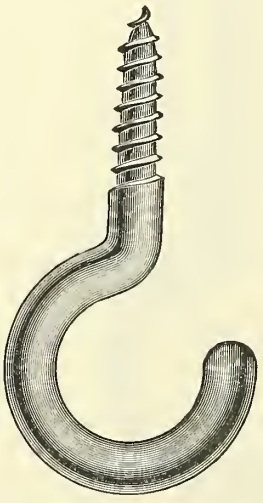
Full Size Cuts



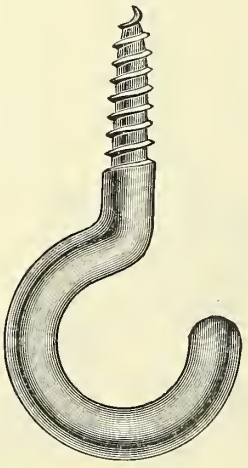
No. 300 Bright Iron
No. 1300 Brass



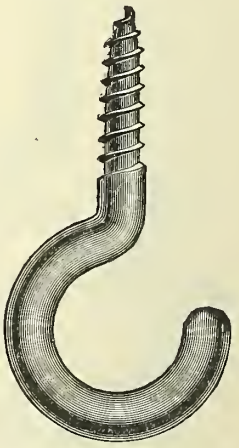
No. 301 Bright Iron
No. 1301 Brass



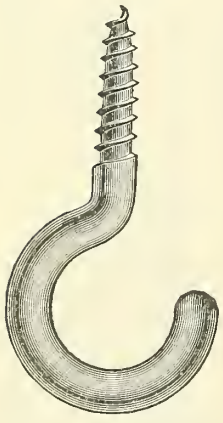
No. 302 Bright Iron
No. 1302 Brass



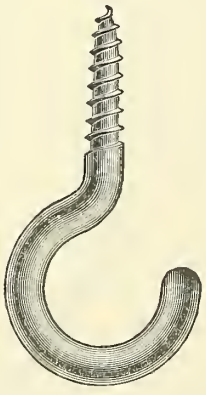
No. 303 Bright Iron
No. 1303 Brass



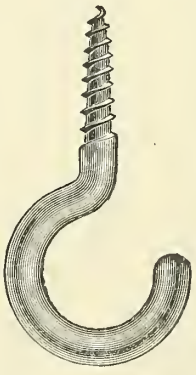
No. 304 Bright Iron
No. 1304 Brass



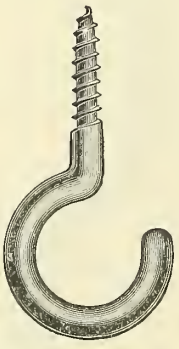
No. 305 Bright Iron
No. 1305 Brass



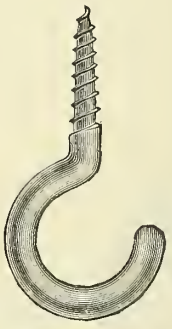
No. 306 Bright Iron
No. 1306 Brass



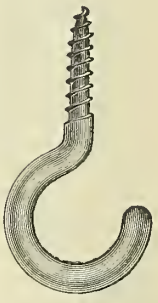
No. 307 Bright Iron
No. 1307 Brass



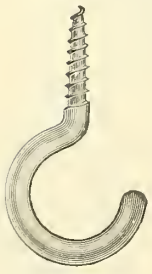
No. 308 Bright Iron
No. 1308 Brass



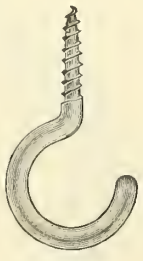
No. 309 Bright Iron
No. 1309 Brass



No. 310 Bright Iron
No. 1310 Brass



No. 311 Bright Iron
No. 1311 Brass



No. 312 Bright Iron
No. 1312 Brass



No. 313 Bright Iron
No. 1313 Brass



No. 314 Bright Iron
No. 1314 Brass

Bright Iron

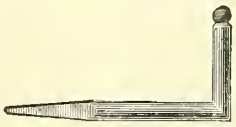
Number	300	301	302	303	304	305	306
Gross	$21.00	18.00	15.00	12.50	10.00	8.00	6.00
Numbers	307	308	309	310	311	312	313	314
Gross	$4.50	4.00	3.50	3.00	2.80	2.50	2.30	2.00

Brass

Number	1300	1301	1302	1303	1304	1305	1306
Gross	$125.00	105.00	85.00	65.00	45.00	37.00	30.00
Number	1307	1308	1309	1310	1311	1312	1313	1314
Gross	$21.00	15.00	12.00	10.00	8.00	6.50	5.00	4.00

SEE DISCOUNT SHEET

Wire Drive Hooks



Full Size Cut

No. 212 Bright Iron Wire, 1⅛-inch, per gross..... $1.10
No. 1212 Brass Wire, 1⅛-inch, per gross..... 1.70

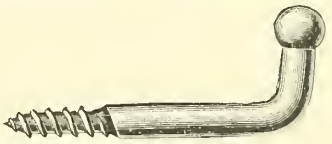
Tenter Hooks



Full Size Cut

Extra quality, sharp points, ⅞-inch, machine made, tinned, 1000 in a box, per 1000..... $1.50

Kitchen Hooks

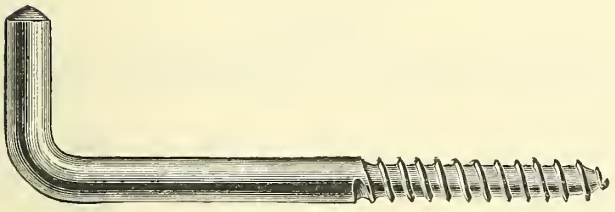


Full Size Cut of Nos. 67 and 1067

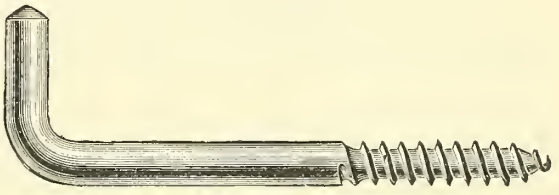
No. 67 Bright Wire, for towels, utensils, etc., gross..... $3.00
No. 1067 Brass Wire, for the bath room, china closet, etc., gross..... 9.00

Square Screw Hooks

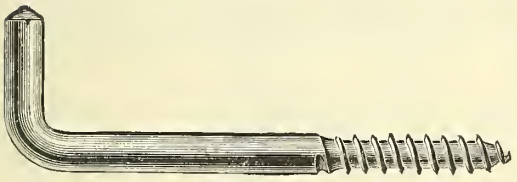
Cuts Full Size



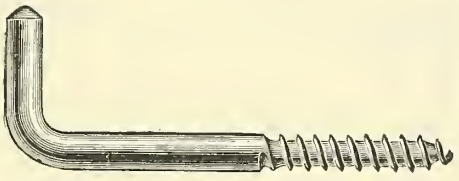
No. 104 Bright Iron Wire **No. 1104** Brass Wire



No. 105 Bright Iron Wire **No. 1105** Brass Wire



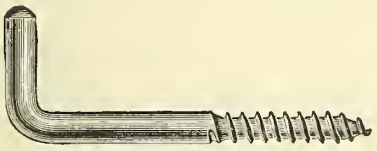
No. 106 Bright Iron Wire **No. 1106** Brass Wire



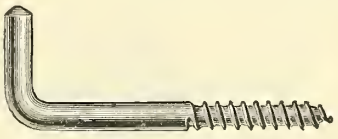
No. 107 Bright Iron Wire **No. 1107** Brass Wire



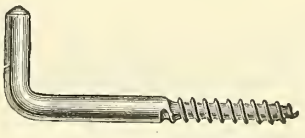
No. 108 Bright Iron Wire **No. 1108** Brass Wire



No. 109 Bright Iron Wire
No. 1109 Brass Wire



No. 110 Bright Iron Wire
No. 1110 Brass Wire



No. 111 Bright Iron Wire
No. 1111 Brass Wire



No. 112 Bright Iron Wire
No. 1112 Brass Wire



No. 113 Bright Iron Wire
No. 1113 Brass Wire



No. 114 Bright Iron Wire
No. 1114 Brass Wire

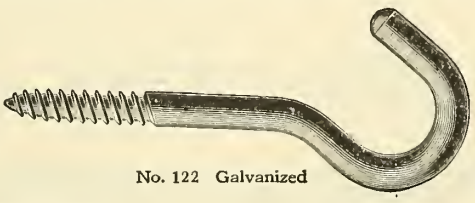
Bright Iron Wire

Number	104	105	106	107	108	109	110	111	112	113	114
Gross	$10.00	8.00	6.00	4.50	4.00	3.50	3.00	2.80	2.50	2.30	2.00

Brass Wire

Number	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114
Gross	$45.00	37.00	30.00	21.00	15.00	12.00	10.00	8.00	6.50	5.00	4.00

Wrought Steel Screw Hooks



No. 122 Galvanized

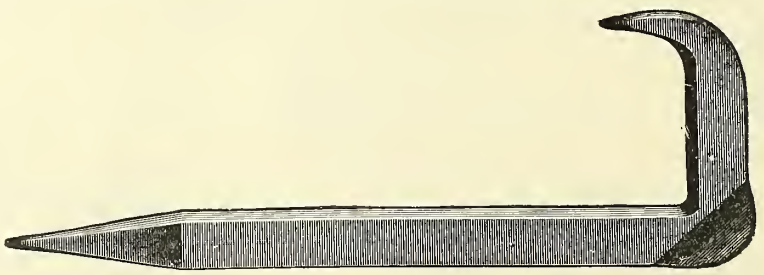
Diameter of Rod, inch.	¼	5/16	⅜	7/16	½	⅝	¾
Length overall, inches.	4¼	4½	4⅞	5¼	6	7	8
Length to bend of hook, inches.....	2⅜	2⅜	2¾	2⅞	3¾	4	4⅞
Dozen.....	$1.20	1.35	1.50	2.10	2.80	4.50	6.70

Well Wheel Hooks



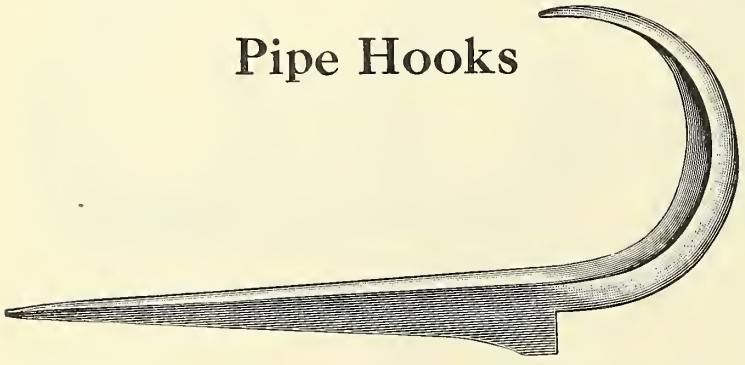
No. 15 ⅜-inch wrought steel, japanned, 7½ inches long, dozen..$2.40

Wrought Awning Hooks



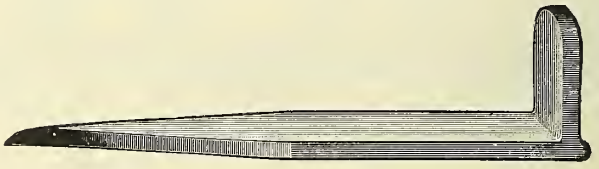
	Round Iron							Square Iron			
Length, inches	1¼	1½	1¾	2	2½	3	3½	4x¼	4½x¼	5x¼	6x¼
Plain, per gross	$2.70	3.00	3.40	3.60	4.00	5.00	6.00	9.00	10.00	11.00	13.00
Galvanized, per gross	3.70	4.00	4.40	4.80	6.50	7.00	8.00	12.50	14.00	16.00	18.00

Pipe Hooks



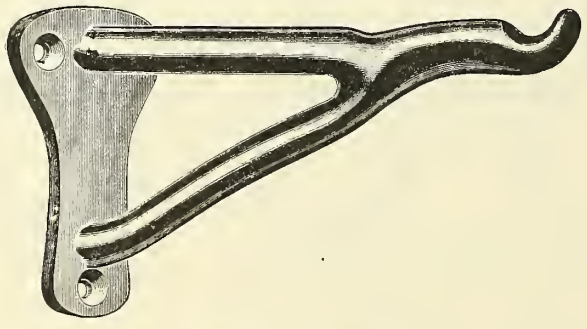
For pipe, inches	¼	⅜	½	¾	1	1¼
Plain, per 100	$1.00	1.00	1.00	1.20	1.20	1.50
Galvanized, per 100	2.00	2.00	2.00	2.00	2.20	2.50

Wrought Sign or Jamb Hooks



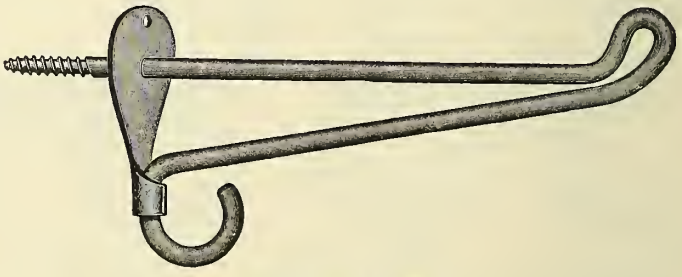
Inches	6	8	10
Plain, per dozen	$2.10	2.50	3.00
Galvanized, per dozen	2.70	3.25	4.10

Fire-Pail Hooks



Cast Iron, Very Heavy

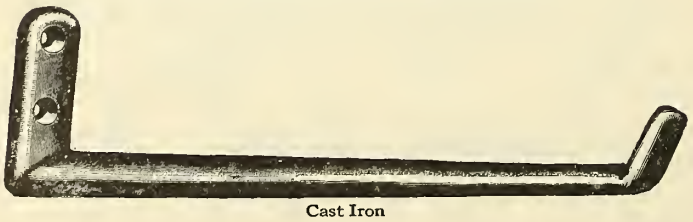
No. 100 Japanned, 7½-inch projection, dozen..... $2.50



Steel Wire No. 4 Gauge

No. 1000 Japanned, 8-inch projection, per gross..... $16.00

Store Rack Hooks



Cast Iron

No. 10 Japanned, projection 10½ inches, per dozen..... $2.20
No. Y10 Bronze-plated, projection 10½ inches, per dozen.... 7.00

Fancy Hooks

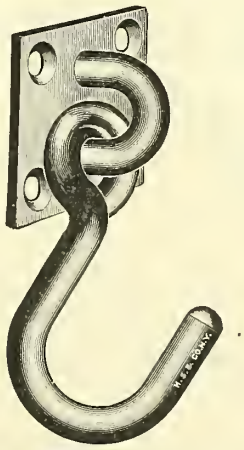


Cast Brass

No. 100 Old brass finish, 8-inch projection, per dozen..... $7.50

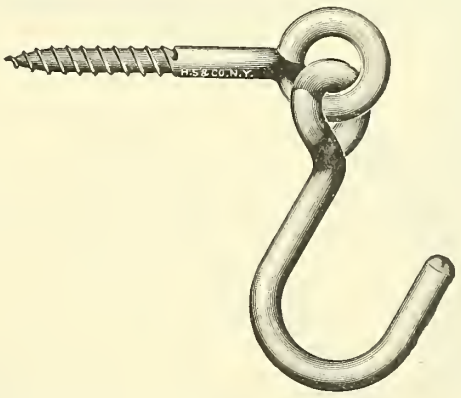
Wrought Steel Hammock Hooks

Half Size Cuts



No. 268

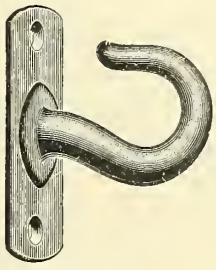
With plate, $\frac{3}{8}$-inch wire, galvanized, dozen $2.60



No. 278

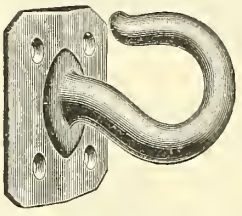
With screw, $\frac{5}{16}$-inch wire, galvanized, dozen $2.00

Clothes Line Hooks



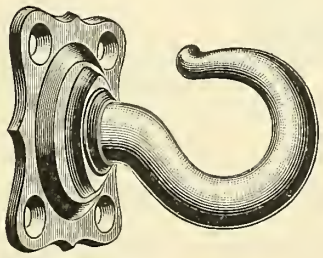
No. 23. Cast Iron

Galvanized, 2-inch projection, dozen ..... $ .78



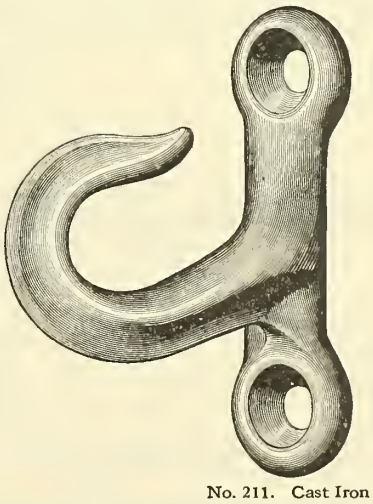
No. 22. Cast Iron

Galvanized, 2-inch projection, dozen ..... $ .92



No. 21. Cast Iron

Galvanized, 3-inch projection, dozen $1.85



No. 211. Cast Iron

Galvanized, $1\frac{5}{8}$-inch projection, dozen ..... $ .50

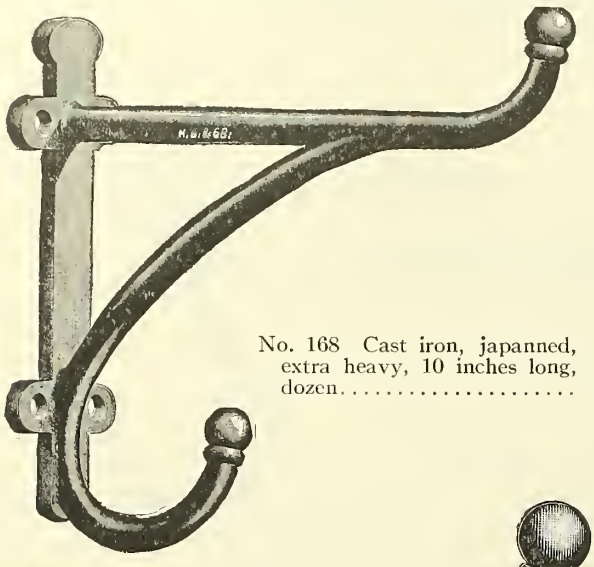


No. 85 For wood. Wrought steel, galvanized, $4\frac{1}{2}$ inches long, dozen ..... $ .80

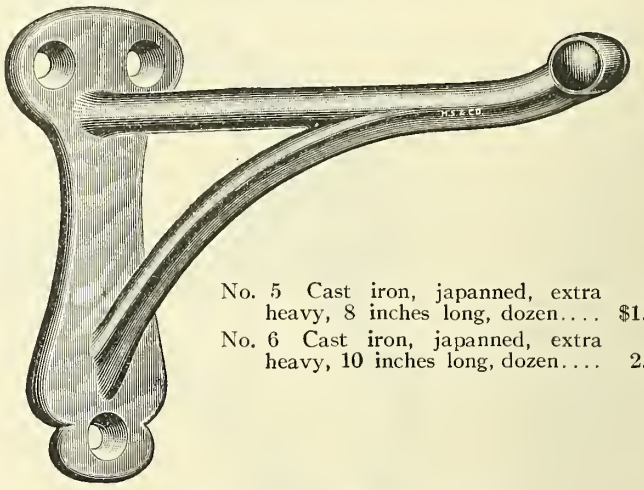


No. 87 For brick. Wrought steel, galvanized, $4\frac{1}{2}$ inches long, dozen ..... $ .80

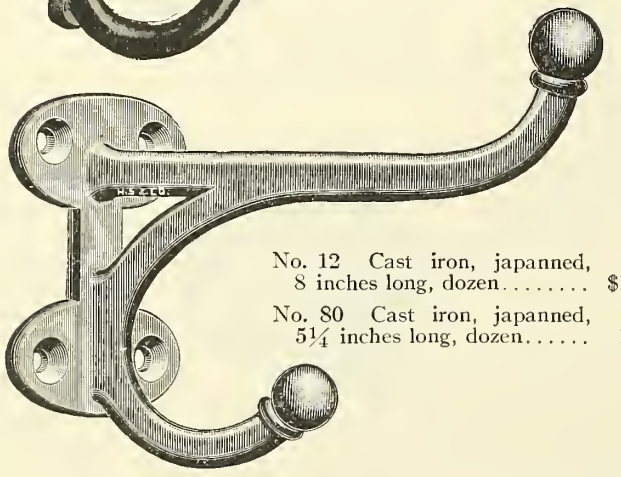
Harness Hooks



No. 168 Cast iron, japanned, extra heavy, 10 inches long, dozen..... $4.00

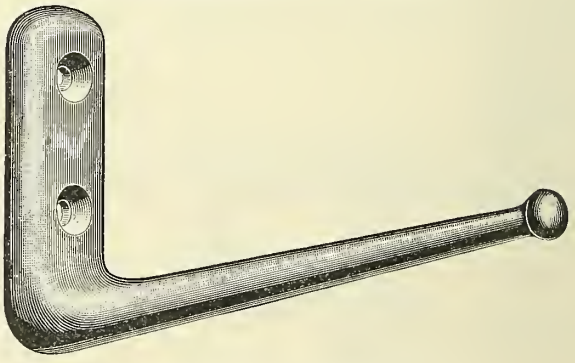


No. 5 Cast iron, japanned, extra heavy, 8 inches long, dozen.... $1.60
No. 6 Cast iron, japanned, extra heavy, 10 inches long, dozen.... 2.00



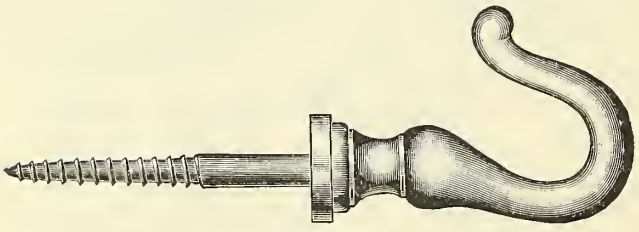
No. 12 Cast iron, japanned, 8 inches long, dozen..... $1.45
No. 80 Cast iron, japanned, 5¼ inches long, dozen..... 1.00

Baggage Hooks



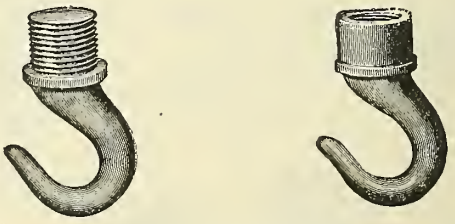
No. 9 Cast iron, japanned, 5½-inch projection, dozen..... $ .80

Chandelier Hooks



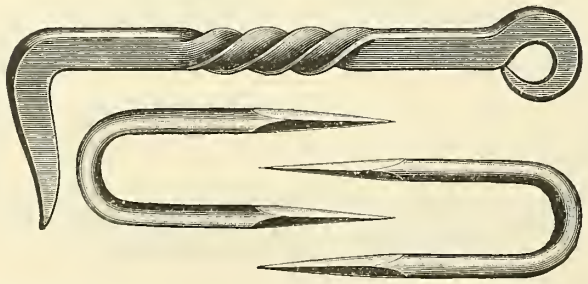
Nos. 861 and 861½

No. 861½ Cast iron, japanned, length of screw 3 inches, dozen. $ .81
No. 861 Cast brass, polished, length of screw 3 inches, dozen. 4.86



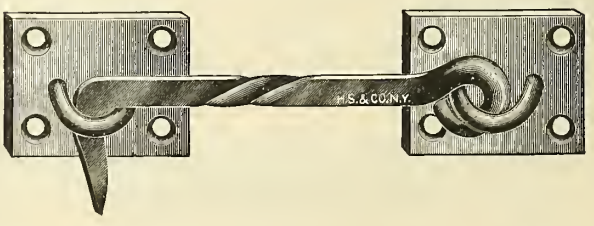
No. 11035 Malleable iron, male, for ⅜-inch iron pipe, each.. $ .10
No. 11037 Malleable iron, female, for ⅜-inch iron pipe, each.. .10

Wrought Iron Hooks and Staples



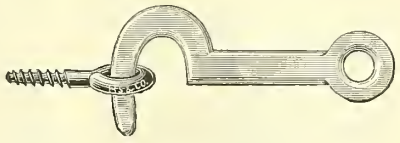
Length of hook, inches	4	6
Plain, gross	$10.00	$14.00
Galvanized, gross	14.50	21.00

Wrought Iron Hooks and Staples on Plates

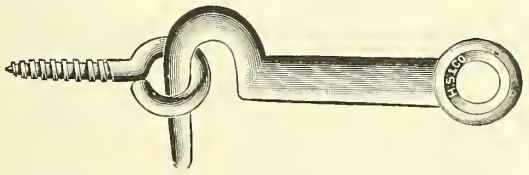


Length of hook, inches	4	6
Plain, gross	$19.00	$24.00
Galvanized, gross	27.00	34.00

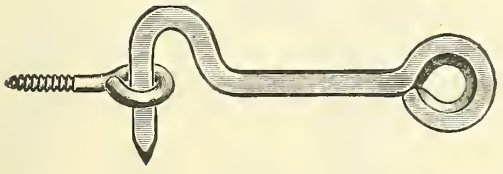
Hooks and Eyes



Length of hook, inches	¾	1	1¼	1½
No. 61 Brass, gross	$2.50	2.75	3.00	3.25
No. 61N Brass, nickel-plated, gross	3.75	4.25	4.50	5.00

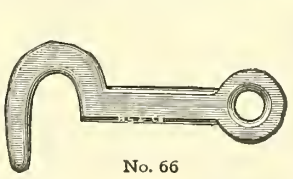


Length of hook, inches	1½	1¾	2	2½	3
No. 60 Brass, heavy, gross	$...	4.00	4.75	5.50	

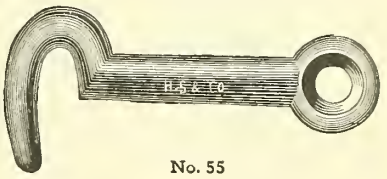


Length of hook, inches	1½	2	2½	3
No. 150 Polished steel, gross	$1.50	2.00	2.75	3.75

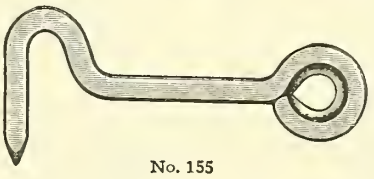
Hooks Only



No. 66



No. 55

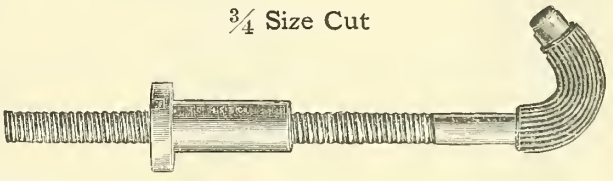


No. 155

Inches	¾	1	1¼	1½	2	2½	3
No. 66 Brass, gross	$1.70	1.80	2.00	2.25			
No. 66N Brass, nickel-plated, gross	2.55	2.70	3.00	3.40			
No. 55 Malleable iron, gross	....	....	....	.85	1.30	2.00	3.00
No. 155 Polished steel, gross	....	....	....	.85	1.30	2.00	

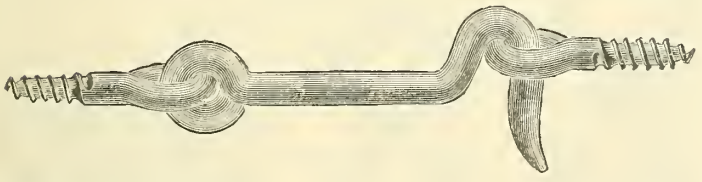
Typewriter Desk Hooks

¾ Size Cut



No. 3704 Bright iron wire, rubber ferrule, malleable iron nut, gross $10.00

Gate Hooks and Eyes



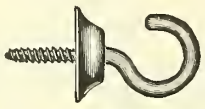
Length of Hook Inches	Gross		Length of Hook Inches	Gross	
	Iron	Brass		Iron	Brass
1	$6.50	$24.00	7	$36.00	$130.00
1½	6.50	24.00	8	36.00	130.00
2	8.00	30.00	9	42.00	150.00
2½	10.00	36.00	10	42.00	150.00
3	12.00	46.00	11	48.00	170.00
3½	14.50	58.00	12	48.00	170.00
4	17.00	64.00	13	55.00	180.00
4½	20.00	76.00	14	55.00	180.00
5	24.00	82.00	15	70.00	200.00
5½	30.00	110.00	16	70.00	200.00
6	30.00	110.00			

Cornice Hooks



Length of Hook Inches	Gross	Length of Hook Inches	Gross
2	$14.00	6	$23.00
2½	14.00	7	27.00
3	14.00	8	27.00
3½	17.00	9	32.00
4	17.00	10	32.00
4½	20.00	11	38.00
5	20.00	12	38.00
5½	23.00		

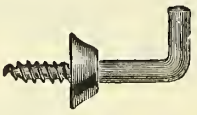
Brass Shouldered Cup Hooks



No. 281. Cut Full Size of ⅝-inch Hook

Size, inch	½	⅝	¾	⅞	1
Gross	$3.75	3.85	4.00	4.50	5.25
Size, inches	1⅛	1¼	1½	1¾	2
Gross	$7.00	9.00	11.00	15.00	18.00

Brass Shouldered Screw Hooks

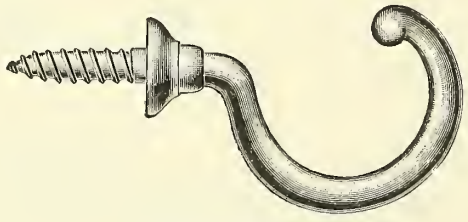


No. 2412. Cut Full Size of ⅝-inch Hook

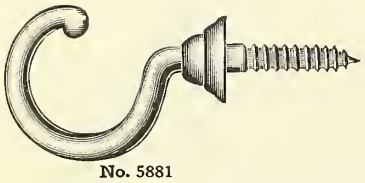
Size, inch	½	⅝	¾	⅞	1
Gross	$3.75	3.85	4.00	4.50	5.25
Size, inches	1⅛	1¼	1½	1¾	2
Gross	$7.00	9.00	11.00	15.00	18.00

Cast Brass Cup Hooks

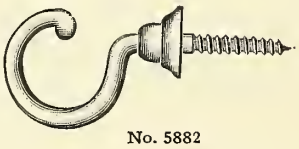
Cuts Full Size



Nos. 5880 and 5880N



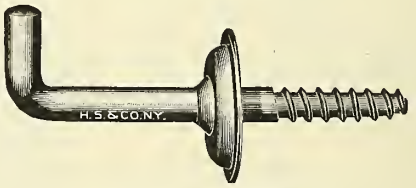
No. 5881



No. 5882

No. 5880	Cast brass, polished, gross	$18.50
No. 5880N	Cast brass, nickel-plated, gross	20.35
No. 5881	Cast brass, polished, gross	14.00
No. 5882	Cast brass, polished, gross	11.50

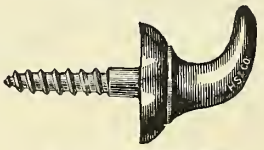
Heavy Square Shouldered Hooks



No. 17. Cut Full Size

Made of No. 7 gauge brass wire, nickel-plated, gross..... $4.80

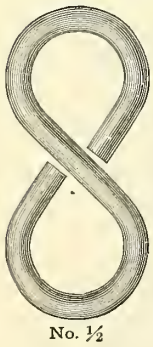
Brush or Duster Hooks



No. 10. Cut Full Size

Cast brass, polished, with steel screw, gross..... $7.80

Bright Steel Wire S Hooks



No. ½

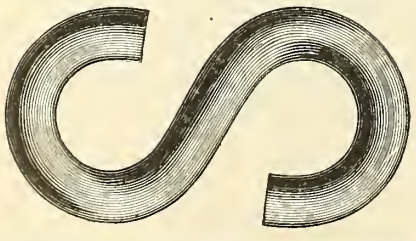


No. 2½



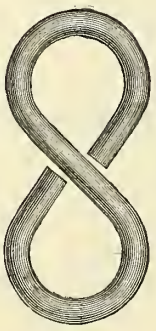
No. 4

Number	½	2½	4
Gross	$1.50	1.30	1.10



Brass S Hooks

Full Size Cuts



No. ½



No. 2½



No. 4



No. 6

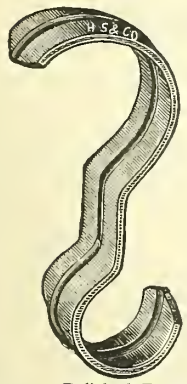
Number	½	2½	4	6
Gross	$3.25	2.00		
Nickel-plated, gross	4.00	2.80	2.00	1.65

Wrought Iron S Hooks

Size, inches	1½	1¾	2	2¼	2½	3
Plain, gross	$4.00	4.75	5.50	6.50	7.50	9.50
Galvanized, gross	6.00	7.25	8.75	9.50	12.00	14.00

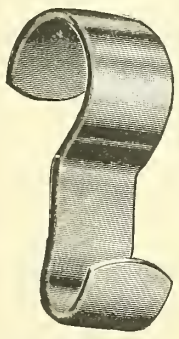
SEE DISCOUNT SHEET

Picture Hooks



Polished Brass

No. 07 To fit 1¼ inch moulding, gross.... $2.60
No. 09 To fit 1½ inch moulding, gross.... 3.15



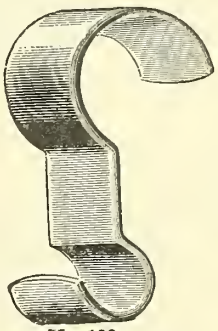
No. 90

Brass-plated, to fit 1½-inch moulding, gross..... $1.00



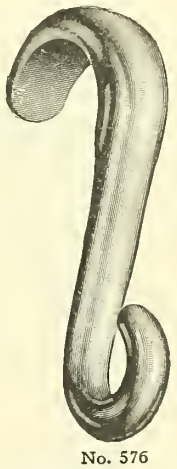
No. 0030

Brass-plated, to fit 1½-inch moulding, gross..... $1.10



No. 199

White, to fit 1½-inch moulding, gross..... $3.00



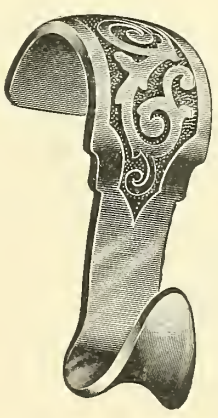
No. 576

Polished brass, to fit 1½-inch moulding, gross..... $9.40



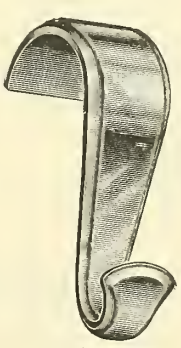
No. 4072

Brass-plated, made to fit 1½-inch or 2-inch moulding, gross..... $3.50



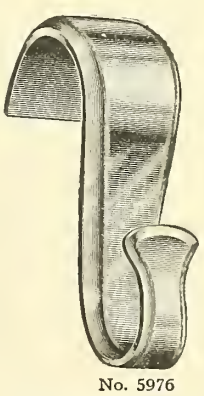
Numbers from 10 to 17 indicate gauge thickness of material. Dipped brass.

To fit moulding, inches..... 1¼ 1½ 2 2½
No. 10 Gross.. .... $5.40 7.40 9.30
No. 14 Gross.. 4.00 4.00
No. 17 Gross.. 3.00 3.00
No. 6214 Polished brass, to fit 1½ or 2-inch moulding, gross. $13.00



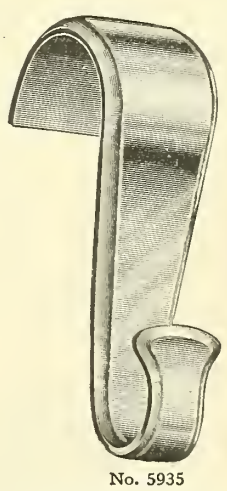
No. 6223

Polished brass
To fit 1½-inch moulding
Gross..... $10.00



No. 5976

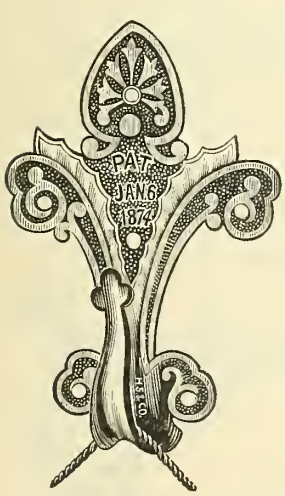
Polished brass, to fit 1½-inch moulding, gross..... $15.00



No. 5935

Polished brass, to fit 2-inch moulding, gross..... $2000.

Wall Picture Hooks



Niles No. 1

Brass dipped, gross.. $4.30



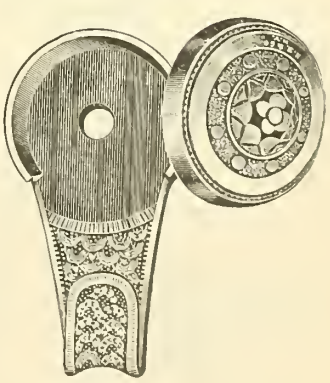
Niles No. 2

Brass dipped, gross.... $3.80



No. 1½

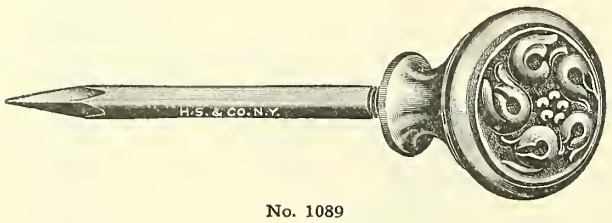
Wrought brass, gross.. $3.00



No. 2½

Wrought brass, gross.. $6.00

Picture Nails



No. 1089

A brass head screws onto coppered steel pin, 2½ inches long, dozen $2.50



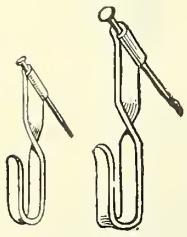
Brass Capped

Length, inches	1	1½	2	2½	3	4
Gross	$ .98	1.12	1.50	1.73	2.12	3.06

Pushless Hangers

Moore

Cuts Full Size



No. 25 No. 27

Made of brass. Has great holding power in wood or plaster.

No. 25	Per card of 6	$ .10
No. 27	Per card of 4	.10
No. 28	Per card of 3	.10



No. 28



Hook Tacks

A Combination Hook and Thumb Tack. The hook is brass and head of tack is celluloid, colored white or blue. For hanging pictures and other small articles on the wall or in show windows.

Mounted six on a block.

Per block	$ .10
Gross	2.25

Glass Push Pins

Moore



No. 1

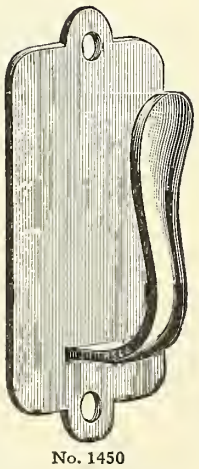
No. 1	Per card of 6	$ .10
No. 2	Per card of 6	.10



No. 2

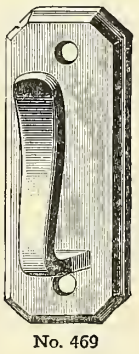
Tassel Hooks

Cuts Full Size



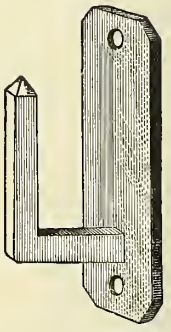
No. 1450

Brass, polished, gross $8.00



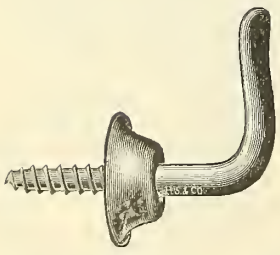
No. 469

Brass, polished and gold lacquered, gross $8.00



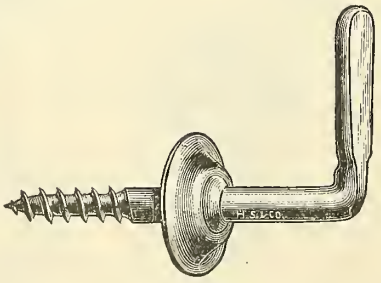
No. 465

Brass, polished, gross $5.50



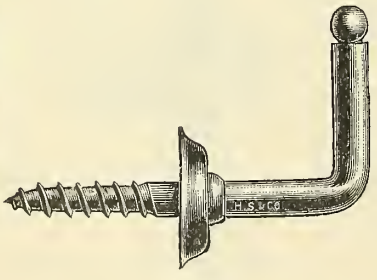
No. 318

Polished brass, gross $3.80



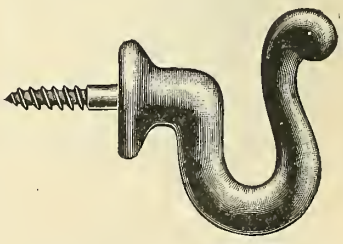
No. 125

Polished brass, gross $7.50



No. 129

Polished brass, gross $7.50



No. 666

Polished cast brass, gross. $15.00

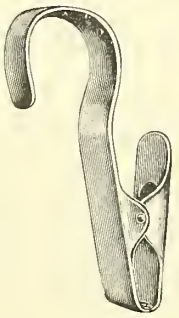
Display Hooks

Cuts Full Size



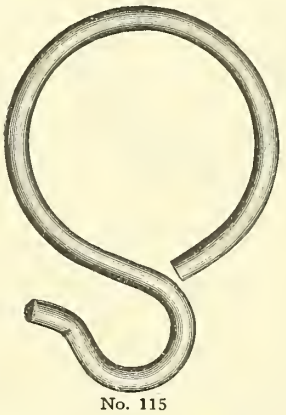
No. 113

Brass dipped, gross..... $2.20
Nickel dipped, gross..... 2.20



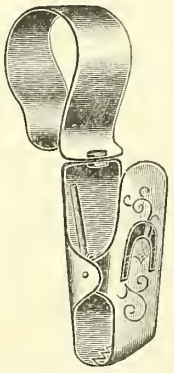
N112

Stamped tin, gross... $1.50



No. 115

Made of No. 00 gauge brass wire, gross..... $10.00



No. 137

Stamped tin, gross..... $3.00

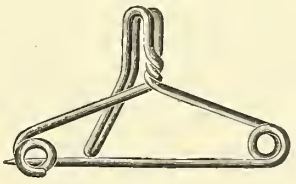
Drapery Pins

Cuts Full Size



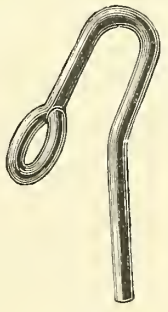
No. 318

Brass, gross..... $ .52



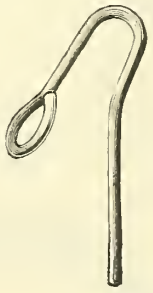
No. 327B

Brass, gross..... $ .88



No. 326¾

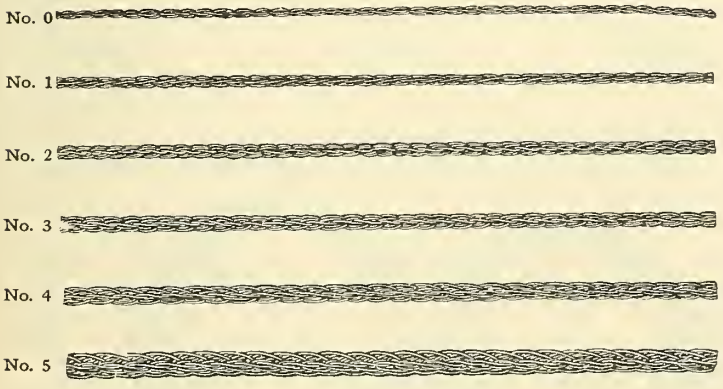
Brass, gross..... $ .88



No. 326

Brass, gross..... $ .56

Picture Wire



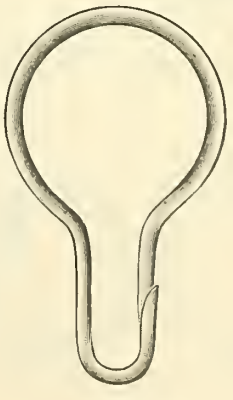
Tinned. 25 yards in a piece. Each piece in a box.

Number	0	1	2	3	4	5
Dozen pieces	$2.50	3.50	5.00	6.50	8.00	10.00

For heavy pictures we recommend copper wire (see Index), which is soft and pliable and has the requisite strength.

Shower Curtain Pin

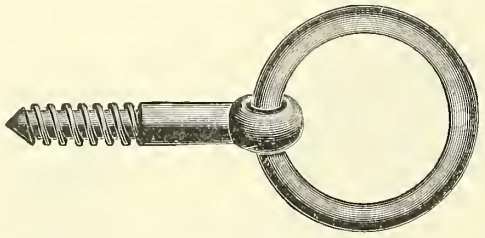
Cuts Full Size



No. 5614

Brass, nickel-plated, gross $2.90

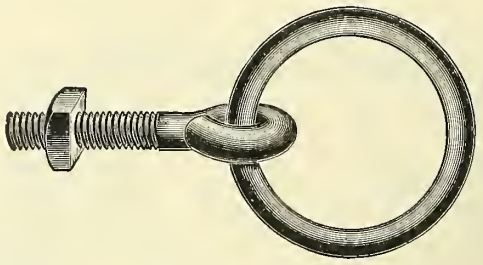
Hitching Rings



No. 17

Wrought steel screw and ring, galvanized, solid forged eye. Screw is 2½ inches long.

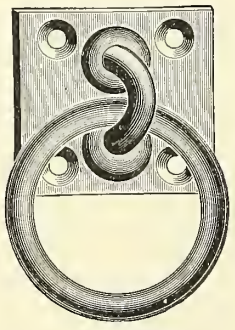
Diameter of ring, inches	2½	2¾	3
Dozen	$2.30	2.50	2.90



Wrought steel screw and ring, with nut, galvanized.

No. 127 Diameter of ring 2¾ inches, length of screw under eye 2½ inches, dozen $3.00

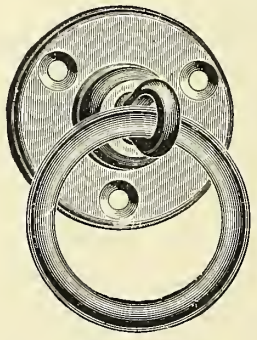
No. 147 Diameter of ring 3 inches, length of screw under eye 4 inches, dozen 4.10



No. 247

All wrought steel, galvanized. Plate is 2 inches square and swivel projects ¾ inch. Ring is 2½ inches in diameter.

Dozen $2.50



No. 236

Wrought steel ring and swivel, japanned. Ring is 2½ inches in diameter.

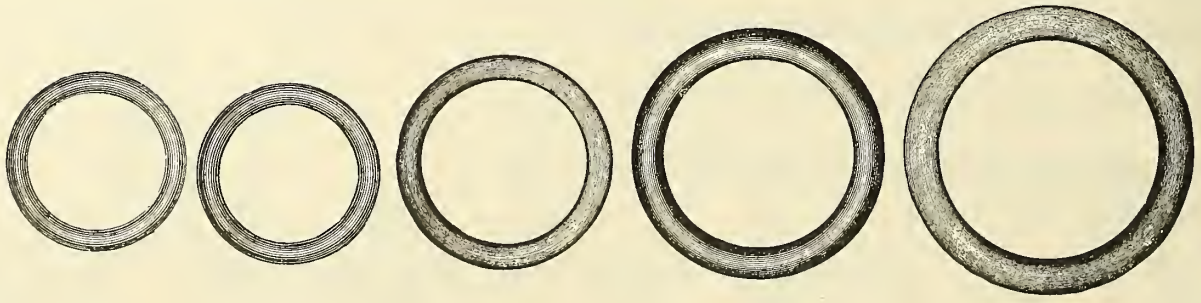
Dozen $1.75



Wrought Iron Trap Door Rings

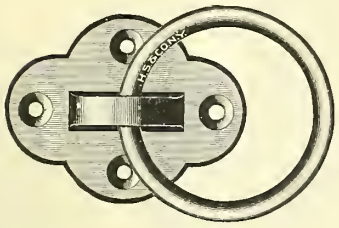
Inside measure, inches	1½x¼	2x¼	2½x¼	3x$\frac{5}{16}$
Plain, gross	$11.50	13.50	16.50	23.00
Galvanized, gross	14.50	17.00	21.00	27.00

Malleable Iron Harness Rings



Inside diameter, inches	½	⅝	¾	⅞	1	1⅛	1¼	1½
Japanned, gross	$.54	.54	.58	.68	.86	.96	1.14	
Galvanized, gross	.62	.62	.72	.86	1.06	1.16	1.38	

Plate Rings



Half size cut

No. 202 Cast brass, polished, dozen $4.50

Screw Rings



No. 48

Cut is full size of ⅜-inch ring. Made of solid brass, brazed and polished.

Inside diameter of ring, inch	½	⅜	5/16
Gross	$5.00	4.50	4.00



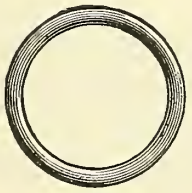
Full size cut of ⅜-inch ring. Ring is made of brass with steel screw.

Number	16	18	18
Inside diameter of ring, inch	½	7/16	⅜
Gross	$ .88	.60	.45

Brass Curtain Rings



No. 10
1 Inch



No. 16
¾ Inch



No. 16
5/8 Inch



No. 16
½ Inch



No. 18
⅜ Inch



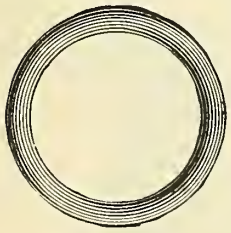
No. 20
5/16 Inch

Gauge number	20	20	18	18	18	18
Inside diameter, inch	¼	5/16	⅜	7/16	½	5/8
Great gross	$1.60	1.75	2.12	2.20	2.40	3.00

Gauge Number	18	16	16	16	16	16
Inside diameter, inch	¾	½	5/8	¾	⅞	1
Great gross	$3.50	3.00	3.50	4.50	5.50	7.00

Gauge Number	14	10	8	8	3/16
Inside diameter, inch	1	1	1⅛	1¼	1½
Great gross	$8.00	14.00	15.60	18.00	27.00

Solid Brazed Curtain Rings



⅞ Inch



¾ Inch



½ Inch

Made of Brass

Inside diameter, inches	½	5/8	¾	⅞	1	1¼
Gross	$1.25	1.35	1.70	2.20	2.55	3.40

Vestibule Rod Rings



No. 30



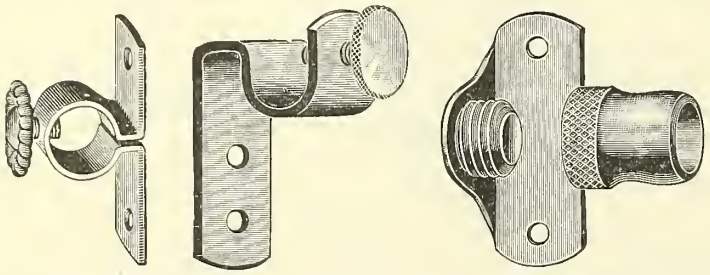
No. 6160

Polished Brass

Diameter, inch	5/16	⅜	7/16	½	5/8	¾
No. 30 Gross	$2.35	2.55	2.70	2.85	3.25	3.50
No. 6160 Gross	2.10	2.20	2.35	2.50	2.75	3.00

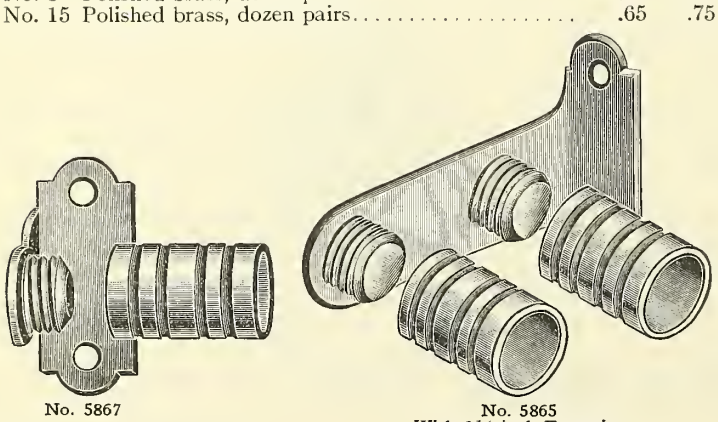
Vestibule Rod Brackets

Packed with Pins



No. 5 No. 8 No. 15

For diameter rod, inch		¼	⅜
No. 5	Polished brass, dozen pairs	$ .35	.40
No. 8	Polished brass, dozen pairs	.35	.40
No. 15	Polished brass, dozen pairs	.65	.75



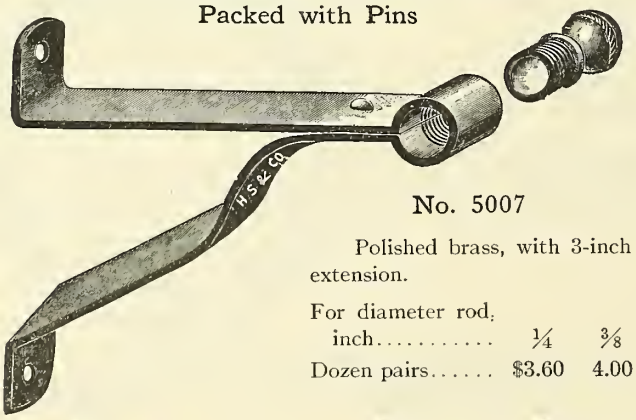
No. 5867

No. 5865
With 1½-inch Extension

For diameter rod, inch		⅜	½
No. 5865	Polished brass, dozen pairs	$5.30	7.30
No. 5867	Polished brass, dozen pairs	4.15	5.15

Extension Brackets

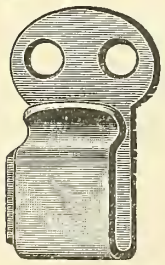
Packed with Pins



No. 5007

Polished brass, with 3-inch extension.

For diameter rod, inch	¼	⅜
Dozen pairs	$3.60	4.00

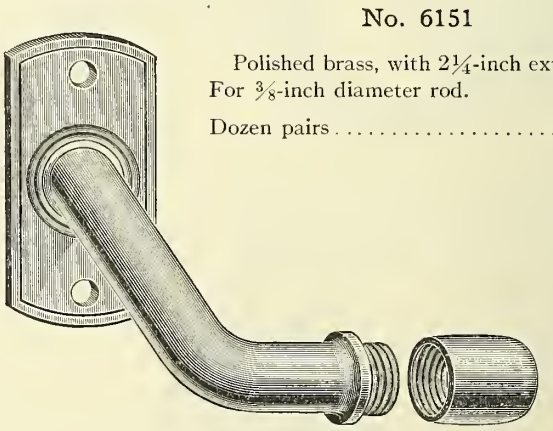


Full Size Cut

No. 557 Bracket, brass, polished.
Per pair ..... $ .35
Packed with screws

Goose-Neck Brackets

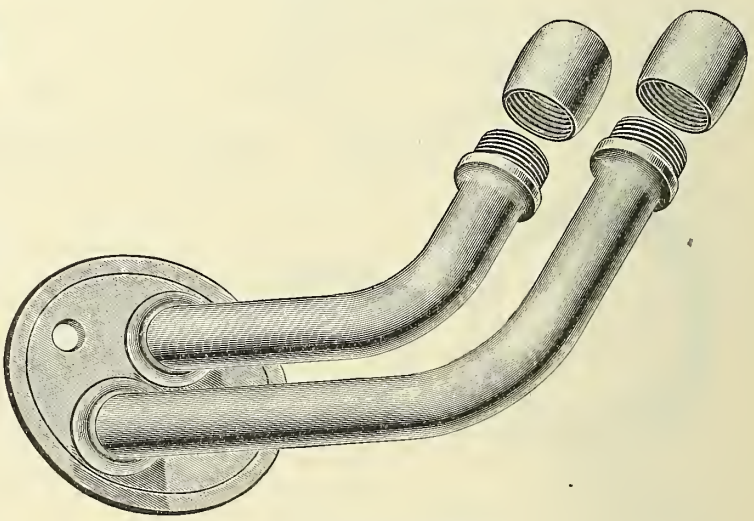
Packed with Screws



No. 6151

Polished brass, with 2¼-inch extension. For ⅜-inch diameter rod.

Dozen pairs $3.60

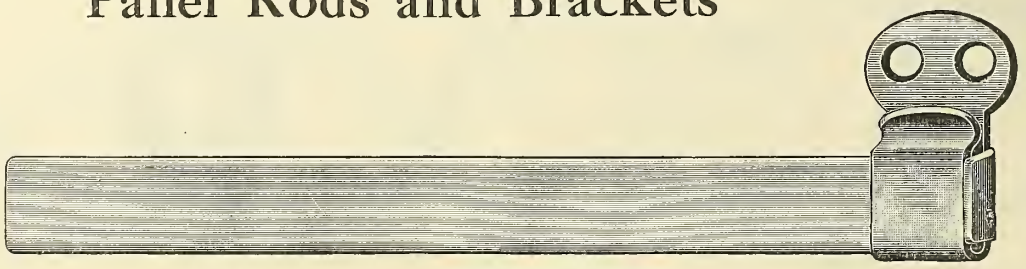


No. 6109 Double

Polished brass. Inside bracket has extension of 1½ inches; outside has 2½ inches. For ¼ or ⅜-inch diameter rod. Specify which size is desired.

Dozen pairs $6.60

Panel Rods and Brackets

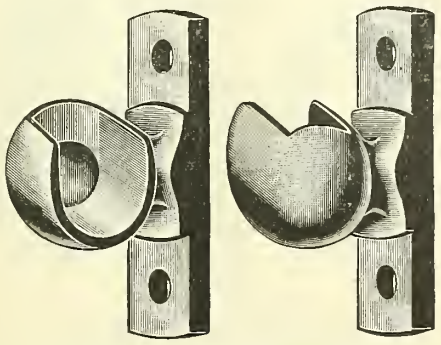


Full size cut, except length

No. 21 Rod only, steel, brass-plated, polished, ½ inch wide, per foot ..... $ .10

Bracket No. 570½ Polished brass, as illustrated above, pair ..... .40

Curtain Rod Brackets

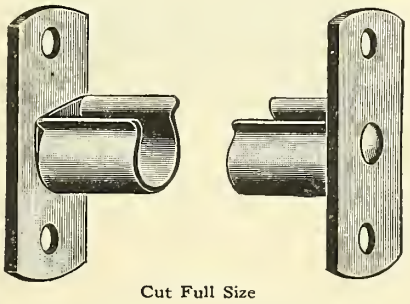


Cut Full Size

Cast Brass, Polished

No. 508⅜ For ⅜-inch rod, per pair..... $ .50
No. 508½ For ½-inch rod, per pair..... .60

Packed with screws.

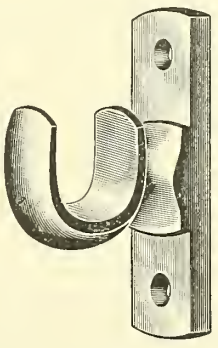


Cut Full Size

Brass Polished

No. 516⅜ For ⅜-inch rod, per gross pairs..... $12.00

Rods snap securely into place.
Packed with pins.

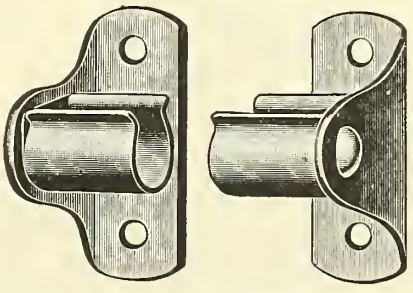


Cut Full Size

Center Support or Bracket
Cast Brass, Polished

No. 510⅜ For ⅜-inch rod, per pair..... $ .45
No. 510½ For ½-inch rod, per pair..... .55

Packed with screws.



Cut Full Size

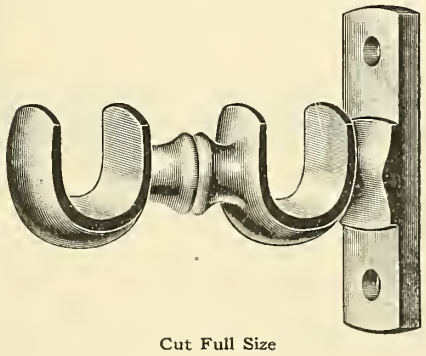
Brass Polished

No. 515⅜ For ⅜-inch rod, per gross pairs..... $12.00

Rods snap securely into place.
Packed with pins.

Center Supports and Brackets

For Curtain Rods



Cut Full Size

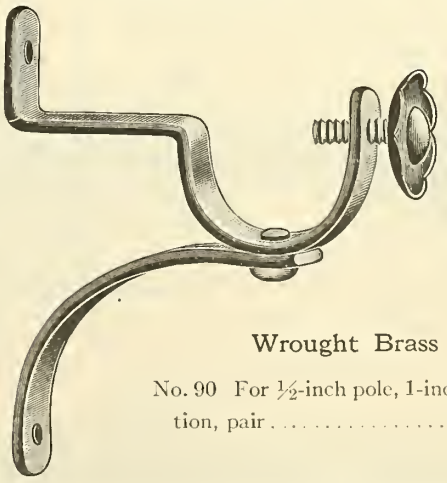
Cast Brass, Polished

No. 511⅜ For ⅜-inch rod, per pair..... $ .70
No. 511½ For ½-inch rod, per pair..... .90

Six pairs in a box, with screws.

Pole Brackets

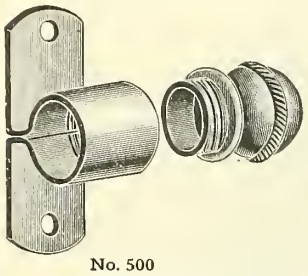
Packed with Pins



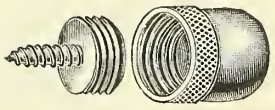
Wrought Brass

No. 90 For ½-inch pole, 1-inch projection, pair..... $ .33

Vestibule Rod Sockets



No. 500



No. 350

For diameter rod, inch	¼	⅜
No. 350 Polished brass, with pins, dozen pairs	$ .50	.60
No. 500 Polished brass, with pins, dozen pairs	.60	.70

Spring Sockets

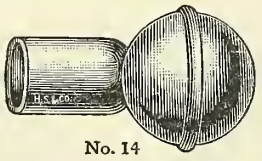
Little Giant



With rubber tips.

For diameter rod, inch	¼	⅜
Gross pairs	$20.00	22.50

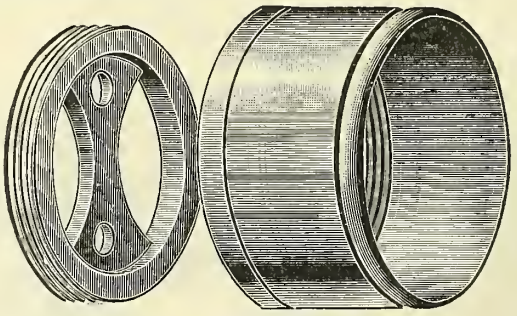
Vestibule Rod Ends



No. 14

Polished brass.

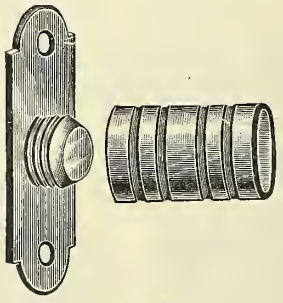
For diameter rod, inch	¼	⅜
Dozen pairs	$ .80	.80



No. 5632

Cast brass, polished.

For diameter poles, inch	½	1
Dozen pairs	$4.00	6.00

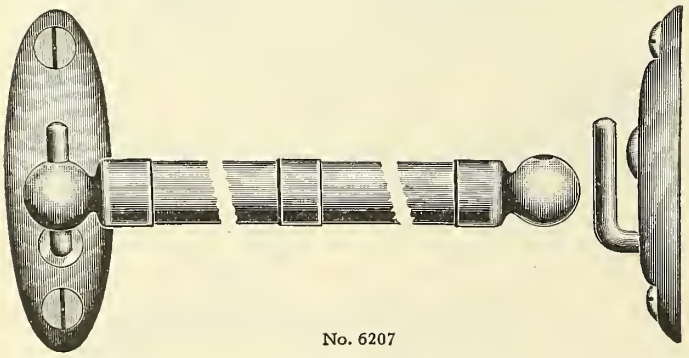


No. 5866

Wrought brass.

For diameter rod, inch	⅜	½
Dozen pairs, with pins	$4.40	5.40

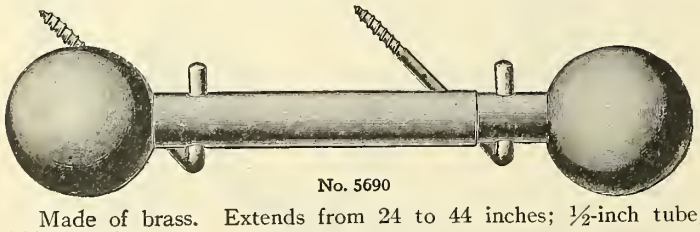
Extension Vestibule Rods



No. 6207

Made of brass. Extends from 24 to 44 inches.

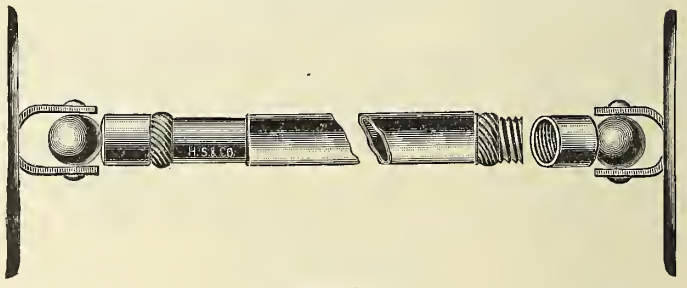
Dozen $2.00



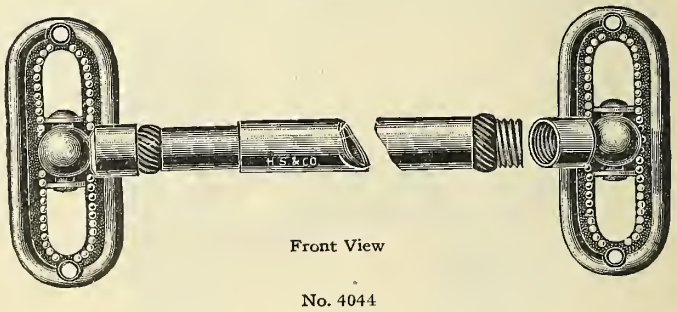
No. 5690

Made of brass. Extends from 24 to 44 inches; ½-inch tube, 1½-inch end.

Dozen $7.00



Side View



Front View

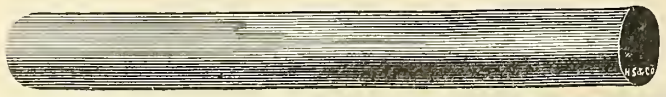
No. 4044

Made of brass. Extends from 24 to 44 inches.

Dozen $2.30

Vestibule Rod

In 12 Foot Lengths

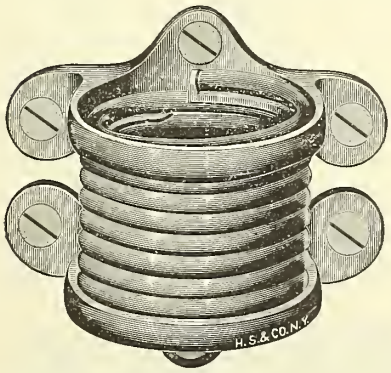


¼ inch diameter, brass covered, 1000 feet	$22.50
⅜ inch diameter, brass covered, 1000 feet	36.00
½ inch diameter, iron lined brass tubing, 100 feet	7.50

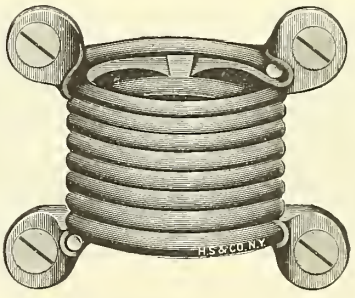
B. & B. Patent Rocker Springs

Half Size Cuts

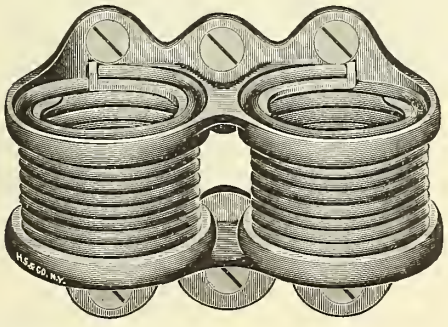
These Springs are oil-tempered and japanned, and are tested to 6 inches extension



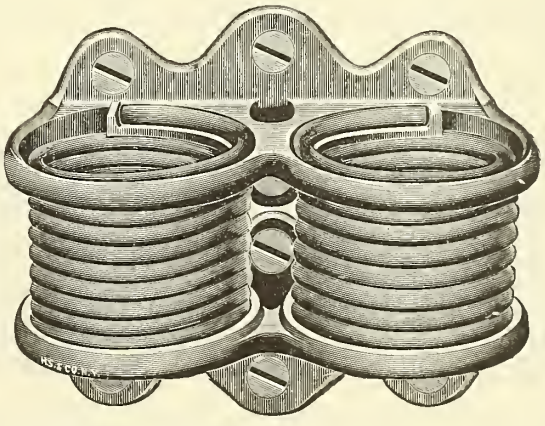
No. 1 In dozen set lots, per set..... $ .42
Approximately 125 sets in a barrel.



No. 4½ In dozen set lots, per set..... $ .30
Approximately 150 sets in a barrel.

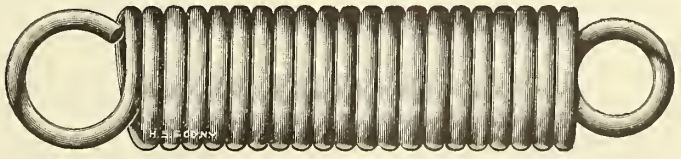


No. 8 In dozen set lots, per set..... $ .60
Approximately 125 sets in a barrel.



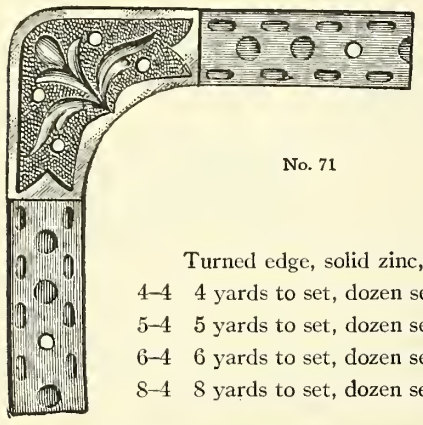
No. 9 In dozen set lots, per set..... $ .75
Approximately 100 sets in a barrel.

Coil Rocker Springs



Number of rings.....	22	28
¾-inch diameter, tempered steel, japanned, 100.....	....	$4.80
⅞-inch diameter, tempered steel, japanned, 100.....	....	5.25
1-inch diameter, tempered steel, japanned, 100.....	$6.00	

Oil Cloth and Linoleum Binding



No. 71

Turned edge, solid zinc, ⅜ inch wide.

4–4	4 yards to set, dozen sets	$2.40
5–4	5 yards to set, dozen sets	3.00
6–4	6 yards to set, dozen sets	3.60
8–4	8 yards to set, dozen sets	4.80



No. 57

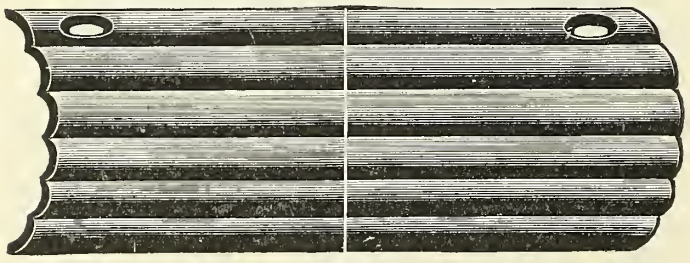
Cuts are full size of widths and thicknesses. For covering seams.

Polished Brass

Width, inches	¾	1	1¼	2
Thickness, B. & S. gauge	22	22	22	22
Foot	$ .07	.08	.10	.18

Furnished in any length up to 12 feet, also in coils of 75 feet. Pierced with holes for pins.

Stair Nosings



No. 51

Cut is full size of width and thickness. 1¼ inches wide, 18 B. & S. gauge thick. In lengths of 18, 20, 22, 24, 27, 30, 36 and 44 inches.

On special order, will be supplied with ends rounded at regular price.

Zinc, foot	$ .07
Brass, foot	.14

Rubber Matting



For stair treads, floor coverings, etc. About 50 yards to a roll. 36 inches wide, first quality.

3/32-inch thick, per square yard	$1.50
⅛-inch thick, per square yard	2.00



No. 53

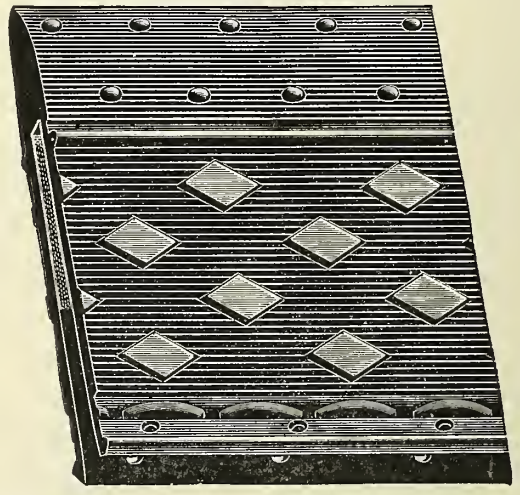
Cuts are full size of widths and thickness

Polished Brass

Width, inches	⅝	¾	1	1¼
Thickness, B. & S. gauge	22	20	20	20
Foot	$ .06	.09	.12	.15

Furnished in any length up to 12 feet, also in coils of 75 feet. Pierced with holes for pins.

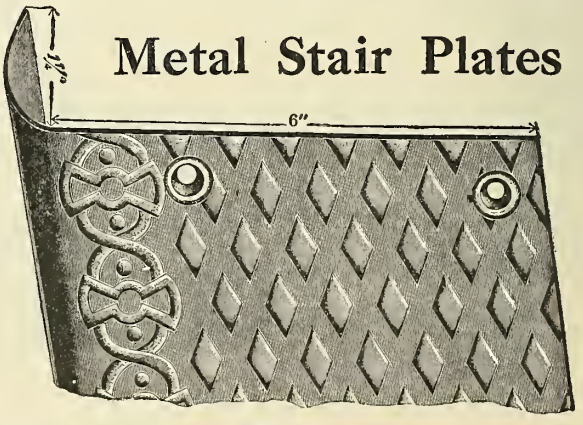
Rubber Binding



For mattings, carpets, etc. This binding is very high grade throughout and is reinforced with canvas, making it exceptionally strong.

Length, inches	27	36	45	54	72
Width, inches	2½	2½	2½	2½	2½
Each, piece	$ .27	.35	.44	.53	.70

Metal Stair Plates



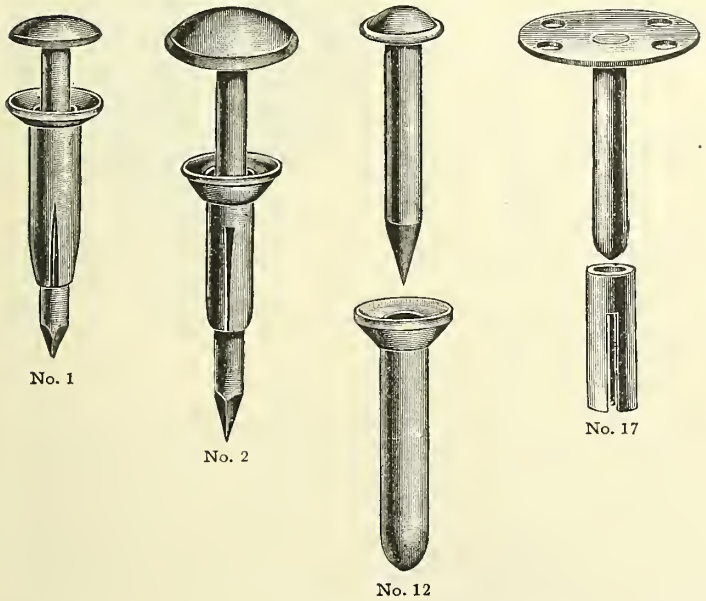
No. 42

Made of zinc, 6 inches wide; 16 B. & S. gauge thick.
In lengths of 18, 20, 22, 24, 27, 30, 36 and 84 inches.
Approximately 72 square inches to a pound.

Pound	$ .25

Carpet Sockets and Pins

Cuts Full Size

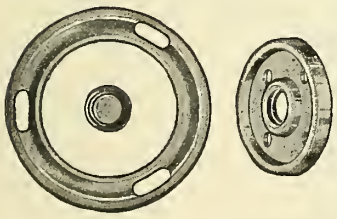


No. 1 No. 2 No. 12 No. 17

No. 1	Brass head, polished steel pin, brass socket, gross	$3.75
No. 2	Brass capped, polished brass dipped pin, brass socket, gross	4.50
No. 12	Solid brass pin, brass socket with closed end forcement floors, gross	3.50
No. 17	Steel pin and brass socket, pin can be sewed to underside of carpet or rug, gross	4.00

Rug Fasteners

New Sultan



These Fasteners hold the rug firmly in place, but are easily detached by slight upward pull. They are not in sight when the rug is down.

Gross $10.00

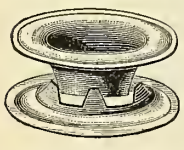


Drugget Pins

Stamped Brass. Polished

Number	Diameter Inch	Gross
5169	5/8	$1.40
5179	3/4	1.80

Tooth Grommets or Eyelets

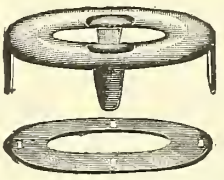


For carpets, rugs, etc. Made of brass

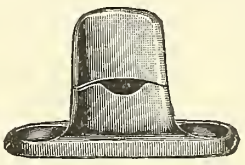
Number	1	2	3
Size of hole, inch	5/16	3/8	7/16
Gross	$ .84	1.00	1.40

We carry in stock the necessary tools for applying tooth grommets or eyelets.

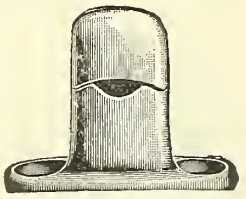
Curtain Fasteners



Oval Eyelet and Perforated Back Plate



No. 6
For Single Curtains



No. 7
For Double Curtains

Made of brass, with stamped base

No. 6	Polished, gross	$6.00
No. 6G	Gunmetal, gross	6.80
No. 7	Polished, gross	7.50
No. 7G	Gunmetal, gross	8.50

Carriage Knobs



No. 75

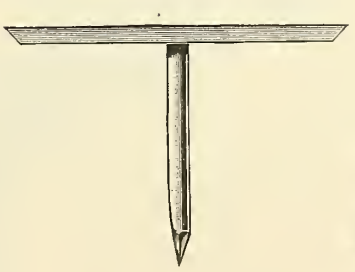


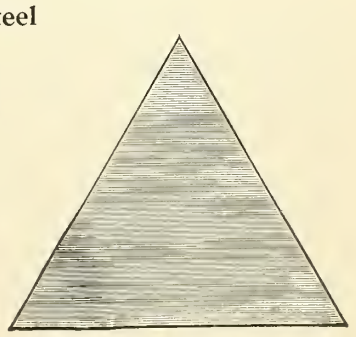
No. 374

No. 75	Cast iron, japanned, gross	$ .80
No. 374	Cast brass, polished, with barbed nail, gross	5.90

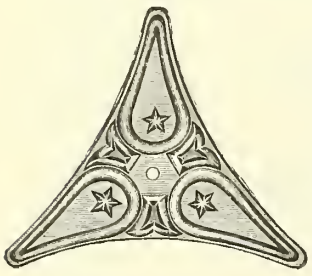
Stair Corners

Steel





No. 06222	Brass-plated, gross	$7.50
No. 06222AC	Antique copper, gross	8.50
No. 06222N	Nickel-plated, gross	8.00



Stair Corners

Brass Dipped

Packed with Pins No. 100 gross $3.60

Stair Buttons

Cut is full size of No. 0204. No. 0203 is same design, but larger.

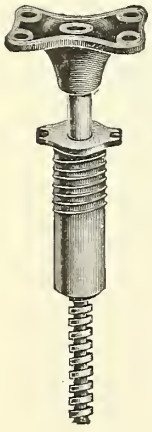
No. 0204

1⅝ inches in diameter, brass, dipped, gross ... $3.80

No. 0203

1⅞ inches in diameter, antique copper, gross.. 4.50





Stool Screws

H. S. & Co.

Our No. 100 Revolving Stool Screw is especially unique in two features: The nut and screw are so tapped and threaded as to permit the flange to turn down to within ½ inch of the top of the nut. The top opening of the nut is only as large as the shoulder of the screw and thus in raising and lowering the stool seat there is no wabbling nor side motion nor rattling, so common and so annoying.

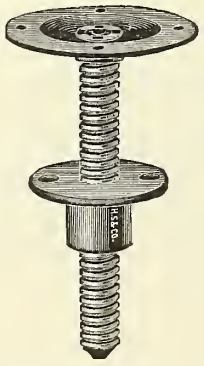
The screw is made of cold rolled steel and the threads are cut square and deep, giving an excellent bearing, and the flanges are tumbled, removing all burrs and nibs and making a clean, smooth, presentable finish, and the four holes are nicely countersunk.

The head of the screw is tapered and readily seats into the flange, and thus the tool seat is easily removed for packing, etc.

The flange is 3⅛ inches square. The screw proper projects below the flange 6¾ inches and the clearance between the top of the nut and the under side of the flange permits of a 4¼-inch extreme raise of the stool seat.

Dozen..... $3.50

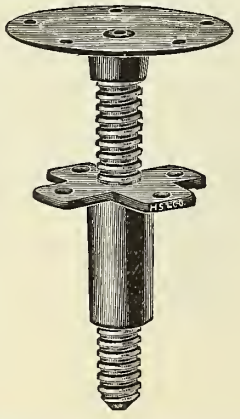
Stool Screws



No. 20 ⅞-inch wrought iron screw, square thread, dozen $6.10

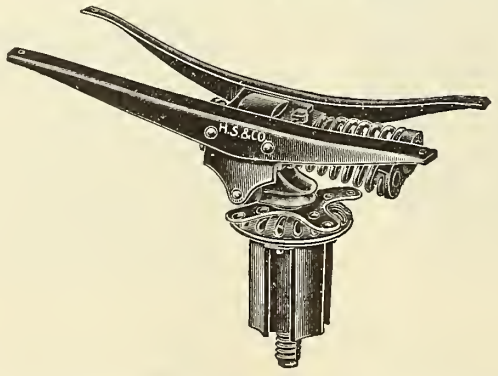
No. 21 1-inch, wrought iron screw, square thread, dozen..... 7.00

Chair Screws



No. 11 1-inch wrought iron screw, square thread, dozen $10.00

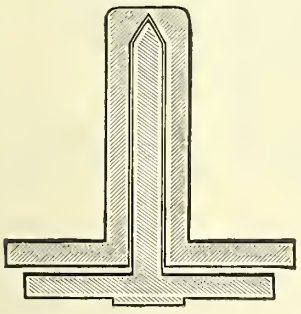
Chair Spiders



No. 17½H Japanned, dozen..... $20.00

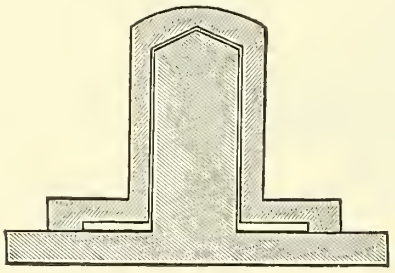
Pivots

These Pivots are made for mounting revolving desks and stands of all kinds, such as used by banks and hotels for carrying registers, used by artists when moulding or carving, etc.



Diameter of outside plate 2½ inches; diameter of inside plate 2¼ inches; diameter of pin $\frac{9}{16}$ inch; length of pin 3⅛ inches.

No. 300 Iron complete, each..... $1.25

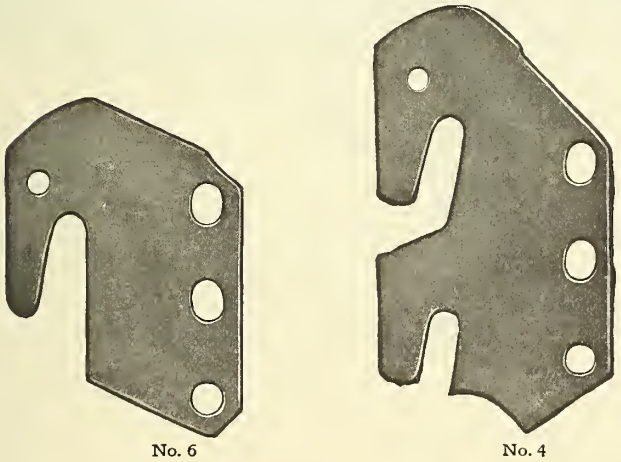


Diameter of outside plate 3 inches; diameter of inside plate 4 inches; diameter of pin ¾ inch; length of pin 1⅜ inches.

No. 600 Bronze, complete, each.....$3.00

Bed Fasteners

One-half Size Cuts



No. 6 No. 4

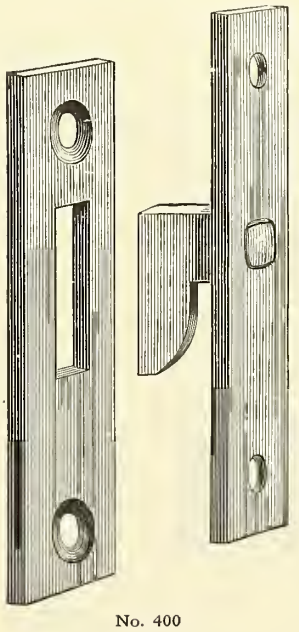
No. 4 4x2½ inches, wrought steel, per dozen sets..... $2.00
No. 6 3x2½ inches, wrought steel, per dozen sets..... 1.60

Post and rail pins are included in these prices

Bed Joints

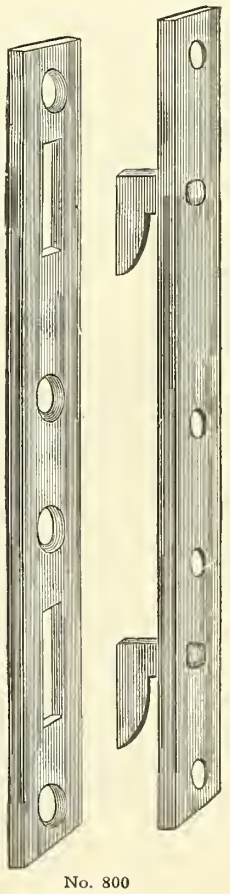
No. 400, eight hooks and eight eyes constitute a set. Wrought iron, dozen sets..... $4.00

No. 800, four hooks and four eyes constitute a set. 6-inch, wrought iron, dozen sets..... 6.90

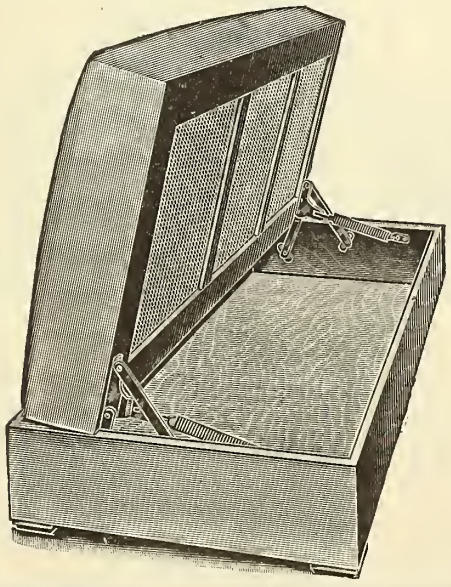


No. 400

Full Size Cuts



No. 800



Seat-Raising Attachments

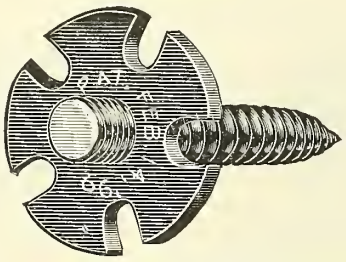
Seng

This attachment is a simple contrivance for raising the seats of box couches. Easily attached and nothing to get out of order. As the seat rises it recedes from the wall and will balance at any point.

No. 60 Pair ..... $ .80

Toilet Fasteners

Tillotson



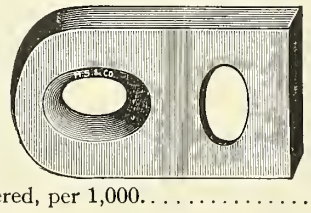
This method of fastening is a great improvement over other methods. All boring is done in the factory, to gauge, and the nuts are inserted by the case-maker. They cannot drop out or be lost. The screw is placed in the standard at the factory, so that dealer or user has only to put in position and tighten the nut with a nail or piece of wire.

No. 1 Bolt $\frac{1}{4}$x2$\frac{1}{4}$ inches, nut 1$\frac{3}{16}$ inches diameter, per 1000.. $30.00
No. 2 Bolt $\frac{5}{16}$x2$\frac{1}{4}$ inches, nut 1$\frac{3}{16}$ inches diameter, per 1000.. 33.00
No. 3 Bolt $\frac{5}{16}$x3 inches, nut 1$\frac{3}{8}$ inches diameter, per 1000.... 36.00
No. 4 Bolt $\frac{5}{16}$x3$\frac{1}{2}$ inches, nut 1$\frac{13}{16}$ inches diameter, per 1000.. 48.00
No. 5 Bolt $\frac{5}{16}$x4 inches, nut 2$\frac{1}{4}$ inches diameter, per 1000.... 60.00

Nos. 1, 2 and 3 will answer for all but the very heaviest work.

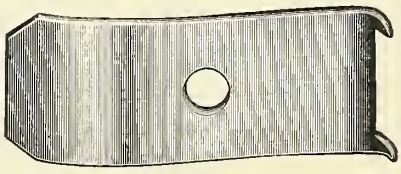
Desk Clips

Full Size Cut



No. 1 Iron, coppered, per 1,000..... $7.00

Table Top Clips



Front View

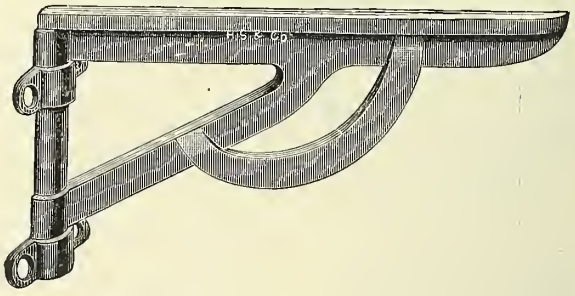


Side View

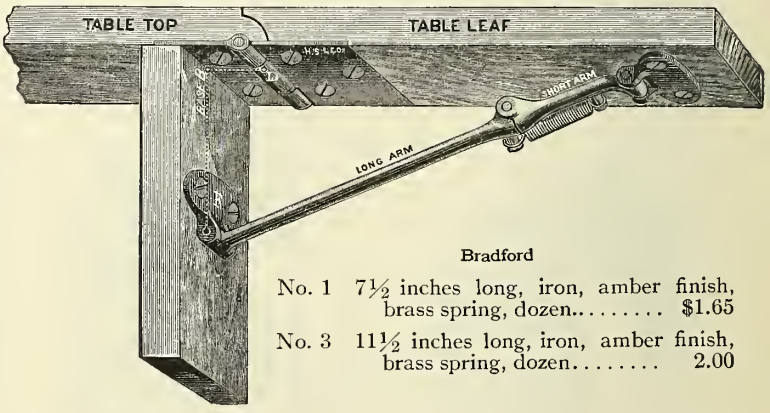
Full Size Cuts

No. 101 $\frac{3}{4}$-inch, wrought steel, per 1000..... $3.50

Table Leaf Supports



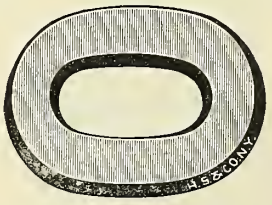
No. 2 8x4 inches, iron, with loops, dozen..... $1.10
Extra loops, dozen..... .24



Bradford

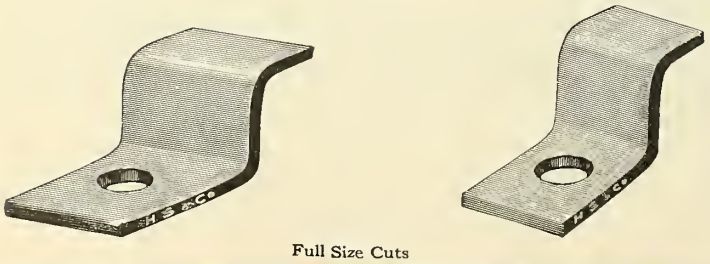
No. 1 7$\frac{1}{2}$ inches long, iron, amber finish, brass spring, dozen..... $1.65
No. 3 11$\frac{1}{2}$ inches long, iron, amber finish, brass spring, dozen..... 2.00

Shrinkage Plates



No. 0 Iron, coppered, per 1,000..... $7.50

Panel Irons



Full Size Cuts

Made of Wrought Steel

Used in the manufacture of tables, desks, counters, etc., where there is objection to rigidly attaching the tops by screws. They require less machine work and smaller screws, thus compensating for their cost.

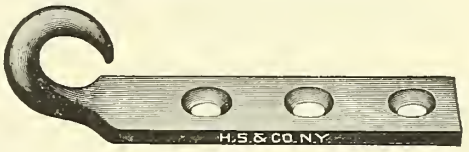
Size, inch	½	¾
Per 1000	$6.00	8.00

Wrought Iron Pivot Cleats



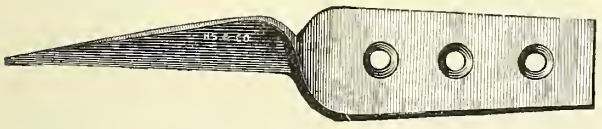
Length, inches	3⅞
Diameter, inch	⅜
Gross	$6.00

Plate Eyes



Wrought iron, 3 inches, gross $12.00

Hold Fasts



No. 1	Slim, wrought iron, 4 inches, 1 screw-hole, gross	$5.00
No. 2	Slim, wrought iron, 5 inches, 1 screw-hole, gross	5.00
No. 3	Regular, wrought iron, 4 inches, 1 screw-hole, gross	5.00
No. 4	Regular, wrought iron, 5 inches, 2 screw-holes, gross	5.25
No. 5	Regular, wrought iron, 6 inches, 3 screw-holes, gross	5.40
No. 6	Extra heavy, wrought iron, 6 inches, 2 screw-holes, gross	7.50
No. 7	Extra heavy, wrought iron, 8 inches, 3 screw-holes, gross	8.50

Sign or Partition Braces

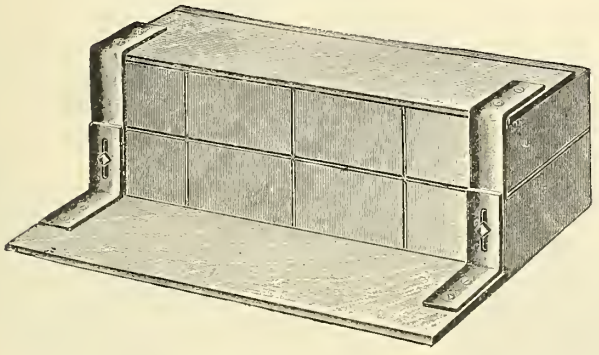
Wrought Iron



	24	30	36
Length, inches			
Diameter inch	½	½	⅝
Dozen	$3.20	3.40	4.00

Storm Stoop Irons

Wrought Iron

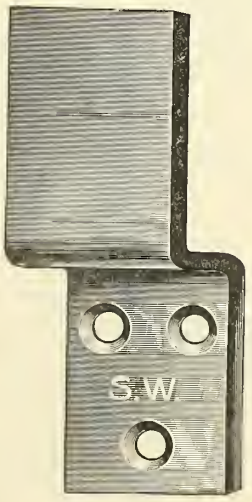


Iron, 1½x⅛ inch; single slot, 3½x8 inches; double slot, 4x6 inches. Galvanized, four pieces to one set.

Dozen sets $7.50

Wrought Steel Bar Holders

Japanned



Width, inches	1¼	1¾
Projection, inches	2	2
Length of sides, inches	2½	2½
Dozen pair	$2.00	3.00

Straight Plates



No. 995. Wrought Steel

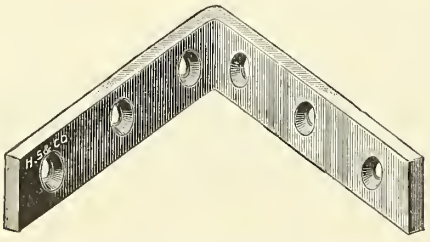
Length, inches	2	2½	3	4	5	6
Width, inches	⅝	⅝	¾	⅞	1	1⅛
Gross	$1.68	1.92	2.16	2.40	2.64	2.88



No. 60. Wrought Brass

Length, inches	2	3	3	4	5
Width, inch	½	½	¾	¾	1
Gross	$3.60	8.00	10.00	12.00	11.35

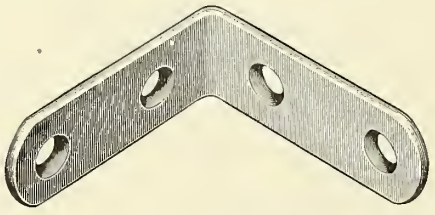
Corner Braces



No. 997. Wrought Steel

5 inch size may be secured galvanized, but must be so ordered

Length of sides, inches	1	1½	2	2½	3	4	5	6
Width of sides, inches	½	½	⅝	⅝	¾	⅞	1	1⅛
Gross	$2.40	3.60	4.20	5.40	6.60	10.80	15.60	18.00
Galvanized, gross	...	...	...	...	...	....	25.20	



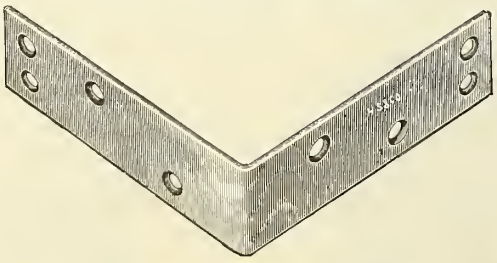
No. 998C. Wrought Steel, Brass-plated

Length of sides, inches	1	1½	1½
Width of sides, inch	¾	¾	1
Gross	$7.20	7.80	8.40

No. 40. Wrought Brass

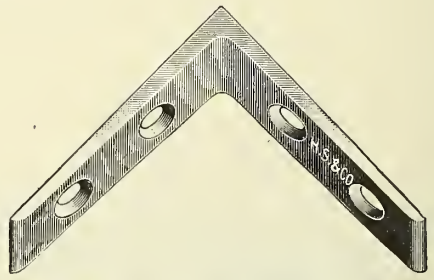
Length of sides, inches	1	1½	2	2	3
Width of sides, inch	½	½	½	¾	¾
Gross	$3.40	4.60	5.90	9.80	13.30

Corner Irons



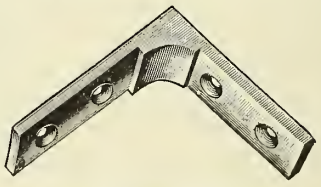
No. 996. Wrought Steel

Length of sides, inches	4½	4½	4½	4½	4½
Width, inches	¾	⅞	1	1⅛	1¼
Gross	$4.80	5.04	5.28	5.76	6.36



No. 70. Malleable Iron

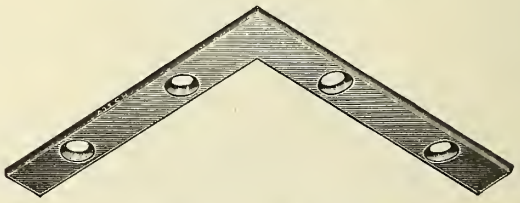
Length of sides, inches	2	2½	3	3½	4¼	5	6
Width of sides, inches	¾	⅝	¾	¾	15/16	1	1⅛
Gross	$1.80	3.60	4.30	4.80	7.60	15.00	23.00



Cast Brass, Polished

Number	1	2
Length of sides, inch	⅝	⅝
Width of sides, inches	2¼	3
Dozen	$2.00	3.30

Angle Plates



No. 50. Wrought Brass

Length of sides, inches	2	2½	3½
Width of sides, inch	½	⅝	¾
Gross	$6.30	7.70	11.60

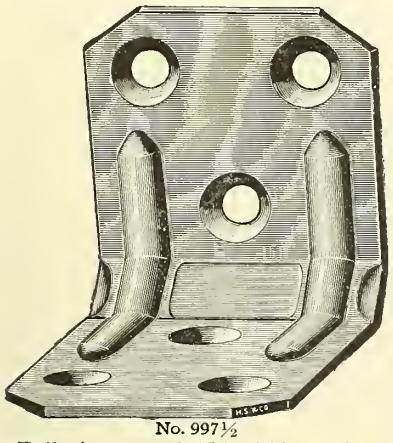
No. 999. Wrought Steel

Length of sides, inches	2	2½	3	3½	4	5
Width of sides, inch	⅜	½	½	⅝	⅝	⅞
Gross	$2.64	3.24	3.48	4.32	4.56	6.96

No. 80. Malleable Iron

Length of sides, inches	2	2½	3	3½	4	4½	5	6
Width of sides, inch	½	½	½	¾	¾	¾	⅞	⅞
Gross	$2.00	2.30	3.60	5.90	7.10	8.00	9.00	13.60

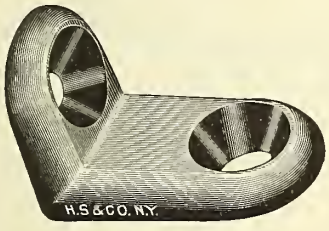
Corner Braces



No. 997½

Full size cut of 1⅝x1½-inch size. Wrought steel.

Inches	1x1	1⅝x1½	2¼x1¾
Gross	$3.24	3.60	4.80

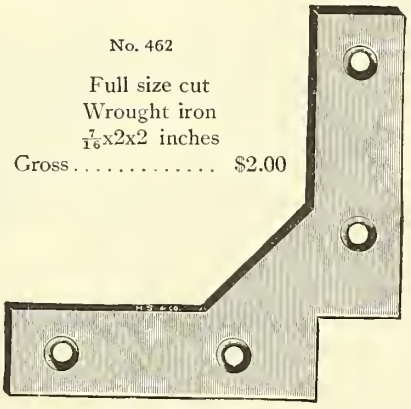


No. 135

Full size cut. Iron, coppered.

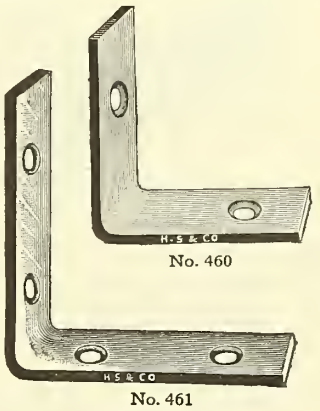
1x1½ inches, gross $2.40

Show Case Corners



No. 462

Full size cut
Wrought iron
$\frac{7}{16}$x2x2 inches
Gross $2.00

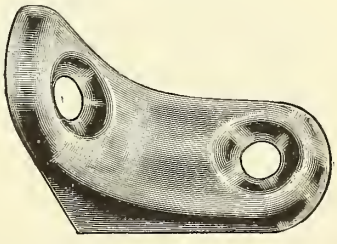


No. 460

No. 461

Full size cuts. Wrought iron.

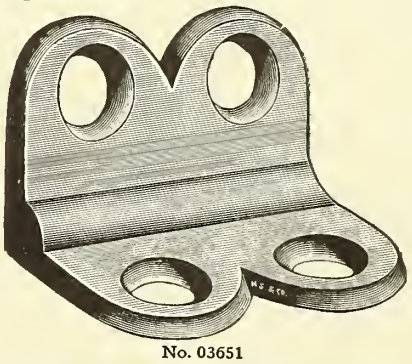
No. 460 Size $\frac{5}{16}$x1x1 inch, gross $1.50
No. 461 Size $\frac{5}{16}$x1⅜x1⅜ inches, gross 1.70



No. 215

Full size cut. Cast steel, extra strong.

1¼x1¼ inches, 1000 ..... $10.00
1¼ x 2¼ inches, 1000 ..... 15.00

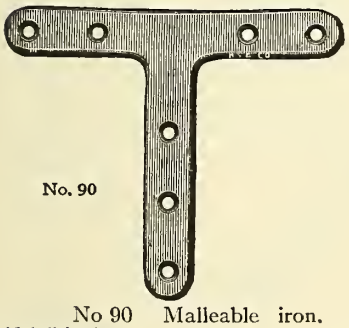


No. 03651

Full size cut. Cast iron, japanned.

1½-inch, gross $5.00

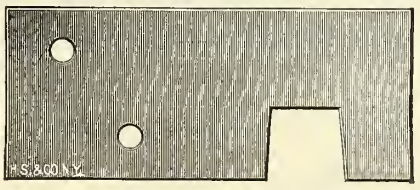
T-Plates



No. 90

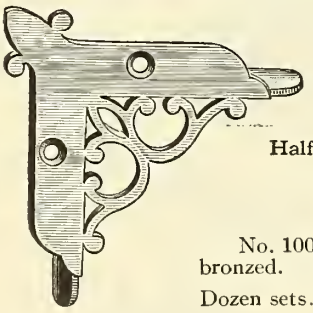
No 90 Malleable iron.
4½x5 inches.
Gross $7.50

Floor Plates



Half size cut. Wrought steel, 2½ inches long.
1000 ..... $7.75

Screen Corners



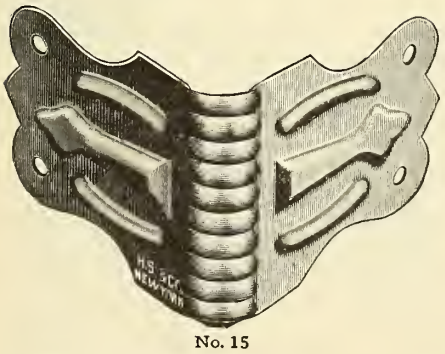
Half Size Cuts

No. 100. Cast iron, Tuscan bronzed. Packed with screws.
Dozen sets $2.60

Trunk Corners

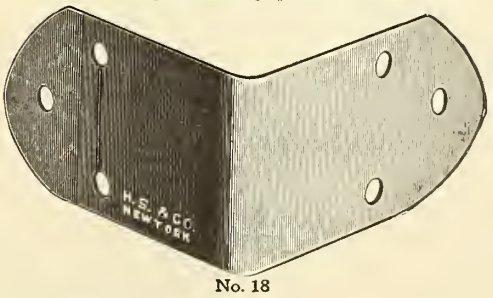
Half Size Cuts

Wrought Steel, Japanned Finish



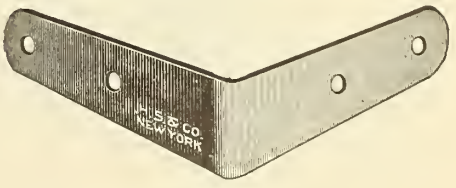
No. 15

2½x2½ inches.
Gross $3.00



No. 18

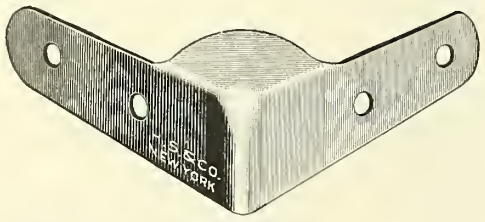
2⅜x2⅜ inches.
Gross $3.30



No. 5A

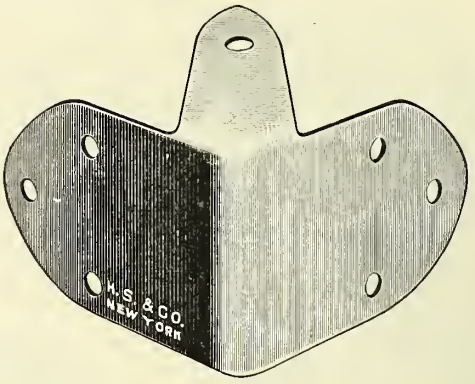
2⅜x2⅜ inches.
Gross $2.70

Trunk Corners



No. 37

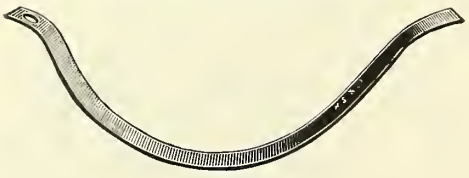
Half size cut. Wrought steel, japanned, 2½x2½ inches.
Gross $3.00



No. 16

Half size cut. Wrought steel, japanned, 2½x2½ inches.
Gross $5.00

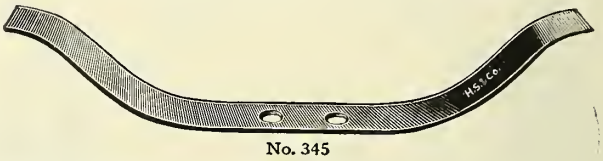
Screen Springs



No. 40

Two-thirds size cut. Blued steel.
Gross $2.40

Show Case Springs

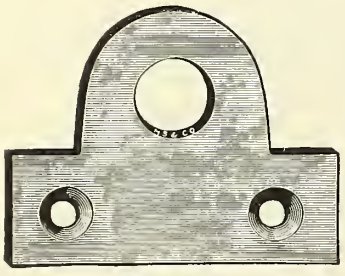


No. 345

Two-thirds size cut. Blued steel.
Gross $4.00

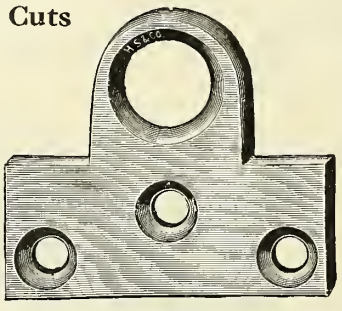
Padlock Eyes

Full Size Cuts



No. 829

Wrought steel, 1⅜x1¾ inches.
Dozen ..... $ .60



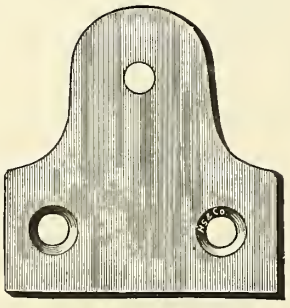
No. 830

1⅜x1½ inches
No. 3350 Malleable iron, japanned, dozen ..... $ .80
No. 3350¼ Malleable iron, brass-plated, dozen 1.20
No. 830 Cast brass, polished, dozen 2.10

2¼x2 inches
No. 3351 Malleable iron, japanned, dozen 1.20
No. 3351¼ Malleable iron, brass-plated, dozen 1.80
No. 831 Cast brass, polished, dozen 2.80

Hanger Plates

Full Size Cuts

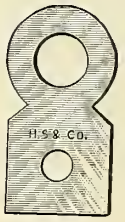


No. 4

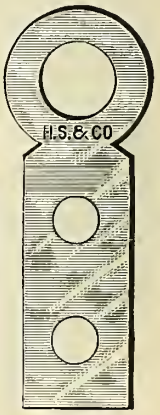
No. 03 Width 1⅛ inches, heavy wrought steel, brass-plated, gross $1.50
No. 3 Width 1⅛ inches, heavy struck brass, gross 2.00
No. 4 Width 1½ inches, heavy struck brass, gross 2.80
No. 14 Width 1¾ inches, heavy struck brass, gross 7.00



No. 11



No. 36

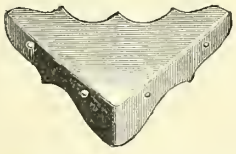


No. 360

No. 11 Sheet brass, gross ..... $ .70
No. 36 Sheet brass, gross 1.00
No. 360 Sheet brass, polished, gross 2.20

Tray or Box Corners

Half Size Cuts

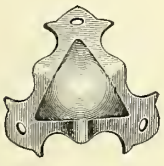


Size ⅞ x 1⅝ x 1⅝ Inches

No. 1 Brass, polished, gross..... $5.00
No. 1N Brass, nickel-plated, gross.. 5.50

Size ¾ x 1⅛ x 1⅛ Inches

No. 2 Brass, polished, gross..... $3.70
No. 2N Brass, nickel-plated, gross.. 4.00



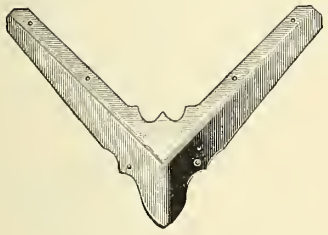
Size 1¼ Inches

No. 3192 Brass, nickel-plated, gross.. $6.70



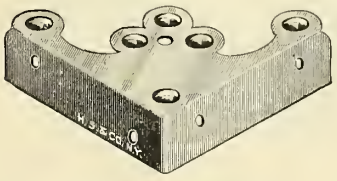
Size 1½ Inches

No. 01776 Brass, polished, gross.... $6.00



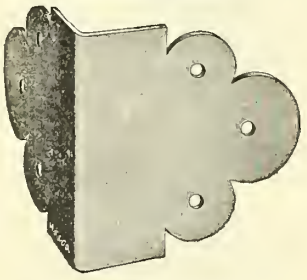
Size ¾ x 2⅜ x 2⅜ Inches

No. 10 Brass, polished, gross..... $8.00
No. 10N Brass, nickel-plated, gross. 8.80



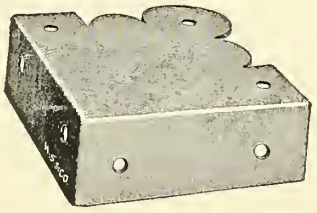
Size ¾ x 2½ x 2½ Inches

No. 1360 Brass, polished, gross.... $10.00



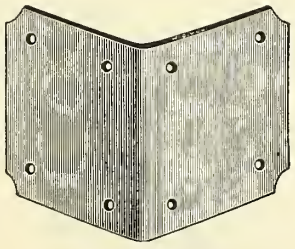
Size 2½ x 2½ x 2½ Inches

No. 1739 Brass, polished, gross.... $17.40



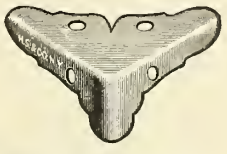
Size ⅞ x 2½ x 2½ Inches

No. 1740 Brass, polished, gross.... $20.00



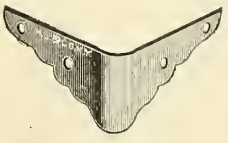
Size 1½ x 1½ x 1½ Inches

No. 8 Brass, polished, gross..... $16.00



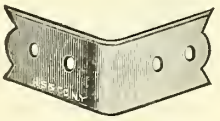
Size ⅞ x 1⅝ x 1⅝ Inches

No. 1220 Brass, nickel-plated, gross $25.20



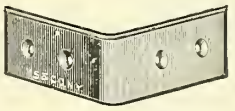
Size ⅞ x 1⅝ x 1⅝ Inches

No. 1223 Brass, nickel-plated, gross $21.60



Size ¾ x 1½ x 1½ Inches

No. 1224 Brass, nickel-plated, gross $14.00

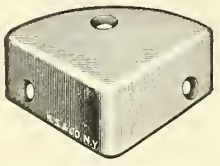


Size ¾ x 1⅝ x 1⅝ Inches

No. 1221 Brass, polished, gross.... $14.70
No. 1221N Brass, nickel-plated, gross 16.00

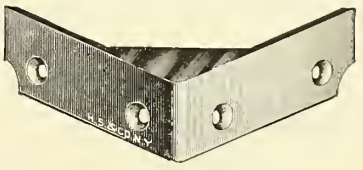
Size 1 x 1½ x 1½ Inches

No. 1222 Brass, polished, gross.... $17.30
No. 1222N Brass, nickel-plated, gross 19.00



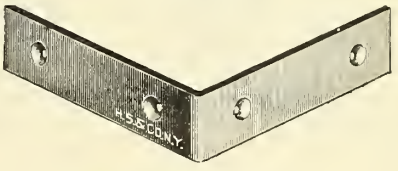
Size 1 x 1½ x 1½ Inches

No. 3 Cast brass, polished, gross... $23.00
No. 3N Cast brass, nickel-plated, gross 25.00



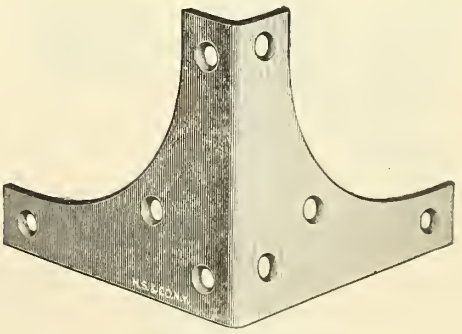
Size ⅞ x 2½ x 2½ Inches

No. 6672 Cast brass, polished, dozen.. $3.50



Size ¾ x 2¾ x 2¾ Inches

No. 6673 Brass, polished, dozen..... $1.60

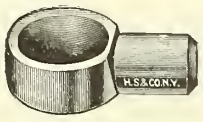


Size 3 x 3¼ x 3¼ Inches

No. 6674 Brass, polished, dozen..... $4.30

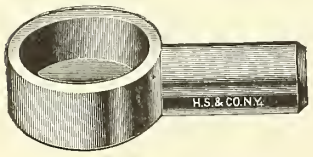
Shelf Blocks

Full Size Cuts



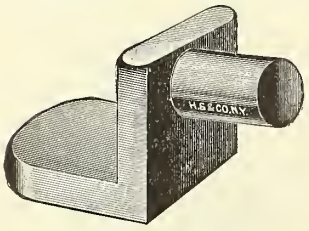
Iron, Coppered

No. 1 *$\frac{5}{16}$-inch shank, per 1000..... $3.40
No. 4 *$\frac{1}{4}$-inch turned shank, per 1000 5.60



Iron, Coppered

No. 3 *$\frac{3}{8}$-inch shank, per 1000..... $6.40

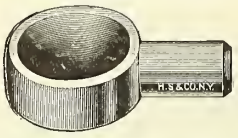


Iron, Coppered

No. 19 $\frac{3}{8}$-inch turned shank, per 1000 $16.00

Cast Bronze, Polished

No. 28P $\frac{3}{8}$-inch turned shank, per gross..... $40.00



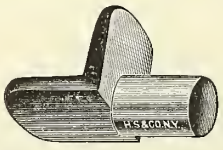
Iron, Coppered

No. 2 *$\frac{5}{16}$-inch shank, per 1000..... $4.70
No. 5 *$\frac{1}{4}$-inch turned shank, per 1000 8.00



Cast Brass, Polished

No. 7 $\frac{1}{4}$-inch turned shank, per 1000. $40.00



Iron, Coppered

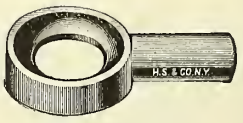
No. 13 $\frac{1}{4}$-inch shank, per 1000..... $2.80
No. 14 $\frac{5}{16}$-inch shank, per 1000..... 3.20

Iron, Brass-Plated

No. 16 $\frac{5}{16}$-inch shank, per 1000..... $5.00

Cast Brass, Polished

No. 17 $\frac{1}{4}$-inch turned shank, per 1000..... $40.00

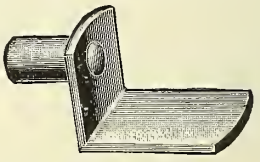


Iron, Coppered

No. 21 *$\frac{1}{4}$-inch turned shank, per 1000..... $6.00

Cast Bronze, Polished

No. 9 $\frac{1}{4}$-inch turned shank, per 1000. $54.00



Wrought Steel, Nickel-Plated

No. 15451 $\frac{15}{64}$-inch shank, per 1000.. $8.30



Steel, Brass-Plated

No. 30 $\frac{1}{4}$-inch shank, per 1000..... $9.50

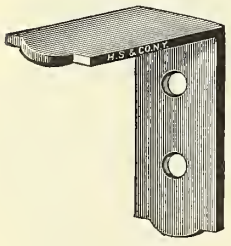
Steel, Nickel-Plated

No. 30N $\frac{1}{4}$-inch shank, per 1000.... $9.50

*When used under glass shelves, rubber buttons, No. 9 (see Index), will prevent scratching and slipping of the shelves.

Shelf Supports

Full Size Cuts



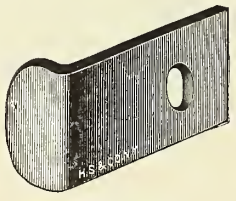
No. 103

Wrought brass, dipped, $1\frac{1}{8}$x1 inches.
Gross..... $4.00



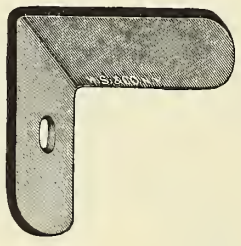
No. 101

Wrought brass, dipped, $\frac{3}{4}$x$\frac{1}{2}$ inch.
Gross..... $1.60



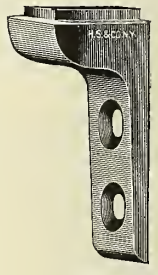
No. 15440

Wrought brass, nickel-plated, 1x$\frac{5}{16}$ inch.
Gross..... $11.50



No. 470

Wrought steel, brass-plated, 1x1 inch.
Gross..... $1.44

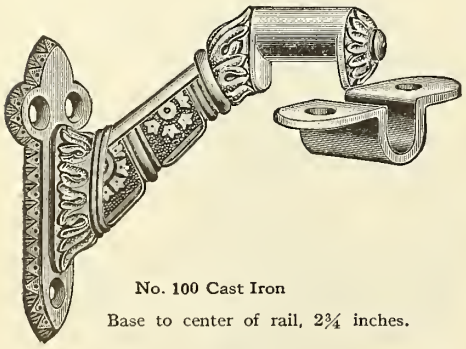


No. 15450

Cast brass, polished, with a leather top; $1\frac{1}{4}$x$\frac{3}{4}$ inches.
Gross..... $20.00

Hand Rail Brackets

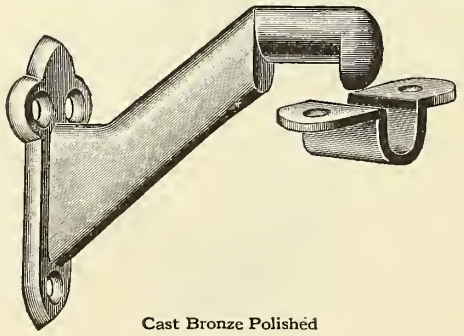
Cuts One Half Size. Packed With Screws



No. 100 Cast Iron

Base to center of rail, $2\frac{3}{4}$ inches.

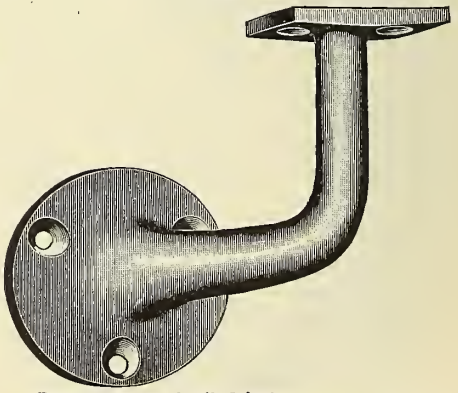
Number	Finish	Dozen
100	Amber Bronze	$1.95
CC100	Coppered	2.30
	Base to center of rail, 4 inches	
101	Amber Bronze	2.55
CC101	Coppered	2.95



Cast Bronze Polished

No. 0100$\frac{1}{2}$

Base to center of rail, $2\frac{3}{4}$ inches.
Dozen..... $15.00



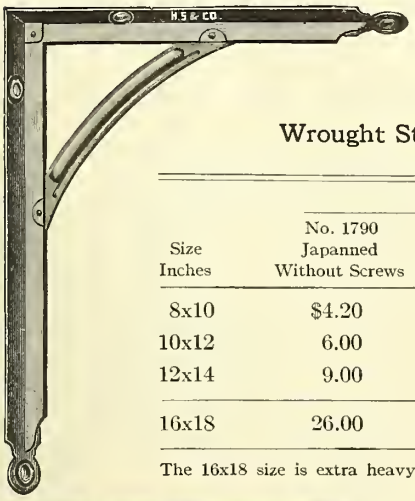
Base to center of rail, 2 inches.

No. 0102$\frac{1}{2}$ Cast bronze, polished, dozen..... $15.00

Base to center of rail, 2 inches.

No. N102$\frac{1}{2}$ Cast iron, bronze-plated, dozen..... 5.55

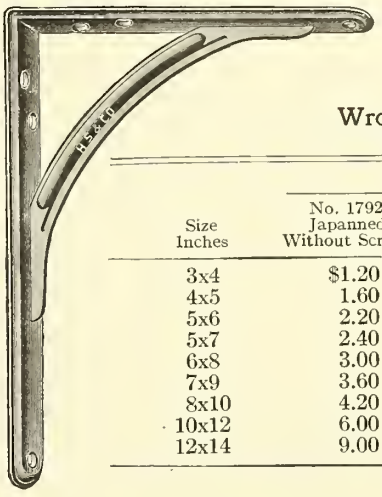
Shelf Brackets



Wrought Steel, Heavy

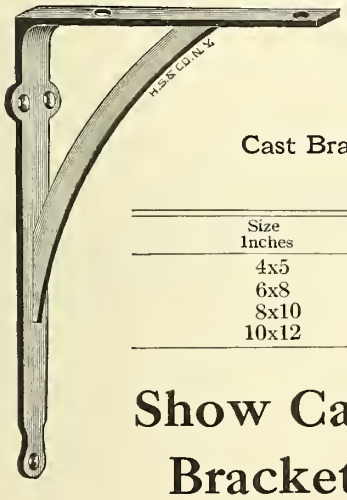
Size Inches	Dozen Pairs: No. 1790 Japanned Without Screws	No. 1490A Bronze-plated With Screws	No. 1490N Nickel-plated With Screws
8x10	$4.20	$9.00	$9.00
10x12	6.00	12.00	12.00
12x14	9.00	13.00	13.00
16x18	26.00	60.00	60.00

The 16x18 size is extra heavy.



Wrought Steel

Size Inches	Dozen Pairs: No. 1792 Japanned Without Screws	No. 1492A Bronze-plated With Screws	No. 1492N Nickel-plated With Screws
3x4	$1.20	$3.75	$3.75
4x5	1.60	4.40	4.40
5x6	2.20	5.00	5.00
5x7	2.40	6.20	6.20
6x8	3.00	8.20	8.20
7x9	3.60	8.70	8.70
8x10	4.20	9.00	9.00
10x12	6.00	12.00	12.00
12x14	9.00	13.00	13.00

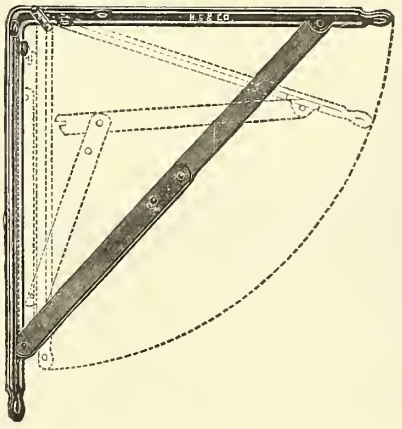


Cast Brass, Old Brass Finish

No. OB392

Size Inches	Dozen Pairs With Screws
4x5	$9.60
6x8	14.00
8x10	22.00
10x12	32.00

Folding Brackets

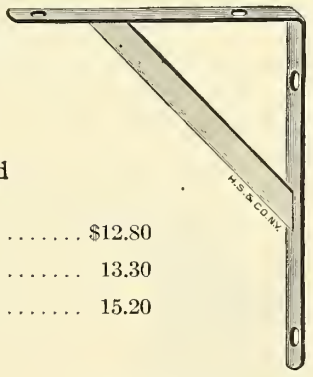


This Bracket locks automatically when open, and can be let down out of the way quickly and easily.

Size Inches	Dozen Pairs: No. 1794 Japanned Without Screws	No. 1494A Bronzed With Screws	No. 1494N Nickel-plated With Screws
8x8	$8.00	$12.00	$14.00
12x12	12.00	17.00	20.00
16x16	20.00	25.00	30.00

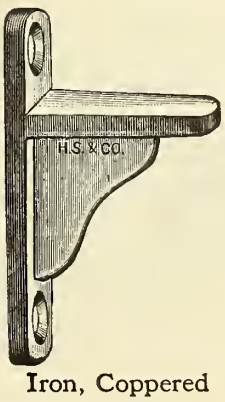
Show Case Brackets

Wrought Brass, Dipped



No. 1441 2½x3 inches, gross..... $12.80
No. 1443 3 x3½ inches, gross..... 13.30
No. 1444 3½x4½ inches, gross..... 15.20

Show Case Brackets



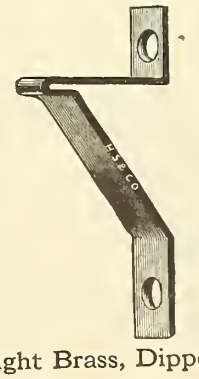
Iron, Coppered

No. 1 1⅛x1¾ inches, gross..... $1.10



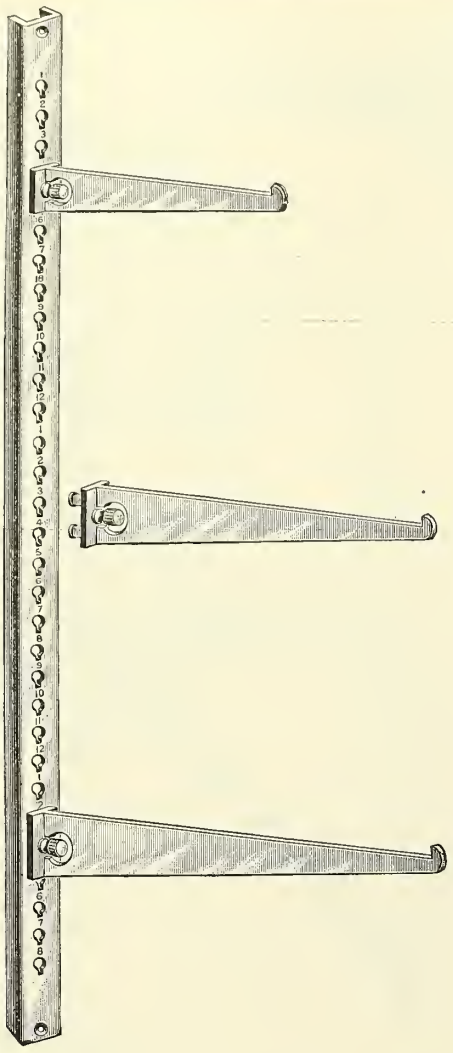
Cast Bronze, Polished

No. 355 ¾x1⅞ inches, gross..... $13.50
No. 360 1¾x3¼ inches, gross..... 18.50
No. 365 2¾x4 inches, gross..... 30.80



Wrought Brass, Dipped

No. 370 ¾x1¾ inches, gross..... $4.00
No. 375 1¾x4 inches, gross..... 7.50



Adjustable Showcase Brackets and Standards

"Reliance" Keyhole Pattern

These Brackets and Standards are made entirely from wrought steel, combining strength, durability and cheapness. Brackets are inserted from face of standard and are removable and adjustable independently. Absolute rigidity is obtained by tightening the adjusting screw. They are used either with or without the adjustable rests shown below. In ordering state size of brackets, and whether wanted for loose or stationary shelving; rests wanted, if any; size of standard and finish.

Brackets

Size, inches	4	6	8	10	12
Dozen	$3.00	3.00	3.25	3.50	3.70

Can also be furnished in 14, 16, 18 and 20-inch sizes.

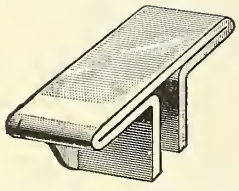
Standards

Width 7/8 inch, drilled and countersunk for No. 8 Flat Head Screw.

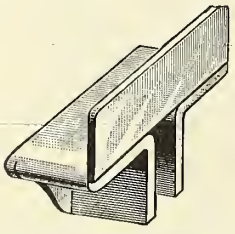
Length, inches	24	30	36
Dozen	$3.90	4.90	5.85

Can also be furnished to order in 40, 42, 48, 54 and 60-inch sizes.

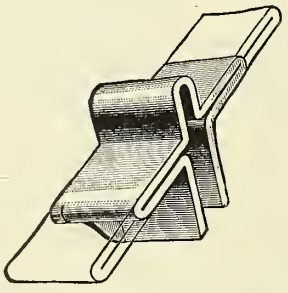
Adjustable Rests and Sockets



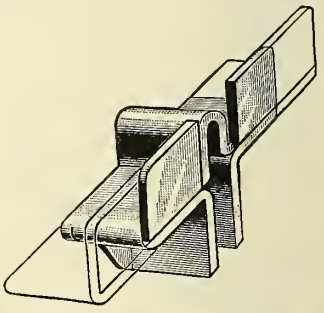
Style "A" Rest, 1 1/8 inches long; for loose shelves on center.



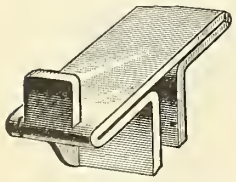
Style "B" Rest, 1 1/8 inches long; for loose shelves on end.



Style "C" Rest, 1 1/8 inches long. Style "C1" Rest, 2 inches long; for loose shelves on center; with dividing lug for parted shelves.



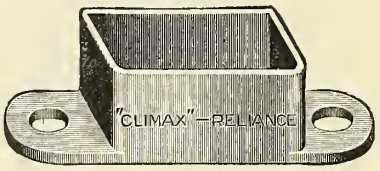
Style "D" Rest, 1 1/8 inches long. Style "D1" Rest, 2 inches long; for loose shelves on end; with dividing lug for parted shelves.



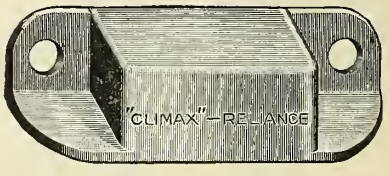
Style "F" Rest, 1 1/8 inches long; for loose shelves at end of case.



Style "G" Rest, 1 1/4 inches long; for stationary wood shelves, used in connection with brackets, when made with indentations for wood shelving. See illustration, upper bracket.



Style "J" Bottom Socket. This style socket may also be used at top of case.

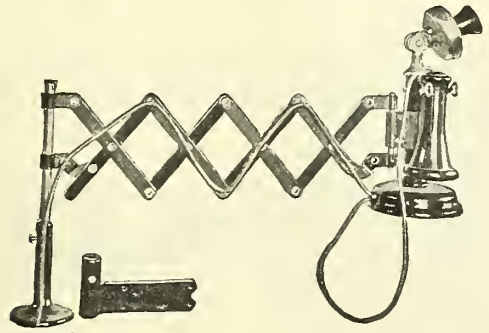


Style "J1" Top Socket

Style	A	B	C	C1	D	D1	F	G	J	J1
Dozen	$ .30	.60	.60	.75	.60	.75	.45	.15	.90	1.20

Telephone Brackets

Burns



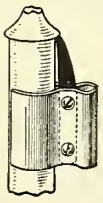
Pedestal Mounting Bracket Mounting

An extremely effective device and a great time-saver. Handy when you want it—out of the way when you don't. Note how the cord is carried through eyelets on the arm. These eyelets fit through hollow rivets so that the cord can be put on the arm without disturbing the connections.

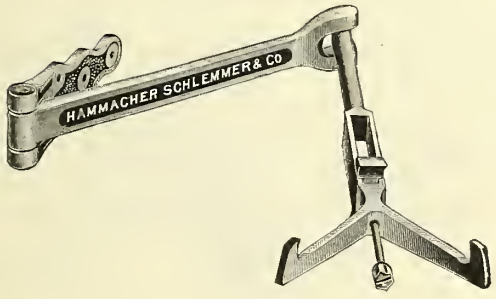
The method of suspension partially insulates outside noise, making the bracket particularly valuable in noisy offices and shops.

Number	Number of Links	Length Closed Inches	Length Extended Inches	Mounting	Each
1073	10	7	28	Pedestal	$4.00
1074	10	7	28	Bracket	4.00
1275	12	9	32	Pedestal	4.50
1276	12	9	32	Bracket	4.50

Nickel-plated Japanned Base. Will sustain any telephone without sagging.



We furnish with all Burns brackets the device as shown, which is mounted between the jaws with the curved part towards the desk stand. Tip prevents slipping down when clamp is not screwed tight. Obviates service trouble through interference with hook.



H. S. & Co.

Cast iron. 21-inch projection.

Antique copper finish, each $2.00

Old brass finish, each 2.00

Wardrobe Bars

Slide-Easy



For wardrobes and house-closets

Hang half a dozen coat or suit hangers on it, and the bar is easily drawn forward so as to bring all the clothing out within easy reach.

No. 1 Nickel-plated

Length, 12 inches. Dozen $5.50

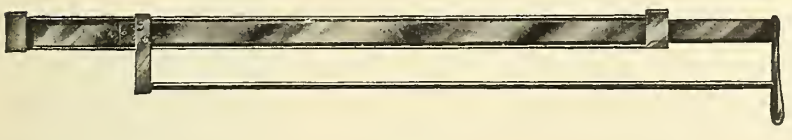
Length, 14 inches. Dozen 6.00

Length, 16 inches. Dozen 6.50

Length, 18 inches. Dozen 7.00

Klondike

Nickel-plated



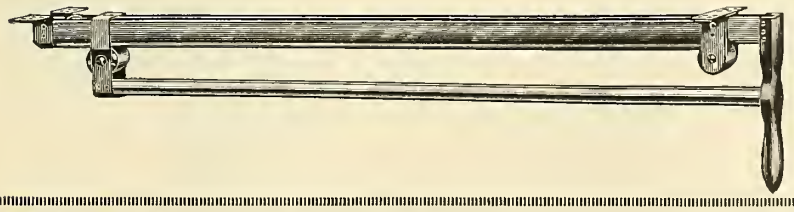
A light bar for light use. Suitable for ladies' waists or jackets, children's clothing, etc.

Length, 24 inches. Dozen $16.00

Length, 30 inches. Dozen 18.00

Extension Clothing Carrier

Columbia



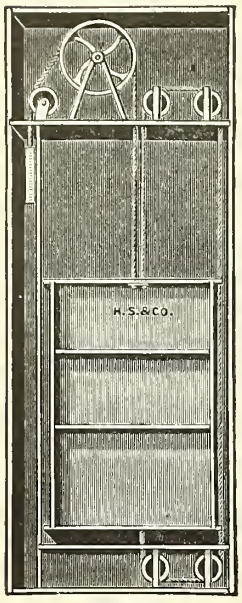
All exposed parts nickel-plated on a heavy copper plate. Made from steel, with specially hardened roller bearings.

Length, 36 inches. Each $5.00

Length, 42 inches. Each 5.70

Dumbwaiter Fixtures

Springfield



This fixture is adapted for all kinds of dumbwaiters where loads under 300 pounds are to be carried.

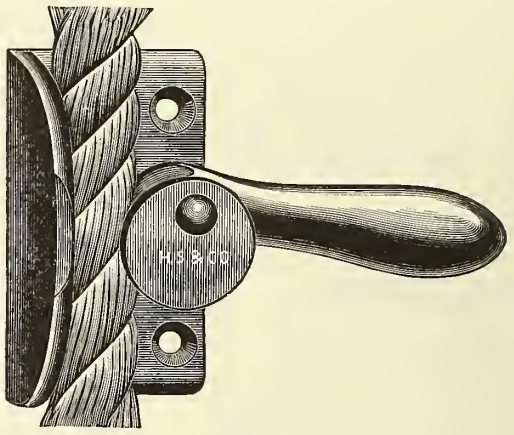
The illustration shows the fixture in position. There are no forked rimmed wheels, rollers, ratchets, or cogs, thus doing away with wearing parts, so far as possible.

The weight of the fixture is 25 pounds; diameter of large wheel, 12½ inches, and of small wheels 3 and 4 inches.

Each set contains 5 small pulleys and 1 large wheel, with full directions for erecting, enabling any one to easily put them in position.

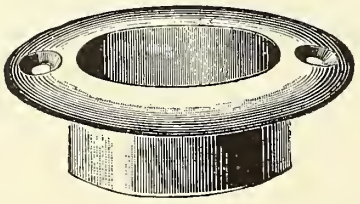
Per set (without weights or ropes).... $7.00

Dumbwaiter Rope Clamps



No. 2 Japanned, for ½ or ⅝-inch rope, dozen..... $5.50

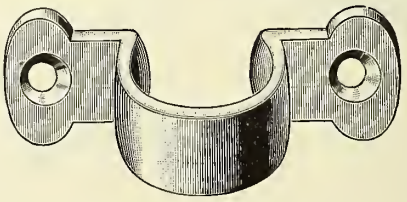
Dumbwaiter Rope Eyes



For floors and ceilings. Inside diameter ⅞ inch.

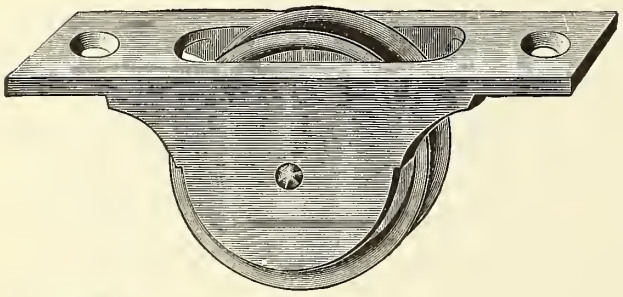
Dozen..... $3.00

Dumbwaiter Rope Guides



For Attachment to the Wall

Dozen..... $1.00



Dumbwaiter Pulleys

1¼x6-inch face, 3-inch wheel, heavy.

No. 40 Will take ½-inch rope, dozen..... $3.30



Frame Dumbwaiter Weights

These Weights are slotted so as to permit addition of inlay weights when necessary

Gray iron, 6x34 inches, approximate weight 30 pounds, pound..... $ .07½

Gray iron, 8x33 inches, approximate weight 45 pounds, pound..... .07½

Inlays for above, approximate weight 3 pounds, pound..... .07½

Sash Balances

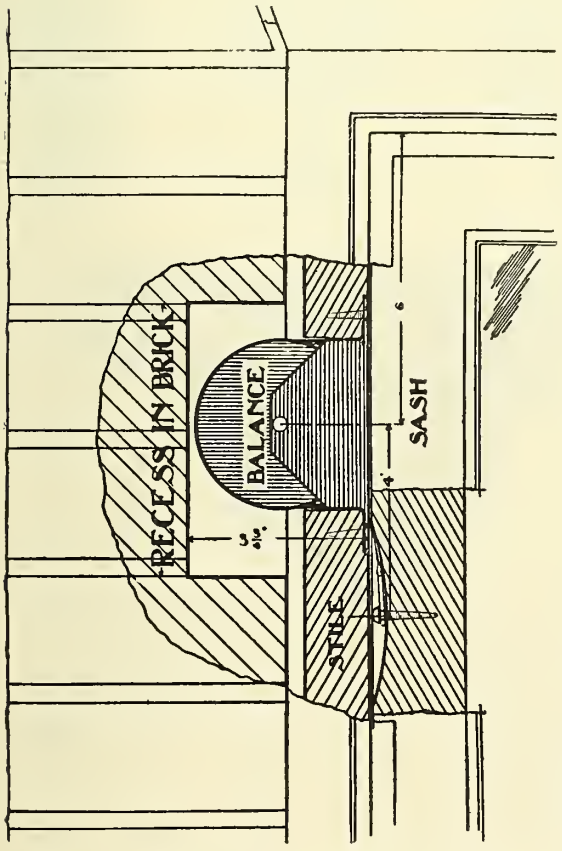
Unit

This is a practical device for balancing window sash in new buildings, replacing unwieldy cords and weights. Made of pressed steel throughout; are light, unbreakable and noiseless. Simple in construction, in shape resembling the ordinary sash pulley, though slightly larger. Consists of a clock spring inside of a revolving drum with a special metal tape wound outside the drum and kept in tension by the spring within. This tape is attached to the sash and as the strength of the spring corresponds to the weight of the sash the window will remain in any desired position.

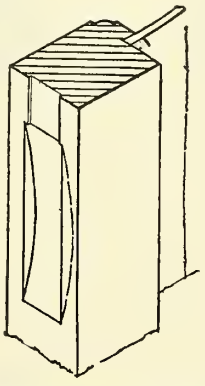
Unit B takes uniform mortise for 4 to 23 pound sash Unit C takes uniform mortise for 16 to 48-pound sash.

Instructions for Ordering

The weight of each sash is usually marked at the mill and the upper and lower sash usually weigh the same. If not, specify the weight of each sash and we will send half sets of the proper sizes. Each unit has sufficient range in a uniform mortise to properly equip all windows ordinarily found in a building. Do not estimate weights, as there is considerable variation in sash of the same dimensions. Be sure there is sufficient space left for the balances.

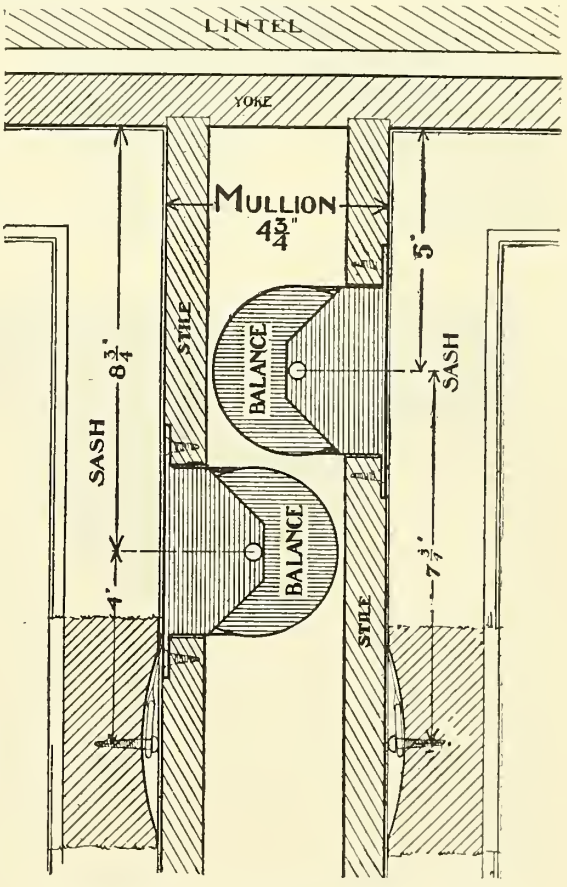


Showing ordinary installation. A small recess in the brick or concrete is all that is required

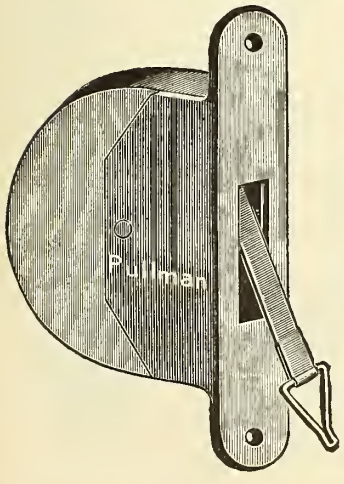


Detail of groove in rail of sash to receive tape and loop at end. This takes the place of the usual groove for cord.

Unit	B	C
Width of tape, inch	7/16	9/16
Width of loop, inch	7/8	15/16



Showing method of installation, in group windows, with narrow mullions



For Dwellings, Apartments, Etc.

Unit B, for 4 to 32 Pound Sash

Set of 4 balances for 2 sash, Nos. 0-B to 9-B..... $2.00

Balance Number	Weight of Each Sash Pounds	Length of Tape Inches
0-B	4 to 6	30
1-B	6 to 7	30
2-B	8 to 9	30
3-B	10 to 11	46
4-B	12 to 13	46
5-B	14 to 15	46
6-B	16 to 17	46
7-B	18 to 19	46
8-B	20 to 21	46
9-B	22 to 23	46

Face plate 5½x1¼ inches
Depth 3⅝ inches
Finished in dull black lacquer

For Factories and Office Buildings

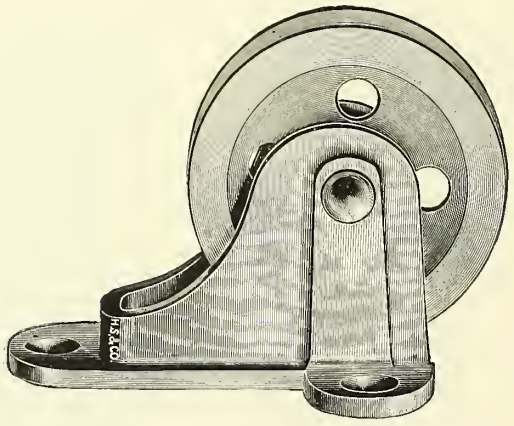
Unit C, for 16 to 48 Pound Sash

Set of 4 balances, for 2 sash..... $3.75

Balance Number	Weight of Each Sash Pounds	Length of Tape Inches
6-C	16 to 17	46
7-C	18 to 19	46
8-C	20 to 21	46
9-C	22 to 23	46
10-C	24 to 26	54
11-C	27 to 29	54
12-C	30 to 32	54
13-C	33 to 35	54
14-C	36 to 38	54
15-C	39 to 41	54
16-C	42 to 44	54
17-C	45 to 48	54

Face plate 6⅞x1 1/16 inches
Depth 4⅝ inches
Finished in dull black lacquer

Wall Case Pulleys



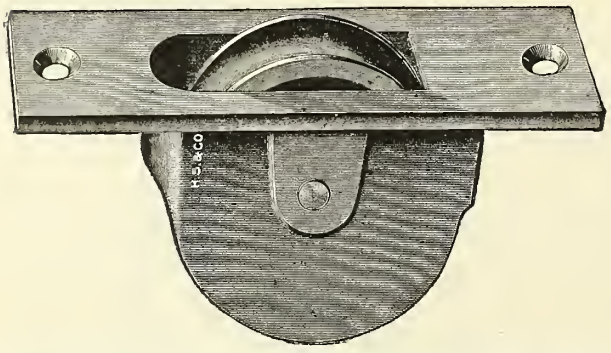
Number	Style	Diameter Wheel Inches	Dozen
3	Morton	2½	$5.00
5	Western	2½	2.50
7	Morton	4	6.90

Nos. 3 and 7 have iron frames and iron turned wheels. No. 5 has steel frame and iron turned wheels.

They are all made to fit sash or cable chains.

Sash Pulleys

Noiseless



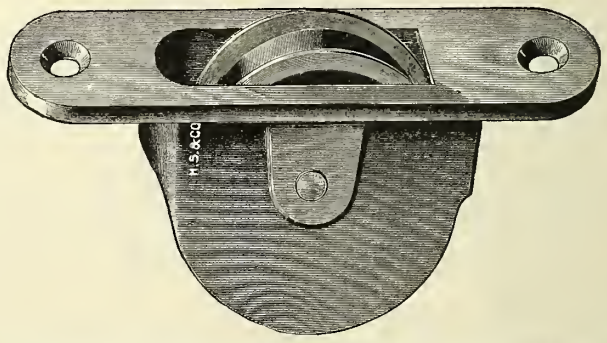
Cut shows No. 77, P177, P1177¼ with square end frame. Turned and polished wheel, with round groove for sash cord.

As Illustrated

Diameter wheels, inches	2	2¼	2½
Size fronts, inches	$4\frac{9}{16}$x1$\frac{1}{16}$	$5\frac{5}{16}$x1$\frac{3}{16}$	$5\frac{7}{8}$x1$\frac{3}{16}$
No. 77 Amber bronze front, dozen	$1.32	1.47	1.83
No. P177 Bronze plated front, polished steel wheels, dozen	2.40	2.58	3.00
No. P1177¼ Wrought bronze front, bronze-plated wheels, dozen	3.00	3.30	3.90

Same as Above Except with Round End Frame

Diameter wheels, inches	2	2¼	2½
Size fronts, inches	$4\frac{5}{8}$x1	5½x1⅛	$5\frac{3}{4}$x1¼
No. 77½ Amber bronze front, dozen	$1.32	1.47	1.83
No. P177½ Bronze-plated front, polished steel wheels, dozen	2.40	2.58	3.00
No. P1177¾ Wrought bronze front, bronze-plated wheels, dozen	3.00	3.30	3.90



Cut shows Nos. 80½, P180½ and P1180¾, with round end frame. Turned and polished wheel, with square groove, for chain.

Same as Above Except with Square End Plate

Diameter wheels, inches	2	2¼	2½
Size fronts, inches	$4\frac{9}{16}$x1$\frac{1}{16}$	$5\frac{5}{16}$x1$\frac{3}{16}$	$5\frac{7}{8}$x1$\frac{3}{16}$
No. 80 Amber bronze front, dozen	$1.32	1.47	1.83
No. P180 Bronze plated front, polished steel wheels, dozen	2.40	2.58	3.00
No. P1180¼ Wrought bronze front, bronze-plated wheels, dozen	3.00	3.30	3.90

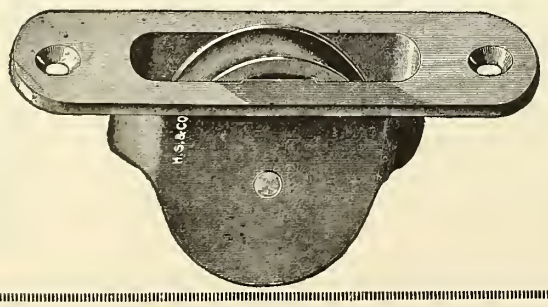
As Illustrated

Diameter wheels, inches	2	2¼	2½
Size front, inches	$4\frac{5}{8}$x1	5½x1⅛	$5\frac{3}{4}$x1¼
No. 80½ Amber bronze front, dozen	$1.32	1.47	1.83
No. P180½ Bronze plated front, polished steel wheels, dozen	2.40	2. 58	3.00
No. P1180¾ Wrought bronze front, bronze-plated wheels, dozen	3.00	3.30	3.90

The above pulleys can be furnished with anti-friction or ball bearings. Prices on application

Plain

Round End Frame, Polished Wheel, with Round Groove for Sash Cord



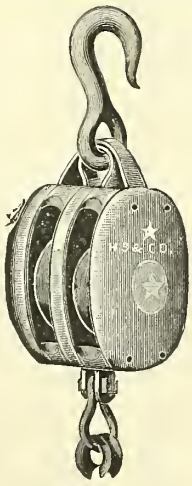
Number	Dimensions of Plain Front Inches	Diameter of Wheel Inches	Dozen
127	4⅛x1	1¾	$ .40
412	$4\frac{7}{16}$x1	2	.48

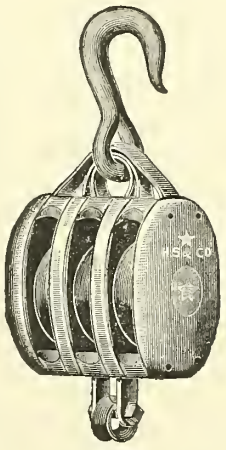
Tackle Blocks

Inside Iron Strapped

With Loose Hook and Becket

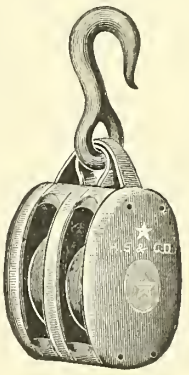

Single

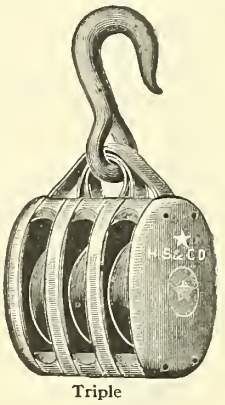

Double


Triple

With Loose Hooks


Single


Double


Triple

List per Block, With or Without Beckets

Iron Bushed

Size	Size of Sheaves Inches	For Diameter Rope Inches	Mortise Inches	Single Each	Double Each	Triple Each
3	1¾x ½x⅜	⅜	9/16	$ .70	$1.30	$1.75
3½	2 x ½x⅜	⅜	9/16	.75	1.45	2.00
4	2¼x ⅝x⅜	½	11/16	.85	1.60	2.15
5	3 x ¾x⅜	⅝	⅞	.90	1.75	2.25
6	3½x1 x½	¾	1⅛	1.10	2.00	2.90
7	4¼x1 x½	⅞	1⅛	1.30	2.40	3.50
8	4¾x1⅛x⅝	1	1¼	1.65	2.85	4.25
9	5½x1⅛x⅝	1	1¼	1.85	3.40	4.75
10	6¼x1¼x⅝	1⅛	1⅜	2.75	4.50	6.25
11	7¼x1¼x¾	1⅛	1⅜	4.45	7.50	10.65
12	8 x1⅜x¾	1¼	1½	4.45	7.50	10.65
13	9 x1½x¾	1¼	1½	7.00	10.50	15.00
14	9½x1⅝x⅞	1⅜	1¾	7.00	10.50	15.00
15	10 x1⅝x⅞	1½	1¾	8.00	13.00	18.00
16	11 x1¾x⅞	1⅝	1⅞	10.00	15.00	22.00

Six-Roller Bushed

Size	Size of Sheaves Inches	For Diameter Rope Inches	Mortise Inches	Single Each	Double Each	Triple Each
3	1¾x ½x⅜	⅜	9/16	$1.10	$2.00	$2.90
3½	2 x ½x⅜	⅜	9/16	1.15	2.20	3.15
4	2¼x ⅝x⅜	½	11/16	1.20	2.25	3.25
5	3 x ¾x⅜	⅝	⅞	1.25	2.35	3.50
6	3½x1 x½	¾	1⅛	1.50	2.85	4.40
7	4¼x1 x½	⅞	1⅛	1.70	3.35	5.00
8	4¾x1⅛x⅝	1	1¼	2.25	4.15	6.00
9	5½x1⅛x⅝	1	1¼	2.50	4.70	7.25
10	6¼x1¼x⅝	1⅛	1⅜	3.50	6.00	8.50
11	7¼x1¼x¾	1⅛	1⅜	5.30	9.20	13.20
12	8 x1⅜x¾	1¼	1½	5.30	9.20	13.20
13	9 x1½x¾	1¼	1½	8.15	12.80	18.45
14	9½x1⅝x⅞	1⅜	1¾	8.15	12.80	18.45
15	10 x1⅝x⅞	1½	1¾	9.25	15.50	21.75
16	11 x1¾x⅞	1⅝	1⅞	11.50	18.00	26.50

A suitable working load is not the greatest load which the blocks will sustain, but is one under which the blocks may be safely used until worn out. We suggest the following loads as a guide in ordering, but do not assume any responsibility for same:

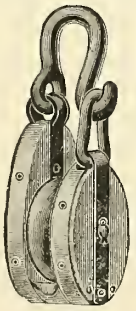
Size	Diameter Rope Inches	Two Singles Pounds	Two Doubles Pounds	Two Triples Pounds
5	9/16	150	250	400
6	¾	250	400	650
8	⅞	750	1,200	1,900
10	1	2,000	4,000	6,000
12	1⅛	4,000	8,000	12,000
14	1¼	7,000	12,000	19,000

Snatch Blocks

Wood

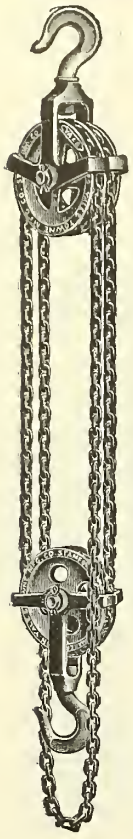

Link Pattern
No. 34


Self-Locking Clasp
No. 35


With Bail
No. 36

Size of Sheave Inches	For Diameter Rope Inches	Length of Shell Inches	Common Iron Bushed Each	Patent Roller Bushed Each
3 x1⅛x½	⅞	6	$4.00	$4.65
3½x1¼x½	⅞	7	4.75	5.50
4½x1⅜x⅝	1	8	5.75	6.60
5 x1⅜x⅝	1⅛	9	6.75	7.75
5¾x1⅞x¾	1¼	10	8.50	10.00
6¾x2⅛x¾	1½	12	10.00	11.50

When ordering Snatch Blocks, be sure to specify style number (as shown in illustration) and size of sheave.



Differential Block

Yale

This Block handles heavy loads readily and on account of its reliability and simplicity is especially adapted for use on farms, in shops, and for all ordinary hoisting purposes where extreme high power and durability are not required.

Three men pulling 216 pounds can lift 2,000 pounds, or one man can do the work which would require several men with rope-tackle, jacks, skids, crow-bars and rollers. Heat and cold do not affect it and it will stand all kinds of weather.

Capacity in Tons 2,240 Pounds to the Ton	Price Complete	Regular Hoist in Feet	Extra Hoist Price per Foot*	Minimum Distance Between Hooks Inches
⅛	$18.00	5	$2.80	16
¼	18.00	6	2.80	17
½	21.00	7	2.80	21
1	28.00	8	3.00	26
1½	36.00	8½	3.20	32
2	45.00	9	3.40	39
3	60.00	9½	4.00	44

*Each foot of extra hoist includes 4 feet of chain.

Duplex Blocks

Yale

Where extreme high speed is not required, we recommend this Block.

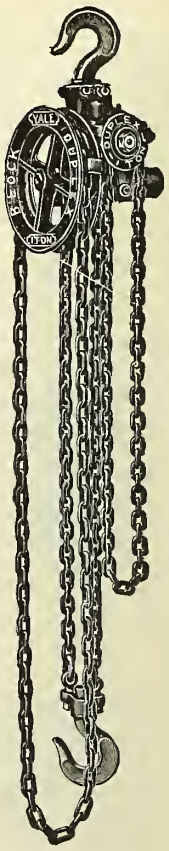
It is especially adapted for portable use, being light in weight, compact in head-room, powerful and durable. Suitable for setting machinery.

The Yale Duplex Block has an efficiency 25 per cent higher than ordinary screw hoists.

With it, one man by pulling only 87 pounds, can lift 2,000 pounds.

Capacity in Tons 2,240 Pounds to the Ton	Price Complete	Regular Hoist in Feet	Extra Hoist Price per Foot*	Minimum Distance Between Hooks Inches
½	$25.00	8	$1.20	13
1	30.00	8	1.50	16
1½	40.00	8	1.75	19
2	50.00	9	2.00	21
3	75.00	10	2.20	25
4	95.00	10	2.40	29
5	140.00	12	3.00	31
6	180.00	12	3.75	33
8	210.00	12	4.00	36
10	275.00	12	4.25	45

*"Extra Hoist Per Foot" includes sufficient hand and load chain to increase the travel of the lower hook 1 foot.



Triplex Blocks

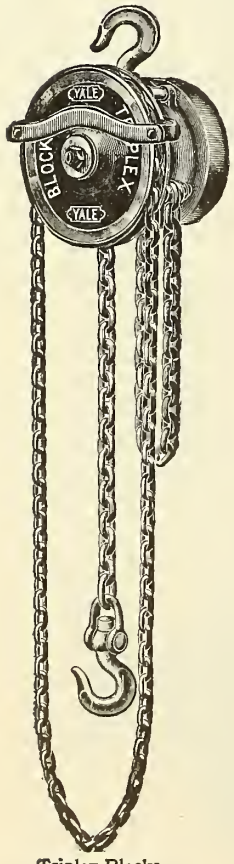
Yale

The One-ton Block will stand, without breaking, a one-ton load dropped into the bottom hook from a height of 25 inches.

The line is standardized so that all sizes are made up of the parts of the ½, 1, 1½ and 2-ton blocks. This simplifies the renewal of parts. The parts of the 2-ton block fit the 4-ton block, and all sizes above.

Rated Capacity in Tons 2,240 Pounds to the Ton	List Price: Complete Block with Standard Hoist	List Price: Regular Hoist in Feet	List Price: Extra Hoist per Foot*	Minimum Distance Between Hooks Inches
¼	$35.00	8	$ .90	15
½	35.00	8	.90	15
1	45.00	8	.95	17
1½	60.00	8	1.00	19½
2	70.00	9	1.05	24
3	90.00	10	1.50	32
4	110.00	10	1.60	37
5	140.00	12	2.15	45
6	165.00	12	2.15	46
8	200.00	12	2.70	51
10	240.00	12	3.25	57
12	300.00	12	4.30	57
16	360 00	12	5.40	61
20	425.00	12	6.50	77

*"Extra Hoist per Foot" includes sufficient hand and load chain to increase the travel of the lower hook 1 foot.



Triplex Blocks
Style of ½ to 2 tons

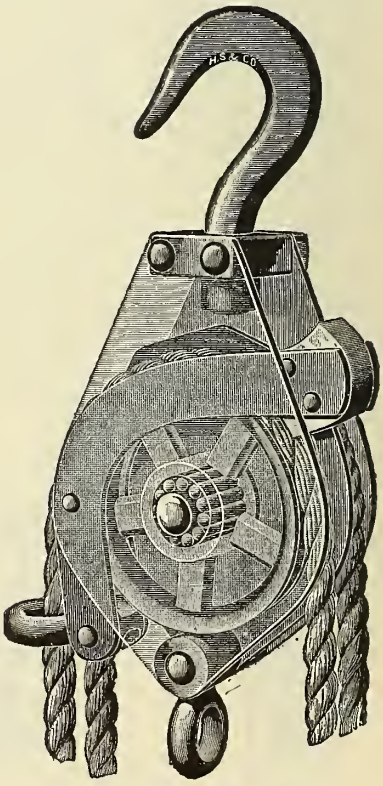
Automatic Lock Tackle Blocks

The cases are of steel, galvanized, and the sheaves are anti-friction roller, bushed. A special feature is the automatic lock which holds the load at any point.

The lock moves with the rope in acting—does not slide over it.

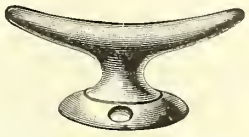
As the lock is positively controlled by the position of hauling rope, and not by gravity the block is equally well adapted for use vertically, horizontally, or at any angle.

Number	Number of Sheaves	Size Rope	Pounds One Man Can Hoist	Pounds Capacity	List Without Rope
80	2 and 1	½	300	600	$3.00
85	2 and 2	½	450	800	4.00
90	2 and 1	⅝	350	1000	5.50
100	2 and 2	⅝	500	1500	6.00
110	3 and 2	⅝	625	2000	6.80
120	3 and 3	⅝	750	3000	7.60
130	4 and 3	⅝	900	3500	8.35
140	2 and 1	¾	350	1250	6.50
150	2 and 2	¾	500	1800	7.00
160	3 and 2	¾	625	2500	8.00
170	3 and 3	¾	750	3700	9.00
180	4 and 3	¾	900	4000	10.00

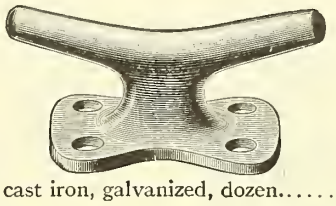


Automatic Lock Tackle Block

Line Cleats



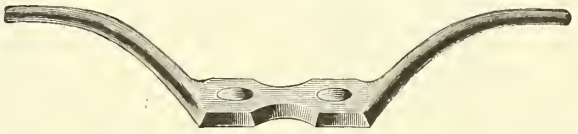
No. 111 1⅞-inch cast iron, galvanized, dozen..... $ .55
No. 121 1⅞-inch cast brass, polished, dozen..... 3.10
No. 123 2½-inch cast brass, polished, dozen..... 3.90



No. 117 3⅜-inch cast iron, galvanized, dozen..... $1.75



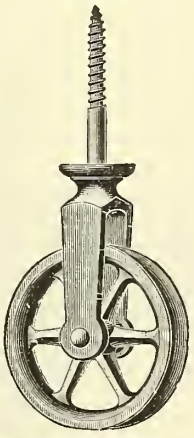
No. 114 4½-inch malleable iron, galvanized, dozen..... $ .62
No. 381 4½-inch cast brass, polished, dozen..... 3.20



No. 115 5⅞-inch malleable iron, galvanized, dozen..... $ .92
No. 116 7⅞-inch malleable iron, galvanized, dozen..... 1.35

Pulleys

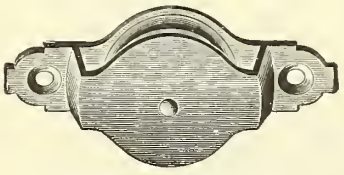
Screw



No. 45 Japanned, Single Wheel

Size, diameter wheel, inches.....	1	1¼	1½	1¾	2
For rope, inch.....	¼	¼	¼	5/16	5/16
Dozen.....	$ .48	.52	.63	.74	.96
Size, diameter wheel, inches.....	2¼	2½	3	4	5
For rope, inch.....	3/8	3/8	7/16	5/8	¾
Dozen.....	$1.20	1.30	2.00	4.60	9.20

Side

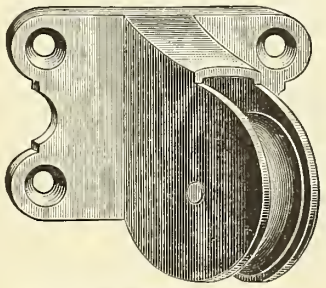


No. 25 Japanned, Single Wheel

Size, diameter wheel, inches.....	1	1¼	1½	1¾	2
For rope ,inch.....	¼	¼	¼	5/16	5/16
Single wheel, dozen.....	$ .74	.80	.90	1.00	1.30
Size, diameter wheel, inches.....	2¼	2½	3	4	5
For rope inches.....	3/8	3/8	7/16	5/8	¾
Single wheel, dozen	$1.80	2.00	3.00	7.40	12.80

No. 26 2¼ inches, for sash chain.

Hot House

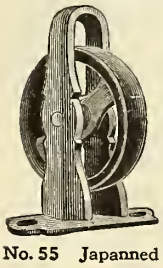


No. 85 Japanned, Single Wheel

Size, diameter wheel, inches.....	1¾	2	2¼
For rope, inch.....	¼	5/16	5/16
Dozen.....	$1.85	2.20	3.00

No. 86 Japanned, Single Wheel

Size, diameter wheel, inches.....	2¼
For sash chain, dozen.....	$5.25

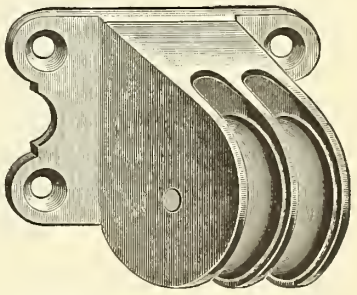


No. 55 Japanned

Upright

Size, diameter wheel, inches.....	1¾	2
For rope, inch.....	¼	5/16
Dozen.....	$ .95	1.15

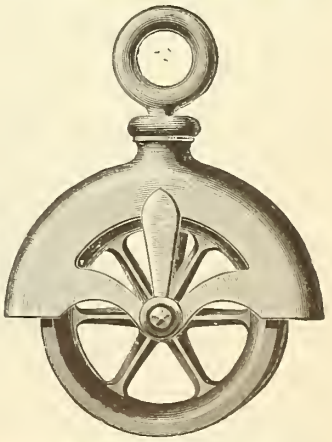
Size, diameter wheel, inches....	1¾	2	2¼
For rope, inch	¼	5/16	5/16
Dozen.....	$3.00	3.50	5.00



No. 87 Japanned, Double Wheel

Encased Swivel

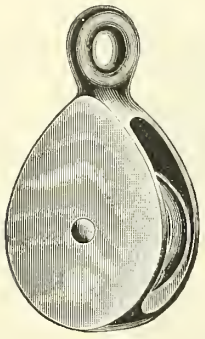
2½-inch wheel, for 5/16-inch rope, dozen..... $2.20
3-inch wheel, for ⅜-inch rope, dozen..... 2.80



No. 42 Japanned, Swivel Eye

Pulleys

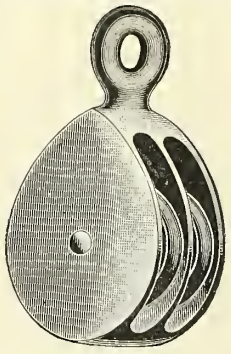
Tackle or Awning



No. 174

Galvanized, single wheel.

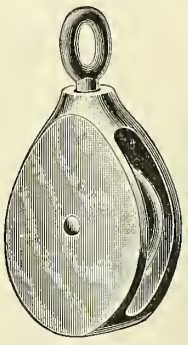
Diameter wheel, inch...	1/2	5/8	3/4
For rope, inch.....	1/8	3/16	3/16
Dozen.....	$ .42	.54	.59
Diameter wheel, inches..	1	1 1/4	1 1/2
For rope, inch.....	1/4	1/4	5/16
Dozen.....	.67	.80	1.00



No. 176

Galvanized, double wheels.

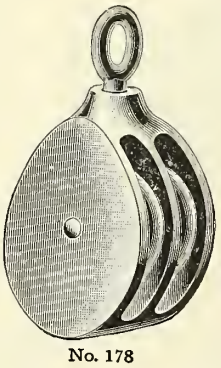
Diameter wheels, inches	1/2	3/4	1	1 1/4
For rope, inch.....	1/8	3/16	1/4	1/4
Dozen.....	$1.20	1.30	1.55	1.80



No. 173

Galvanized, single wheel, swivel eye.

Diameter wheel, inch...	1/2	5/8	3/4
For rope, inch.....	1/8	3/16	3/16
Dozen.....	$ .78	.90	1.15

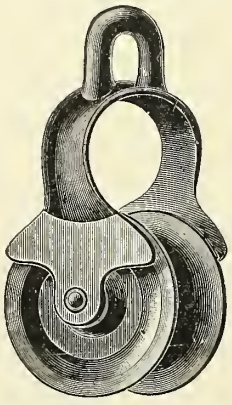


No. 178

Galvanized, double wheel, swivel eye.

Diameter wheels, inch...	1/2	5/8	3/4
For rope, inch.....	1/8	3/16	3/16
Dozen.....	$ .90	.98	1.35

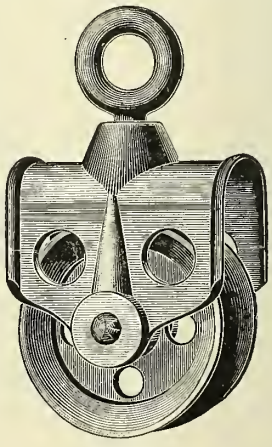
Clothes Line



No. 161

Galvanized, with large opening so as to allow knotted rope to pass freely.

Diameter wheel, inches.....	2	2 1/2
For rope, inch.....	1/2	5/8
Dozen.....	$1.50	2.40



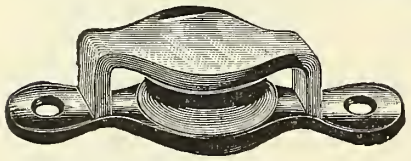
No. 162

Galvanized, for 3/8-inch rope, swivel eye, diameter of wheel 2 1/2 inches.
Dozen..... $3.70

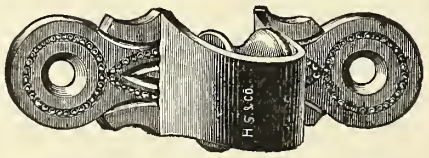
Side

Full Size Cuts

Upright



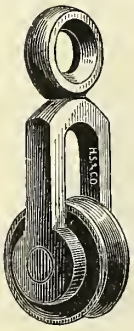
No. 2



No. 12

5/8-inch wheels.

No. 2	Cast brass, gross.....	$13.50
No. 12	Bronzed iron, gross.....	6.00



No. 62

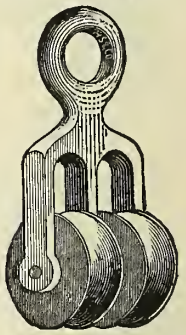
Swing

Full Size Cuts

Cast Brass

No. 62 Single wheel, dozen $1.00

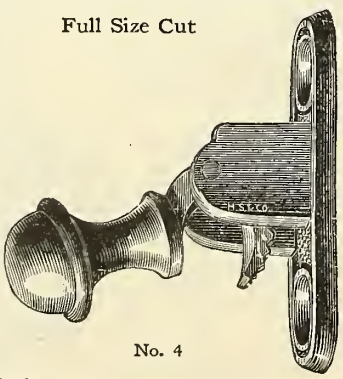
No. 64 Double wheels, dozen..... 1.60



No. 64

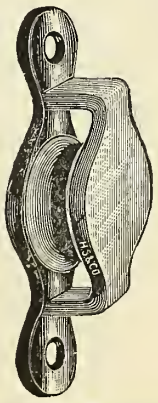
Cord Clamps

Full Size Cut



No. 4

Cast brass, polished, dozen..... $3.00



No. 38

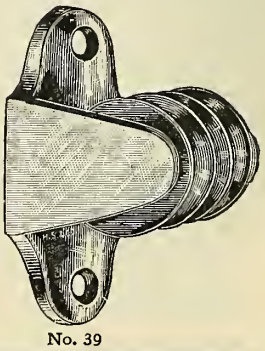
Concave Back

Full Size Cuts

Cast Brass

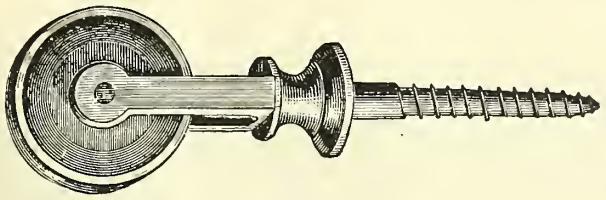
No. 38 Single wheel, dozen..... $2.40

No. 39 Double wheels, dozen..... 3.20



No. 39

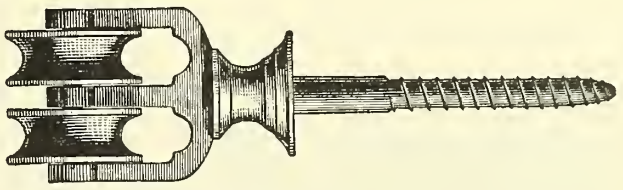
Screw Pulleys



No. 35

Cast brass, polished. Single wheel.

Diameter wheel, inch	1/2	5/8	3/4	1
For rope, inch	1/8	1/8	3/16	1/4
Dozen	$1.45	1.70	1.90	2.40



No. 37

Cast brass, polished. Double wheel.

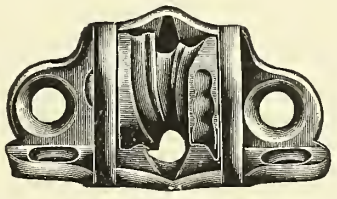
Diameter wheel, inch	5/8
For rope, inch	1/8
Dozen	$3.30

Stop Pulleys

To make cord fast, pull to side; to liberate, pull to center.

Bronzed iron.

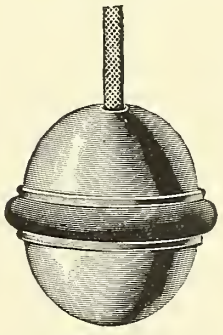




No. 21	Diameter wheel 5/8 inch, gross	$5.00
No. 23	Diameter wheel 5/8 inch, gross	5.00

Traverse Tassels

Full Size Cut



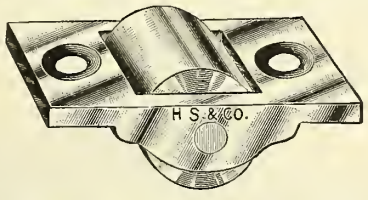
No. 233

Polished brass, loaded. Soft rubber buffer.

Dozen $2.00

Sash Rollers

Full Size Cut of 3/4 Inch Size



Cast Brass, Polished and Lacquered

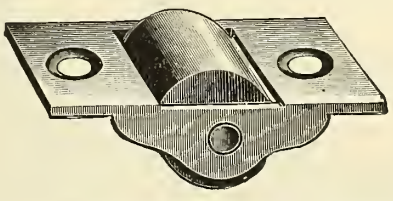
Width of plate, inch		5/8	3/4	7/8	1
No. 15	Dozen	$1.50	1.65	1.80	2.00

Cast Iron, Japanned

Width of plate, inches		5/8	3/4	7/8	1	1 1/4
No. 10	Iron wheel, gross	$2.70	3.20	4.20	5.40	7.70
No. 30	Lignumvitæ wheel, gross	....	3.60	5.00	6.50	

Cast Iron, Japanned, Extra Heavy

Number	1	2	3
Width of plate, inches	1	1 1/4	1 1/2
Gross	$8.00	12.00	19.00

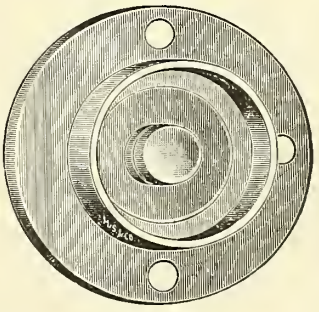


Wrought Steel Turned Wheels

Width of plate, inch		5/8	3/4	7/8	1
No. 17059	Gross	$5.00	6.00	7.00	8.00

Roller Guides

Full Size Cut



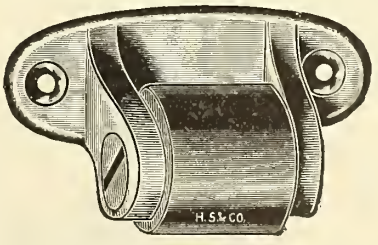
No. 1060

For sliding sash doors.

Wrought steel, 1 1/2 inches diameter, gross $8.50

Door-Guide-Rollers

Full Size Cut

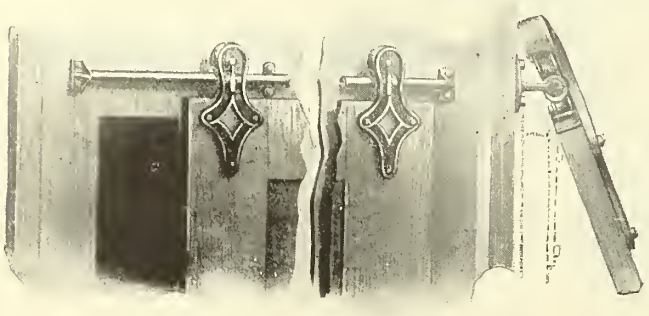


No. 19

Polished cast bronze, soft rubber roller. Packed with screws. Dozen $4.20

Barn or Garage Door Hangers and Tracks

Reliable



For each 2 pieces of 6 ft. track we furnish 5 center brackets
For each 2 pieces of 8 ft. track we furnish 7 center brackets
For each 2 pieces of 10 ft. track we furnish 9 center brackets
No. 1 Track with brackets every 2 ft. will carry 250-lb. doors
No. 1 Track with brackets every 18 in. will carry 400-lb. doors
No. 2 Track with brackets every 2 ft. will carry 600-lb. doors
No. 2 Track with brackets every 18 in. will carry 1000-lb. doors



No. 18

For heavier doors space the brackets proportionally closer. If door weighs more than 200 pounds and not over 500 pounds, use No. 2 track in preference to No. 1.

Nos. 1C, 1E, 2C and 2E track brackets are for doors 2 inches thick and under, and Nos. 2C3, 2E3 and 2C4 for doors 2 to 2⅜ inches thick.

No. 18 Hanger Wheel and upper part of frame same size as No. 2. Made without pendent for attaching to doors with steel or angle iron frame.

The Hanger Frame is made of thoroughly annealed malleable iron of one solid piece, ribbed and reinforced, with no bolts or rivets to break or loosen.

The Upper Wheel, with perfectly grooved tread, has hardened steel axle, washers, and roller bearings packed in the highest grade graphite lubricant, making the hanger absolutely anti-friction and very durable.

The Lower Wheel by contact with the track should the door be raised, prevents derailing or binding.

The Track is regularly made in single lengths of six, eight and ten feet. It is a high carbon, heavy round steel tube, with a three-eighths inch slot in the back, allowing the insertion of the track brackets. This shape makes it much stronger and more rigid than other styles of track and always allows a perfect bearing for the wheel with no side friction. It cannot get out of line or sag.

The Brackets are malleable iron, fitting inside of the track tightly and may be spaced to suit any requirements. One center bracket is used to connect two lengths or sections of track, making the joint as strong as any other part of the track.

Hangers, track and track brackets, all finished in durable black enamel, baked on.

No. 1 Hanger frame, 4 inches wide, 9½ inches long, upper wheel 2 inches in diameter.

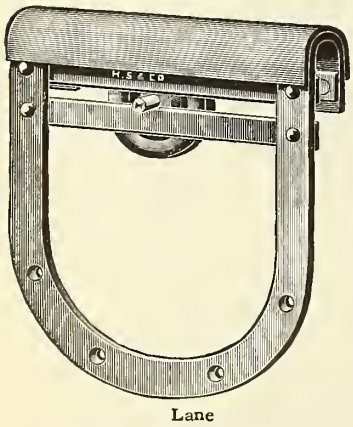
No. 2 Hanger frame, 6 inches wide, 12 inches long, upper wheel 2½ inches in diameter.

No. 1 Track, ⅞ inch in diameter. In lengths 6, 8 and 10 feet.

No. 2 Track, 1 5/16 inches in diameter. In lengths 6, 8 and 10 feet.

No.	Description	Shipping Weight Pounds	Japanned	Galvanized
1	Barn Door Hangers, dozen pairs	64½	$16.00	$20.00
2	Barn Door Hangers, dozen pairs	100	19.20	24.00
1	Barn Door Track, with brackets every two feet, per 100 feet..	73⅖	11.00	16.00
2	Barn Door Track, with brackets every two feet, per 100 feet..	114⅗	14.00	20.00
1X	Barn Door Track without brackets, per 100 feet.....	63½	9.24	13.76
2X	Barn Door Track without brackets, per 100 feet.....	97	11.36	16.50
1C	Center Brackets for No. 1 track, per 100.....	23½	4.00	5.00
1E	End Brackets for No. 1 track, per 100.....	38	4.00	5.00
2C	Center Brackets for No. 2 track, per 100.....	40	6.00	8.00
2E	End Brackets for No. 2 track, per 100.....	44	6.00	8.00
18	Hanger for steel frame doors, dozen pairs.....	50	19.20	24.00

Lane



Lane

This Hanger is made with a heavy steel cover applied outside of the regular hanger frame. The axle has a very broad bearing surface and the steel cover carries the eave drip clear from the axle and ways, as well as protecting the wheel.

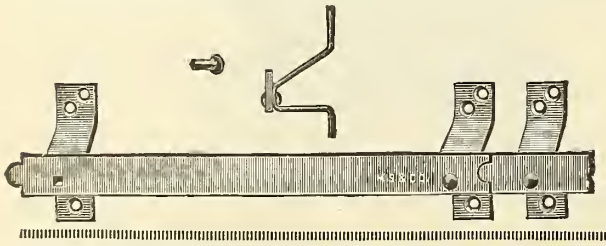
No. 11 For doors which slide 5 feet; dozen pairs $16.50
No. 12 For doors which slide 10 feet; dozen pairs 27.50

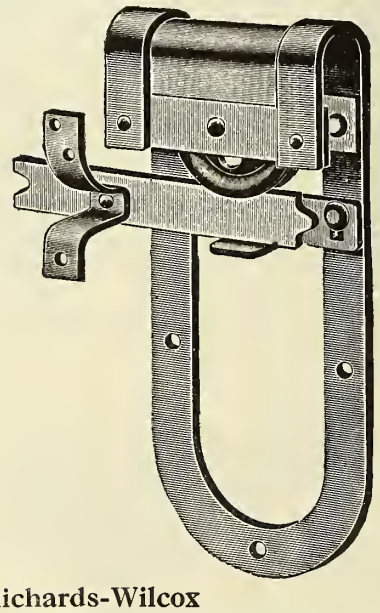
Track for Lane Hanger
O. N. T.

(This track also fits the Richards-Wilcox Hanger listed below.)

The stock is straight and true with brackets one foot apart.

The rivet holes are square, which prevents the brackets from turning.
May be secured in lengths of 4, 5, 6, 7 and 8 feet.
1¼ inches x 3/16 inch, per foot ..... $ .09





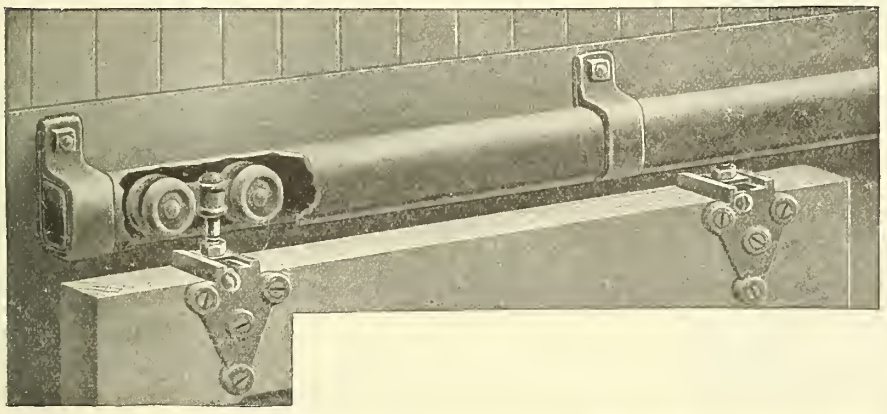
Richards-Wilcox

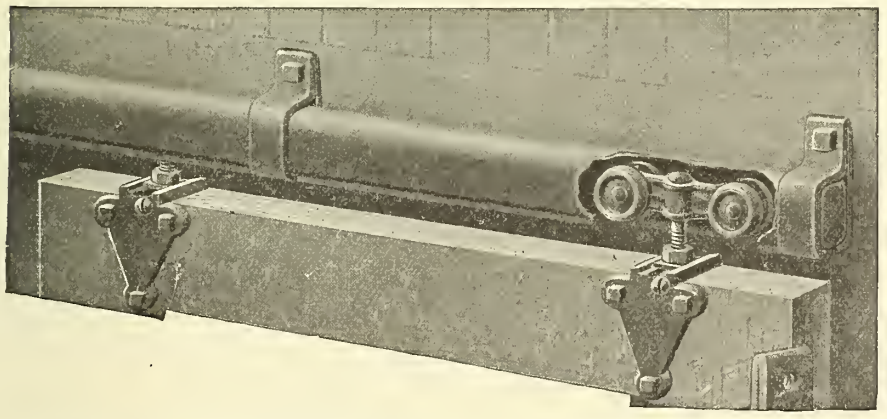
This Hanger is made with a steel cover applied outside of the regular hanger frame and has an adjustable stay-on attachment.

No. 38–1 Pendant 12 x 1 x 1/16 inches; diameter wheel 3 inches; tread 3/16 and ¼ inch; dozen pairs $15.00

Barn or Garage Door Hangers and Tracks

McCabe





No. 20

With double carriage, apron and track, suitable for doors weighing 300 pounds or under, complete with track, brackets and screws. Brackets four feet apart.

The malleable apron has adjustments from 1¾ to 2¼ inches (thickness of doors).

Single Doors		Double Doors	
Size of Opening and Under	Complete Set	Size of Opening and Under	Complete Set
3 feet	$5.00	5 feet	$9.00
4 feet	5.50	6 feet	9.50
5 feet	6.00	7 feet	10.00
6 feet	6.50	8 feet	10.50
7 feet	7.00	9 feet	11.00
8 feet	7.50	10 feet	11.50
9 feet	8.00	11 feet	12.00
10 feet	8.50	12 feet	12.50
11 feet	9.00	13 feet	13.00
12 feet	9.50	14 feet	13.50

No. 30

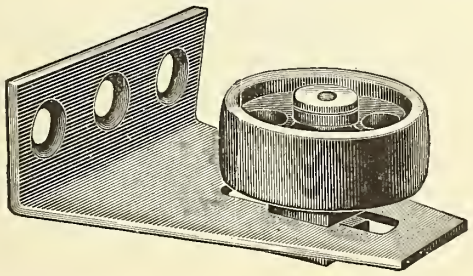
With double carriage, apron and track, suitable for doors weighing 300 to 500 pounds, complete with track, brackets and carriage bolts Brackets 2 feet apart.

The malleable apron has adjustment from 2⅜ to 3 inches (thickness of doors).

Single Doors		Double Doors	
Size of Opening and Under	Complete Set	Size of Opening and Under	Complete Set
4 feet	$9.00	6 feet	$18.00
5 feet	10.00	7 feet	18.00
6 feet	11.00	8 feet	18.00
7 feet	12.00	9 feet	19.00
8 feet	13.00	10 feet	20.00
9 feet	14.00	11 feet	21.00
10 feet	15.00	12 feet	22.00
11 feet	16.00	13 feet	23.00
12 feet	17.00	14 feet	24.00
13 feet	18.00	15 feet	25.00
14 feet	19.00	16 feet	26.00

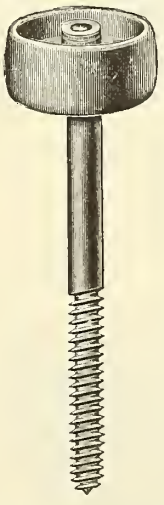
Complete sets as above include track, brackets, carriages, aprons and screws
When ordering be careful to give the exact thickness of the door, size of opening, and state whether for double or single doors
Prices of hangers for heavier doors on application.

Barn or Garage Door Stay Rollers



Adjustable and reversible Cast iron wheel, 2 inches in diameter For inside or outside doors.

No. 153 Dozen..... $2.00



This style with an expansion shield is used generally where there are concrete floors. Wheel cast iron, 2 inches in diameter; lag screw $\frac{7}{16}$ x 7 inches.

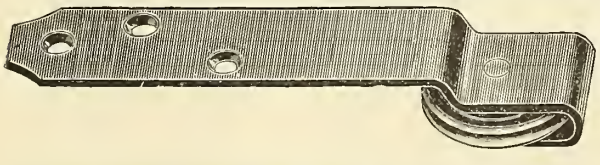
No. 155 Dozen..... $1.25

Fusible Links

Inspected and labeled by the national board of underwriters laboratories.

"Yates" Dozen..... $3.00

Partition Door Hangers



Richards—Wilcox

These Hangers are operated on ¾-inch sliding door rail which is fixed to the top of a wooden strip (same thickness as door) attached rigidly to wall over door and allowing as small space as possible between door and wooden strip, to prevent hanger jumping the track while in operation.

No. 34 Bronze plate, dozen pairs..... $14.00

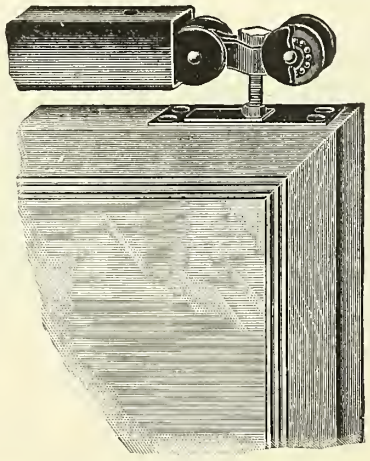
For ¾-inch Rail to fit these hangers, see page 820.

Partition Door Hangers

Richards—Wilcox



Full Size Cross Section of No. 30 Trolley Track



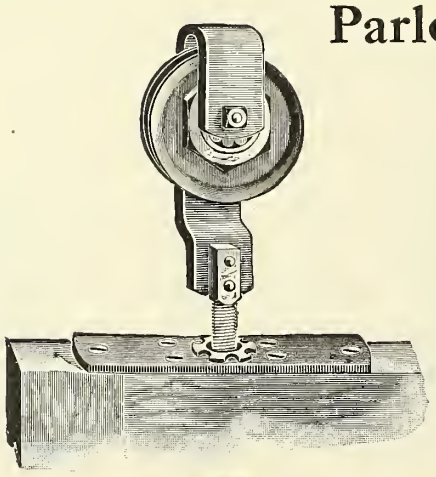
Little Giant

Suitable for light doors ⅞ to 1⅜ inches thick. Requires only 2½ inches space above top of door. Furnished with either fibre or steel ball bearing wheels. Can be attached to side with brackets or to ceiling with screws. Lateral and vertical adjustment.

No. 30	Hangers, pair	$2.00
No. 30	Trolley track, foot	.20
No. 29	Center side brackets, each	.20
No. 30	Left or right end side brackets, each	.20

Parlor Door Hangers

Lane

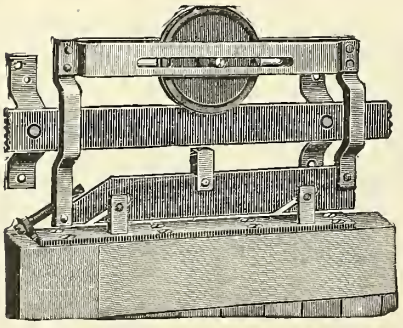


New Champion

Hanger frame made of steel. Wheels are iron with roller bearings. Track made of steel 1 inch wide.

The adjusting nut extends through the base plate and has serrated projecting flanges, both above and below, by which it may be turned.

No. 104	Set, for double doors (four hangers), including 14 feet of track, gravity stops, striking plates, floor guides, and all screws	$4.00
No. 104½	Half-set, for single door (two hangers), including 8 feet of track, floor guide, and all screws	2.00



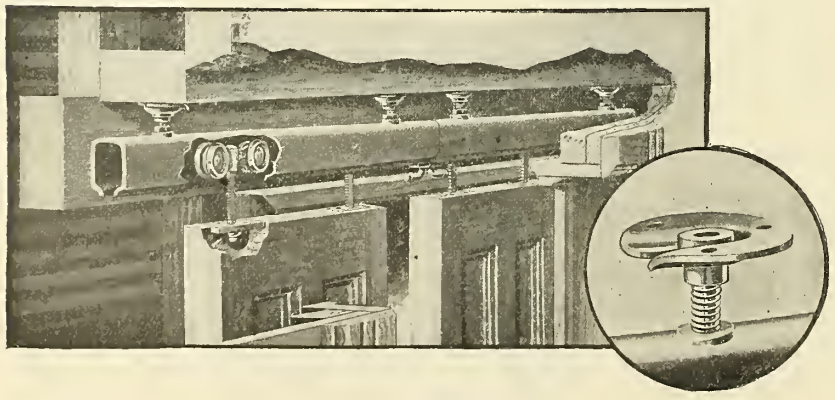
Standard

Heavy hanger frame made of steel. Wheels are iron with steel bearings. Track made of steel 1¼ inches wide.

The adjusting screw is on the side and easily accessible.

No. 102	For double doors, each one to slide four feet or less. Set (of four hangers), including 14 feet of track, gravity stops, striking plates, floor guides, and all screws	$6.00
No. 102½	For single door, to slide four feet or less. Half-set (of two hangers), including 8 feet of track, floor guide, and all screws	3.00

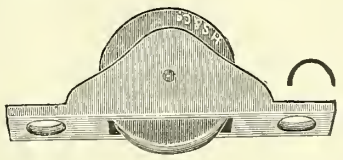
McCabe—No. 10



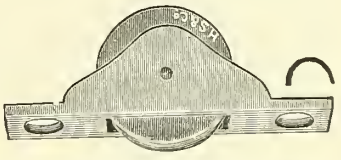
Has steel wheels. Ball bearing. All parts are case hardened. The bearings are constructed with the same care as those in bicycles, thereby reducing friction to a minimum. The track is made of cold drawn steel, with parallel slot having flanges on both sides. The inside surfaces of the track in which the ball-bearing carriages travel are as smooth as it is possible to make them. There is an adjustment on the track, also on the carriages, making adjustment convenient at any time.

Opening Feet	For Single Doors Set	Opening Feet	For Double Doors Set
2½	$3.00	4	$6.00
3	3.00	4½	6.00
3½	3.50	5	6.00
4	4.00	5½	6.00
4½	4.00	6	6.00
5	4.00	6½	6.00
5½	4.50	7	7.00
6	4.50	7½	7.00
6½	5.00	8	7.00
7	5.00	9	8.00
7½	5.50	10	9.00
8	5.50		

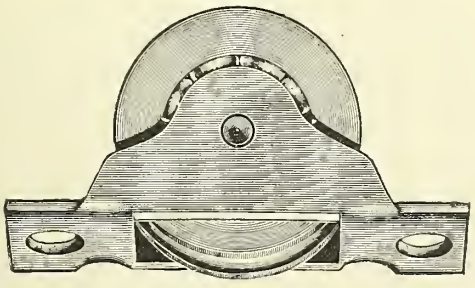
Sliding Door Sheaves



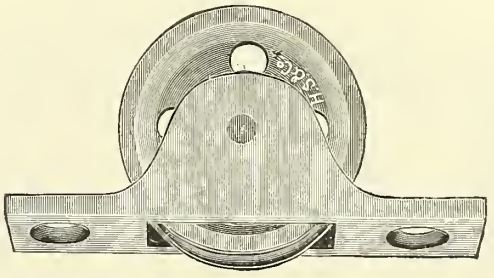
No. 405½ Steel, brass-plated, ⅝-inch turned wheel, fits No. 880 ⅞, 1, 1⅛-inch and No. 990 rail, gross $5.00



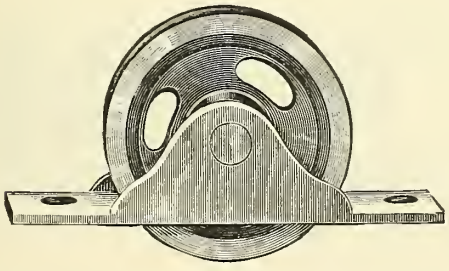
No. 406½ Steel, brass-plated, ⅝-inch turned wheel, fits ¾-inch and No. 17299 rail, gross..... $5.00



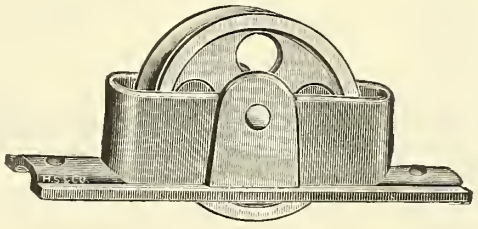
No. 4 Steel frame, 1⅜-inch turned ball bearing wheel, fits No. 880 ⅞, 1, 1⅛-inch and No. 990 rail, dozen..... $2.34



No. 585¼ Japanned iron frame, brass polished wheel, 1¼-inch turned wheel, fits No. 880 ⅞, 1, 1⅛-inch and No. 990 rail, dozen $2.00



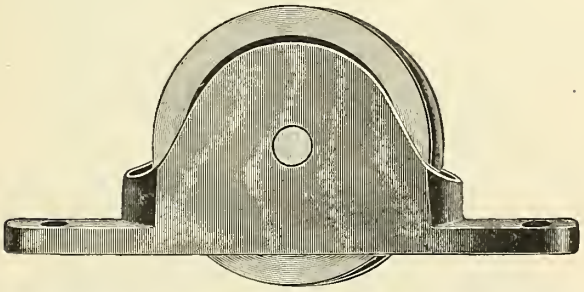
No. 17027 Steel frame, 1¼-inch turned wheel, fits No. 880 ⅞, 1, 1⅛-inch and No. 990 rail, gross..... $12.00



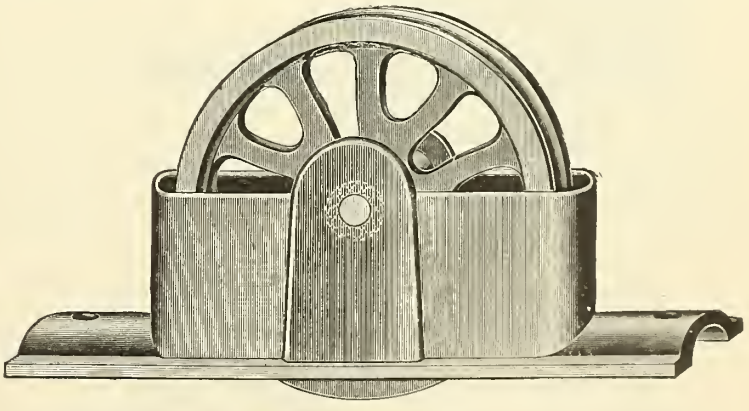
Japanned iron frame and wheel, fits No. 880 ⅞, 1, 1⅛-inch and No. 990 rail.

No. 1 1¾-inch wheel, $3\frac{3}{4}$x$\frac{15}{16}$ inches front, dozen $1.68

No. 2 2¼-inch wheel, $4\frac{3}{8}$x$\frac{15}{16}$ inches front (turned wheel), dozen 2.88



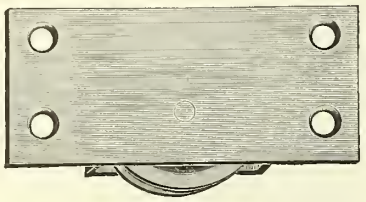
No. 100 Japanned iron frame, 2¼-inch turned ball bearing wheel, fits No. 880 ⅞, 1, 1⅛-inch and No. 990 rail, dozen..... $3.50



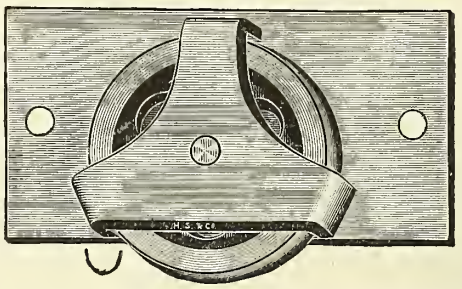
Japanned iron frame, coppered wheels, anti-friction, fits 1 and 1⅛-inch rail.

Diameter wheel, inches	3	4
No. 9 Dozen	$3.90	4.38

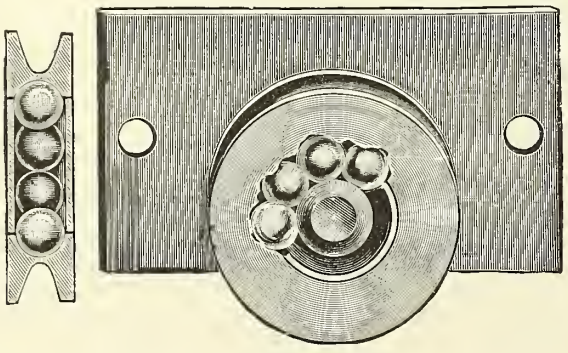
Sliding Door Sheaves



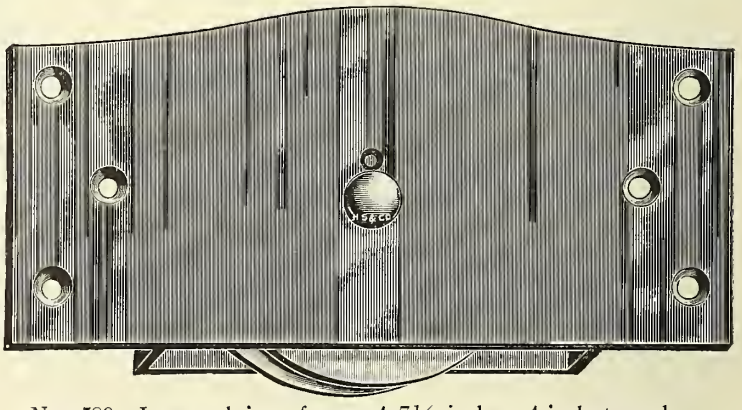
No. 580 Steel frame, turned wheel.
Diameter wheel 1½ inches, dimensions of case 1⅝x3⅝ inches.
Fits ¾-inch and No. 17299 rail, dozen $2.59
Diameter wheels 1¾ inches, dimensions of case 1⅞x3⅞ inches.
Fits No. 880 ⅞, 1, 1⅛ and No. 990 rail, dozen..... 3.24



No. 490 All iron, plate 2⅜x1$\frac{3}{16}$ inches, 1$\frac{3}{16}$-inch turned wheel.
Fits ¾-inch and No. 17299 rail, gross $12.00



No. 17074 Steel frame 2⅜x1$\frac{5}{16}$ inches, 1⅜-inch turned ball bearing wheel. Fits ¾-inch and No. 17299 rail, dozen $18.00



No. 589 Japanned iron frame, 4x7½ inches, 4-inch turned wheel. Fits 1⅛-inch rail, dozen..... $10.80

Sliding Door Rail

Full Size Cuts



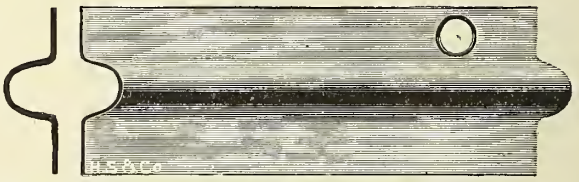
No. 990 $\frac{5}{16}$-inch, fits sheaves Nos. 1, 2, 4, 100, 405½, 580, 1¾, 585¼ and 17027. Regular lengths 5 and 6 feet. Solid brass, per 100 feet..... $8.25
No. 880 ¼-inch, fits sheaves Nos. 1, 2, 100, 580, 1¾, 405½, 585¼ and 17027. Regular lengths 5 and 6 feet. Iron, coppered, per 100 feet..... 2.50



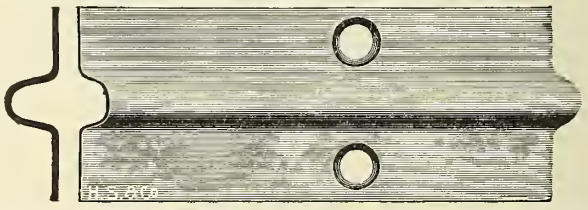
No. 17299 Fits sheaves Nos. 406½, 490, 580, 1½, 17074, and will fit almost all of the standard sheaves on the market. 10-foot pieces, solid wrought steel, copper-plated, per 100 feet.. $3.00



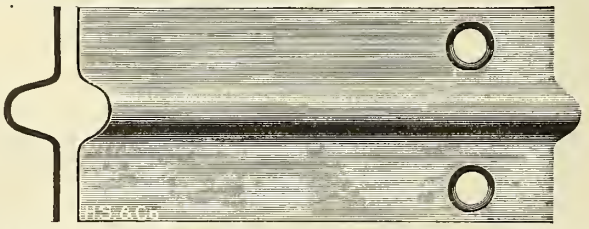
¾-inch. Fits sheaves Nos. 406½, 490, 580, 1½ and 17074. Regular lengths 4, 5, 6 and 7 feet.
Wrought brass, polished, per 100 feet..... $5.50
Wrought iron, brass-plated, per 100 feet..... 4.50



⅞-inch. Fits sheaves Nos. 1, 2, 4, 100, 405½, 580, 1¾, 585¼ and 17027. Regular lengths 5, 6 and 7 feet.
Wrought brass, polished, per 100 feet..... $6.00



1-inch. Fits sheaves Nos. 1, 2, 4, 9, 100, 405½, 580, 1¾, 585¼ and 17027. Regular lengths 5, 6 and 7 feet.
Wrought brass, polished, per 100 feet..... $10.00



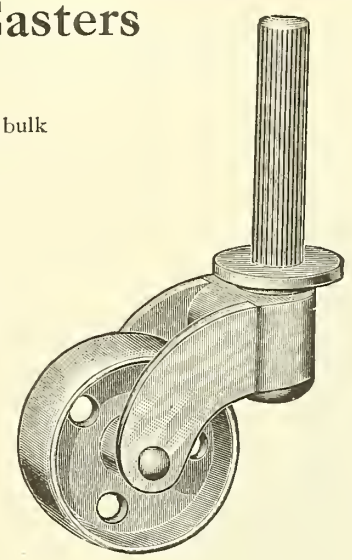
1⅛-inch. Fits sheaves Nos. 1, 2, 4, 9, 100, 405½, 580, 1¾, 589, 585¼ and 17027. Regular lengths 5 and 6 feet.
Wrought brass, polished, per 100 feet..... $10.50
Wrought iron, brass-plated, per 100 feet..... 6.70

Philadelphia Stem Casters

Full Size Cut

Packed 6 sets in a box. Also supplied in bulk

In ordering, state number and size.



Coppered Iron Horn

Per Set of Four

Size		1	2	3	4	5	6	7
Diameter of wheel, inches		13/16	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 1/2
Kind of Wheel								
No. 95	Coppered Iron	$ .14	.15	.17	.19	.21	.24	.30
No. 96	Lignumvitæ	.16	.17	.19	.22	.24	.26	.40
No. 97	Brass	.25	.28	.34	.42	.44	.58	.78

Plain Steel Horn

Per Set of Four

Size		1	2	3	4	5	6	7
Diameter of wheel, inches		13/16	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 1/2
Kind of Wheel								
No. 105	Maple	$ .10	.11	.13	.15	.17	.20	.26
No. 106	Iron	.14	.15	.17	.19	.21	.24	.30
No. 107	Steel	.16	.17	.19	.22	.24	.26	.40
No. 108	Lignumvitæ	.16	.17	.19	.22	.24	.26	.40
No. 109	Brass	.25	.28	.34	.42	.44	.58	.78

Brass-plated Steel Horn

Per Set of Four

Size		1	2	3	4	5	6	7
Diameter of wheel, inches		13/16	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 1/2
Kind of Wheel								
No. 113	Lignumvitæ	$ .28	.29	.34	.40	.45	.47	.54
No. 114	Steel, brass-plated	.34	.36	.40	.45	.50	.55	.65
No. 115	Brass	.35	.40	.49	.62	.68	.86	1.15
No. 116	Leather	.70	.76	.80	.90	1.10	1.40	1.80

Cast Brass Horn

Per Set of Four

Size		1	2	3	4	5	6	7
Diameter of wheel, inches		13/16	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 1/2
Kind of Wheel								
No. 117	Lignumvitæ	$ .30	.31	.36	.46	.48	.56	.70
No. 118	Brass	.37	.42	.51	.66	.70	.88	1.20
No. 119	Hard Rubber	.58	.65	.75	.85	1.00	1.15	1.50
No. 120	Leather	.70	.76	.80	.90	1.10	1.40	1.80

For Casters of this type with Feltoid Wheels, see page 828.

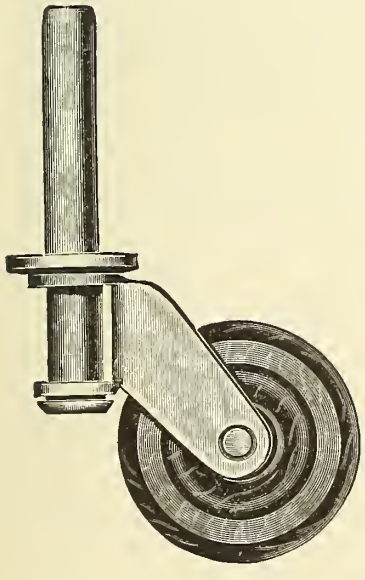
Philadelphia Stem Casters can be furnished with stems cut to any length desired.
Rings and Sockets to fit Philadelphaia Casters on page 844.

"Star" Philadelphia Casters

Full Size Cut

Packed 6 sets in a box. Also supplied in bulk.

In ordering, state number and size.



Plain Steel Horn

Per Set of Four

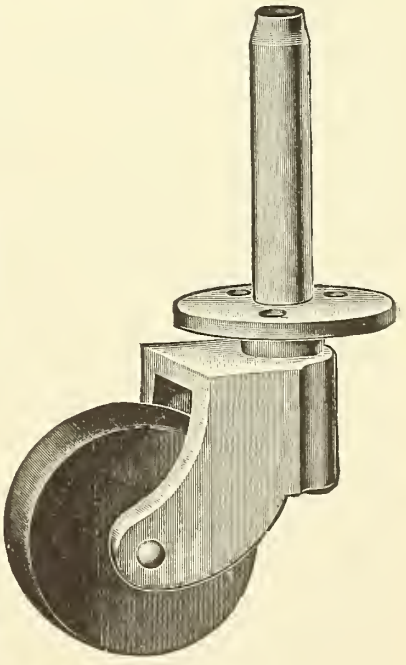
Size		1	2	3	4	5	6
Diameter of wheel, inches		13/16	15/16	1 1/16	1 3/16	1 1/4	1 3/8
Kind of Wheel							
No. 125	Maple	$ .10	.11	.13	.15	.17	.20
No. 126	Iron	.14	.15	.17	.19	.21	.24

English Casters

Full Size Cut

Packed 4 sets in a box.

In ordering, state number and size.



Cast Brass Horn and Plate

Per Set of Four

Size		0	1	2	3	4
Diameter of plate, inches		7/8	1	1 1/8	1 1/4	1 3/8
Diameter of wheel, inches		1	1 1/8	1 3/16	1 1/4	1 5/16
Kind of Wheel						
No. 561	Cast brass	$ .80	.89	.96	1.12	1.55
No. 562	Hard rubber	1.00	1.05	1.16	1.26	1.62
No. 563	Leather	1.20	1.30	1.40	1.60	1.90

For Casters of this type with Feltoid Wheels, see page 828.

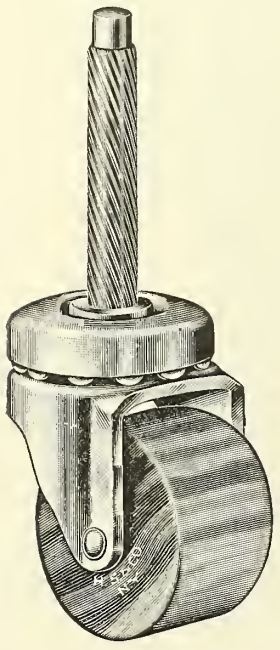
Cast Brass Horn, Coppered Iron Plate, Steel Stem

Size		0	1	2	3
Diameter of plate, inches		7/8	1	1 1/8	1 1/4
Diameter of wheels, inches		15/16	1	1 1/8	1 1/4
Kind of Wheel					
No. 571	Cast brass	$ .69	.75	.85	.94
No. 572	Hard rubber	.86	.94	1.06	1.16
No. 573	Leather	1.20	1.28	1.34	1.46

"Steel Gem" Roller-Bearing Casters

Philadelphia Stem

Full Size Cuts



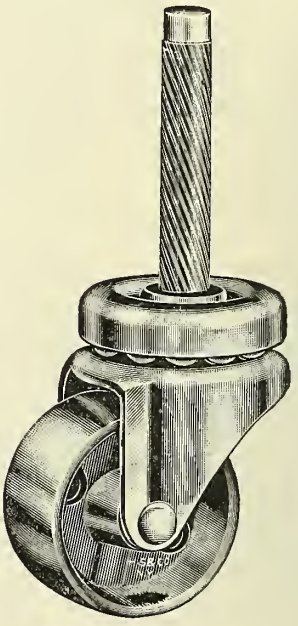
The highest grade of caster construction is found in all "Steel Gem" casters.

The steel rollers revolve at the least touch, do not wear or fall out and add immeasurably to the appearance and life of the caster.

Packed 1 set in a box, or in barrel bulk as follows:

650 sets sizes 3 and 4
400 " size 6
325 " " 7
200 " " 8
150 " " 9

In Ordering "Steel Gem" Casters, order by number only, which includes style, size and kind of wheel.



Bright Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
353	3	Iron	1 1/32 x 5/8	1	1 5/8	$ .42
353P	3	Iron, highly polished	1 1/32 x 5/8	1	1 5/8	.42
354	3	Lignumvitæ	1 1/32 x 5/8	1	1 5/8	.42
453	4	Iron	1 3/16 x 5/8	1	1 3/4	.47
453P	4	Iron, highly polished	1 3/16 x 5/8	1	1 3/4	.47
454	4	Lignumvitæ	1 3/16 x 5/8	1	1 3/4	.47
653	6	Iron	1 3/8 x 25/32	1 1/4	2	.53
653P	6	Iron, highly polished	1 3/8 x 25/32	1 1/4	2	.53
654	6	Lignumvitæ	1 3/8 x 25/32	1 1/4	2	.53
753	7	Iron	1 1/2 x 25/32	1 1/4	2 1/8	.60
753P	7	Iron, highly polished	1 1/2 x 25/32	1 1/4	2 1/8	.60
754	7	Lignumvitæ	1 1/2 x 25/32	1 1/4	2 1/8	.60
853	8	Iron	1 1/2 x 1	1 3/4	2 1/4	.90
853P	8	Iron, highly polished	1 1/2 x 1	1 3/4	2 1/4	.90
854	8	Lignumvitæ	1 1/2 x 1	1 3/4	2 1/4	.90
953	9	Iron	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
953P	9	Iron, highly polished	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
954	9	Lignumvitæ	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00

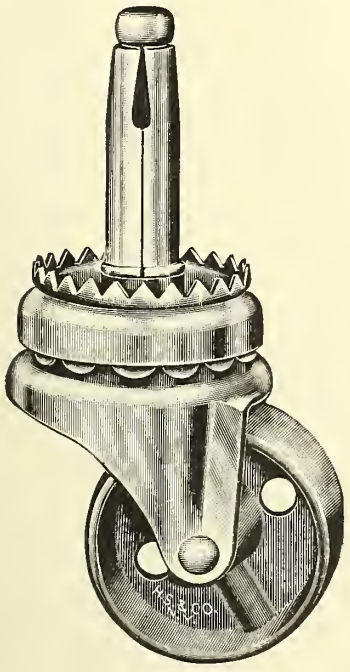
Brass Plated Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
353B	3	Iron, brass plated	1 1/32 x 5/8	1	1 5/8	$ .42
354B	3	Lignumvitæ	1 1/32 x 5/8	1	1 5/8	.42
379B	3	Feltoid	1 1/32 x 5/8	1	1 5/8	.88
453B	4	Iron, brass plated	1 3/16 x 5/8	1	1 3/4	.47
454B	4	Lignumvitæ	1 3/16 x 5/8	1	1 3/4	.47
459B	4	Leather	1 3/16 x 5/8	1	1 3/4	2.00
479B	4	Feltoid	1 3/16 x 5/8	1	1 3/4	1.10
653B	6	Iron, brass plated	1 3/8 x 25/32	1 1/4	2	.53
654B	6	Lignumvitæ	1 3/8 x 25/32	1 1/4	2	.53
679B	6	Feltoid	1 3/8 x 25/32	1 1/4	2	1.34
753B	7	Iron, brass plated	1 1/2 x 25/32	1 1/4	2 1/8	.60
754B	7	Lignumvitæ	1 1/2 x 25/32	1 1/4	2 1/8	.60
759B	7	Leather	1 1/2 x 25/32	1 1/4	2 1/8	2.60
779B	7	Feltoid	1 1/2 x 25/32	1 1/4	2 1/8	1.90
853B	8	Iron, brass plated	1 1/2 x 1	1 3/4	2 1/4	.90
854B	8	Lingumvitæ	1 1/2 x 1	1 3/4	2 1/4	.90
953B	9	Iron, brass plated	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
954B	9	Lignumvitæ	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00

When nickel-plated finish is desired, suffix "N" instead of "B"

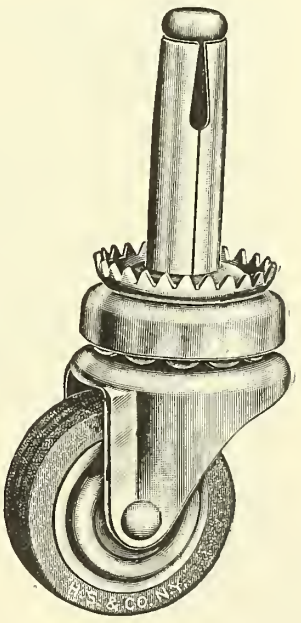
SEE DISCOUNT SHEET

"Steel Gem" Roller-Bearing Casters



Grip-Neck Spring Socket

Full Size Cuts



Packed 1 set in a box or in barrel bulk as follows:

650 sets sizes 3 and 4
400 " size 6
325 " " 7
200 " " 8
150 " " 9

In Ordering "Steel Gem" Casters, order by number only which includes style, size and kind of wheel.

Bright Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
355	3	Iron	1 1/32 x 5/8	1	1 5/8	$ .42
355P	3	Iron, highly polished	1 1/32 x 5/8	1	1 5/8	.42
356	3	Lignumvitæ	1 1/32 x 5/8	1	1 5/8	.42
455	4	Iron	1 3/16 x 5/8	1	1 3/4	.47
455P	4	Iron, highly polished	1 3/16 x 5/8	1	1 3/4	.47
456	4	Lignumvitæ	1 3/16 x 5/8	1	1 3/4	.47
655	6	Iron	1 3/8 x 25/32	1 1/4	2	.53
655P	6	Iron, highly polished	1 3/8 x 25/32	1 1/4	2	.53
656	6	Lignumvitæ	1 3/8 x 25/32	1 1/4	2	.53
755	7	Iron	1 1/2 x 25/32	1 1/4	2 1/8	.60
755P	7	Iron, highly polished	1 1/2 x 25/32	1 1/4	2 1/8	.60
756	7	Lignumvitæ	1 1/2 x 25/32	1 1/4	2 1/8	.60
855	8	Iron	1 1/2 x 1	1 3/4	2 1/4	.90
855P	8	Iron, highly polished	1 1/2 x 1	1 3/4	2 1/4	.90
856	8	Lignumvitæ	1 1/2 x 1	1 3/4	2 1/4	.90
955	9	Iron	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
955P	9	Iron, highly polished	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
956	9	Lignumvitæ	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00

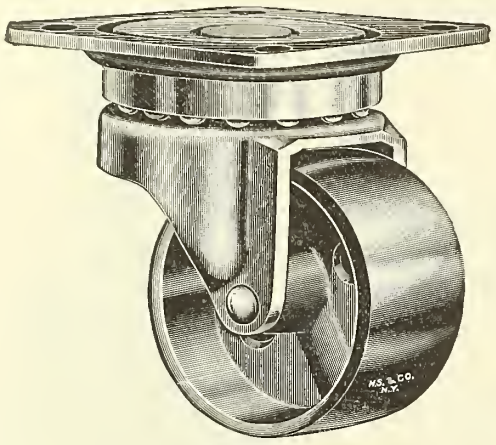
Brass Plated Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Top Plate, Inches	Height, Inches	Per Set of Four
355B	3	Iron, brass plated	1 1/32 x 5/8	1	1 5/8	$ .42
356B	3	Lignumvitæ	1 1/32 x 5/8	1	1 5/8	.42
378B	3	Feltoid	1 1/32 x 5/8	1	1 5/8	.88
455B	4	Iron, brass plated	1 3/16 x 5/8	1	1 3/4	.47
456B	4	Lignumvitæ	1 3/16 x 5/8	1	1 3/4	.47
458B	4	Leather	1 3/16 x 5/8	1	1 3/4	2.00
478B	4	Feltoid	1 3/16 x 5/8	1	1 3/4	1.10
655B	6	Iron, brass plated	1 3/8 x 25/32	1 1/4	2	.53
656B	6	Lignumvitæ	1 3/8 x 25/32	1 1/4	2	.53
678B	6	Feltoid	1 3/8 x 25/32	1 1/4	2	1.34
755B	7	Iron, brass plated	1 1/2 x 25/32	1 1/4	2 1/8	.60
756B	7	Lignumvitæ	1 1/2 x 25/32	1 1/4	2 1/8	.60
758B	7	Leather	1 1/2 x 25/32	1 1/4	2 1/8	2.60
778B	7	Feltoid	1 1/2 x 25/32	1 1/4	2 1/8	1.90
855B	8	Iron, brass plated	1 1/2 x 1	1 3/4	2 1/4	.90
856B	8	Lignumvitæ	1 1/2 x 1	1 3/4	2 1/4	.90
878B	8	Feltoid	1 5/8 x 1	1 3/4	2 1/4	2.40
955B	9	Iron, brass plated	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
956B	9	Lignumvitæ	1 7/8 x 1 1/16	1 3/4	2 9/16	1.00
978B	9	Feltoid	2 x 1 1/16	1 3/4	2 9/16	3.10

When Nickel-plated Finish is desired suffix "N" instead of "B"

"Steel Gem" Roller-Bearing Casters

Full Size Cut



No. 751P

Square Plate

All "Steel Gem" Casters packed 1 set in a box or in bulk as follows:

Sizes 3 and 4, full case lots, 400 sets.
" 6 " 7 " " " 200 "
" 8 " 9 " " " 100 "

In Ordering "Steel Gem" Casters, order by number only which includes style, size and kind of wheel.

Bright Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Diam. of Plate, Inches	Height, Inches	Per Set of Four
351	3	Iron	1 1/32 x 5/8	1 1/2	1 5/8	$ .42
351P	3	Iron, highly polished	1 1/32 x 5/8	1 1/2	1 5/8	.42
352	3	Lignumvitæ	1 1/32 x 5/8	1 1/2	1 5/8	.42
451	4	Iron	1 3/16 x 5/8	1 1/2	1 3/4	.47
451P	4	Iron, highly polished	1 3/16 x 5/8	1 1/2	1 3/4	.47
452	4	Lignumvitæ	1 3/16 x 5/8	1 1/2	1 3/4	.47
651	6	Iron	1 3/8 x 25/32	1 7/8	2	.53
651P	6	Iron, highly polished	1 3/8 x 25/32	1 7/8	2	.53
652	6	Lignumvitæ	1 3/8 x 25/32	1 7/8	2	.53
751	7	Iron	1 1/2 x 25/32	1 7/8	2 1/8	.60
751P	7	Iron, highly polished	1 1/2 x 25/32	1 7/8	2 1/8	.60
752	7	Lignumvitæ	1 1/2 x 25/32	1 7/8	2 1/8	.60
851	8	Iron	1 1/2 x 1	2 1/4	2 1/4	.90
851P	8	Iron, highly polished	1 1/2 x 1	2 1/4	2 1/4	.90
852	8	Lignumvitæ	1 1/2 x 1	2 1/4	2 1/4	.90
951	9	Iron	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
951P	9	Iron, highly polished	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
952	9	Lignumvitæ	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00

Brass Plated Steel Horn

No.	Size	Kind of Wheel	Size of Wheel, Inches	Diam. of Plate, Inches	Height, Inches	Per Set of Four
351B	3	Iron, brass plated	1 1/32 x 5/8	1 1/2	1 5/8	$ .42
352B	3	Lignumvitæ	1 1/32 x 5/8	1 1/2	1 5/8	.42
377B	3	Feltoid	1 1/32 x 5/8	1 1/2	1 5/8	.88
451B	4	Iron, brass plated	1 3/16 x 5/8	1 1/2	1 3/4	.47
452B	4	Lignumvitæ	1 3/16 x 5/8	1 1/2	1 3/4	.47
457B	4	Leather	1 3/16 x 5/8	1 1/2	1 3/4	2.00
477B	4	Feltoid	1 3/16 x 5/8	1 1/2	1 3/4	1.10
651B	6	Iron, brass plated	1 3/8 x 25/32	1 7/8	2	.53
652B	6	Lignumvitæ	1 3/8 x 25/32	1 7/8	2	.53
677B	6	Feltoid	1 3/8 x 25/32	1 7/8	2	1.34
751B	7	Iron, brass plated	1 1/2 x 25/32	1 7/8	2 1/8	.60
752B	7	Lignumvitæ	1 1/2 x 25/32	1 7/8	2 1/8	.60
757B	7	Leather	1 1/2 x 25/32	1 7/8	2 1/8	2.60
777B	7	Feltoid	1 1/2 x 25/32	1 7/8	2 1/8	1.90
851B	8	Iron, brass plated	1 1/2 x 1	2 1/4	2 1/4	.90
852B	8	Lignumvitæ	1 1/2 x 1	2 1/4	2 1/4	.90
877B	8	Feltoid	1 5/8 x 1	2 1/4	2 1/4	2.40
951B	9	Iron, brass plated	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
952B	9	Lignumvitæ	1 7/8 x 1 1/16	2 1/4	2 9/16	1.00
977B	9	Feltoid	2 x 1 1/16	2 1/4	2 9/16	3.10

When nickel-plated finish is desired, suffix "N" instead of "B"

Oblong Steel Plate Ball-Bearing Casters

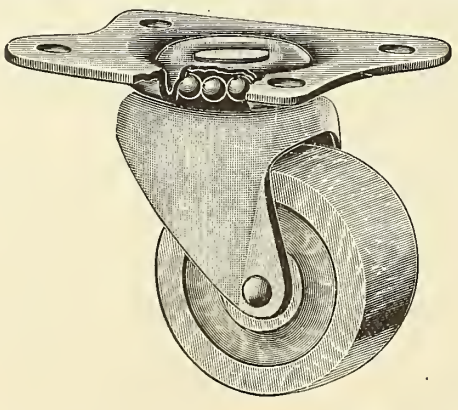
Full Size Cut

Packed 6 sets in a package. Also supplied in bulk.

Plain Steel Horn and Plate

Per Set of Four

Size	3	5	7	8
Size of whl. ins.	1 x 5/8	1 1/4 x 3/4	1 1/2 x 7/8	1 5/8 x 1
Size of plate ins.	1 1/2 x 1 1/8	2 x 1 1/2	2 1/4 x 1 3/4	2 5/8 x 2
Height, ins.	1 1/2	1 3/4	2	2
Steel Wheel.	$ .24	No. 196 .32	.45	.65
Lignum-vitæ Wheel	.24	No. 197 .32	.45	.65

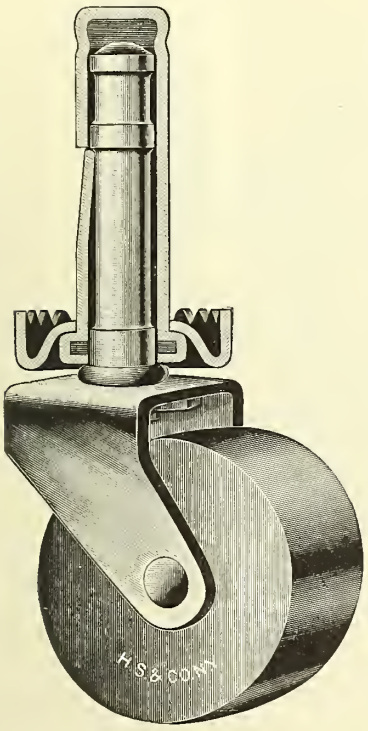


Brass Plated Steel Horn and Plate

Per Set of Four

Size	3	5	7	8
Size of whl. ins.	1 x 5/8	1 1/4 x 3/4	1 1/2 x 7/8	1 5/8 x 1
Size of plate, ins.	1 1/2 x 1 1/8	2 x 1 1/2	2 1/4 x 1 3/4	2 5/8 x 2
Height, ins.	1 1/2	1 3/4	2	2
Lignum-vitæ Wheel..	$ .36	No. 198 .41	.50	.70
Iron Wheel, brass plated..	.44	No. 199 .47	.60	.80

Diamond Velvet Casters



Grip Neck

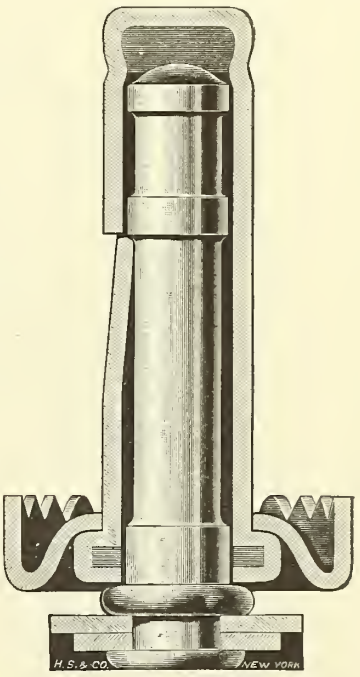
Full Size Cuts

The Diamond Velvet Casters are furnished with a tempered steel socket, with a top and base bearing of vulcanized compressed cotton fibre, permitting the caster to swivel perfectly at all times, eliminating all noise, squeak and friction. The tongue of the socket, being made of tempered steel, springs firmly into place and it is impossible for the caster to drop out. The fibre ring at the bottom of the socket takes all the side strain and reduces friction. This ring also holds the stem rigid, placing the bearing where it belongs—exactly on the top.

The horn and axle are exceptionally strong and heavy. The compressed cotton fibre wheels are noiseless and durable.

Packed one set in a box, with sockets. Also supplied in bulk.

Order by number only.



Brass Plated Steel Horn, with Compressed Cotton Wheels

No.	Wheel		Socket			Per Set of Four
	Diameter, Inches	Face, Inches	Diameter, Inches	Depth of Hole, Inches	Diam. of Track Plate, Inches	
A	7/8	9/16	5/16	1 1/4	7/8	$.75
B	1	9/16	3/8	1 3/4	1 5/32	.80
C	1 1/8	5/8	3/8	1 3/4	1 5/32	.85
D	1 1/4	11/16	3/8	1 3/4	1 5/32	.90
E	1 3/8	3/4	3/8	1 3/4	1 5/32	.95
F	1 1/2	13/16	3/8	1 3/4	1 5/32	1.00
G	1 1/2	13/16	1/2	1 3/4	1 5/16	1.10

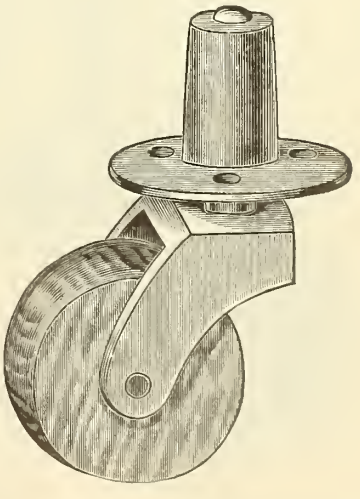
Nos. A to F are also furnished with 27/32 in. Track Plate to order.

Plate Casters

Full Size Cut

Packed 6 sets in a box. Also supplied in bulk.

In ordering, state number and size of wheel.



Coppered Iron Horn and Plate

Per Set of Four

Size	1	2	3	4	5	6	7	8
Diameter of wheel, inches	13/16	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 1/2	1 3/4
Kind of Wheel								
No. 150 Coppered Iron	$ .14	.16	.18	.20	.24	.29	.38	.42
No. 151 Lignumvitæ	.14	.16	.18	.22	.26	.33	.44	.48
No. 152 Brass	.25	.28	.33	.42	.48	.60	.80	1.35

Cast Brass Horn and Plate

Per Set of Four

Size	1	2	3	4	5	6	7	8
Diameter of wheel, inches	13/16	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 1/2	1 3/4
Kind of Wheel								
No. 153 Lignumvitæ	$ .34	.42	.45	.55	.60	.75	1.00	1.25
No. 154 Brass	.45	.55	.60	.75	.90	1.10	1.50	1.75
No. 155 Hard Rubber	.62	.72	.85	1.00	1.12	1.35	1.90	2.25
No. 156 Leather	.80	.84	.90	1.00	1.20	1.40	1.90	2.50

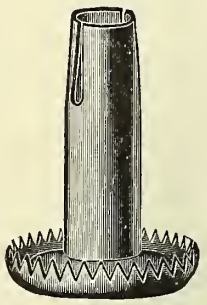
Grip-Neck Casters

Full Size Cuts

Six sets of casters complete with sockets packed in a box or in barrel bulk as follows:

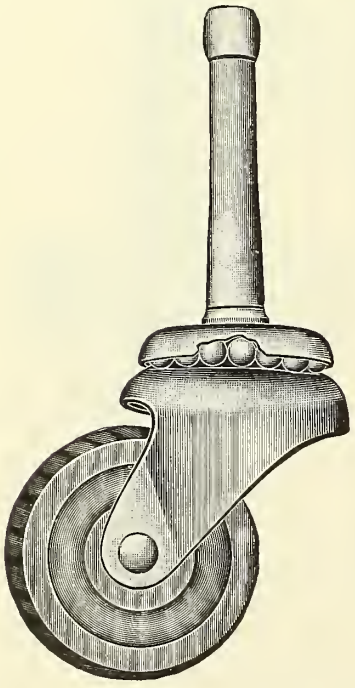
1,300 sets number 30
1,100 sets number 40
1,000 sets number 50
750 sets number 60
550 sets number 70

In ordering, state number and size of wheel.



⅜-inch spring socket with 1-inch toothed track plate. Fits all Grip-Neck Casters.

Ball Bearing



Size 5

Ball-Bearing Steel Horn

Per Set of Four

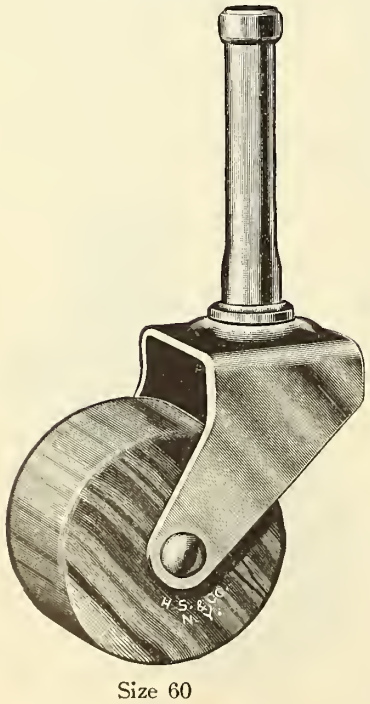
Size	2	3	4	5	6	7	8
Diameter of wheel, inches	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 5/8	1 3/4
Kind of Wheel							
No. 165 Steel	$ .21	.22	.24	.26	.29	.33	.40
No. 166 Lignumvitæ	.21	.22	.24	.26	.29	.33	.40

Ball-Bearing Brass Plated Steel Horn

Per Set of Four

Size	2	3	4	5	6	7	8
Diameter of wheel, inches	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 5/8	1 3/4
Kind of Wheel							
No. 167 Lignumvitæ	$ .34	.35	.37	.40	.43	.47	.52
No. 168 Steel, brass-plated	.39	.42	.43	.46	.52	.56	.62
No. 169 Brass	.58	.59	.71	.82	.95	1.24	1.45
No. 170 Leather	.62	.68	.78	.94	1.06	1.35	1.65

Plain Horn



Size 60

Plain Steel Horn

Per Set of Four

Size	20	30	40	50	60	70	80
Diameter of wheel, inches	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 5/8	1 7/8
Kind of Wheel							
No. 175 Maple	$ .10	.11	.12	.13	.14	.17	.17
No. 176 Iron	.12	.13	.15	.18	.21	.25	.25
No. 177 Lignumvitæ	.12	.13	.15	.18	.21	.25	.25

Bell Form Steel Horn

Per Set of Four

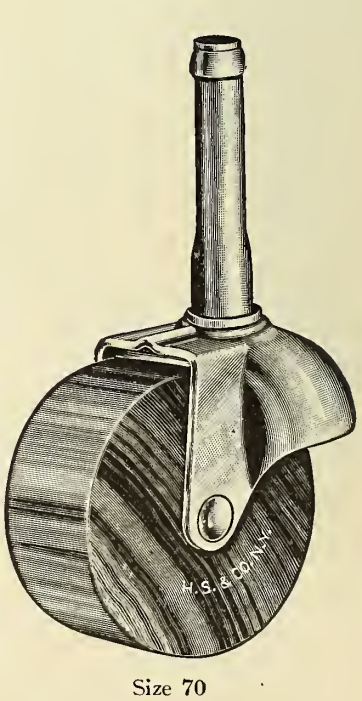
Size	20	30	40	50	60	70	80
Diameter of wheel, inches	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 5/8	1 7/8
Kind of Wheel							
No. 179 Maple	$ .12	.13	.14	.15	.17	.20	.20
No. 180 Iron	.14	.15	.17	.20	.23	.29	.29
No. 181 Lignumvitæ	.14	.15	.17	.20	.23	.29	.29

Bell Form, Brass Plated Steel Horn

Per Set of Four

Size	20	30	40	50	60	70	80
Diameter of wheel, inches	15/16	1 1/16	1 3/16	1 1/4	1 3/8	1 5/8	1 7/8
Kind of Wheel							
No. 185 Lignumvitæ	$ .33	.34	.36	.39	.43	.48	.52
No. 186 Iron, brass-plated	.38	.41	.42	.45	.48	.57	.57
No. 187 Steel, brass-plated	.38	.41	.42	.45	.48	.57	

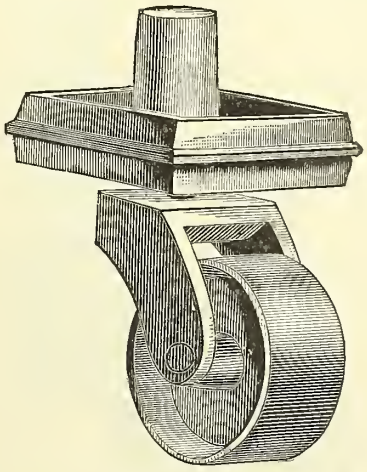
Bell Horn



Size 70

Socket Casters

Full Size Cuts

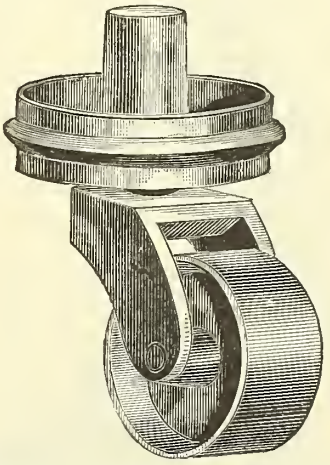


Square Shallow Socket

Cast Brass Horn and Socket

Per Set of Four

Size	1	2	3	4	5	6
Inside diameter of socket, inches	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
Diameter of wheel, inches.	13/16	15/16	1	1 1/8	1 1/4	1 1/2
Kind of Wheel						
No. 206 Brass	$ .65	.75	.88	1.05	1.25	1.45
No. 207 Hard Rubber	.80	.90	1.05	1.25	1.45	1.75
No. 208 Leather	.95	1.00	1.10	1.20	1.60	2.10

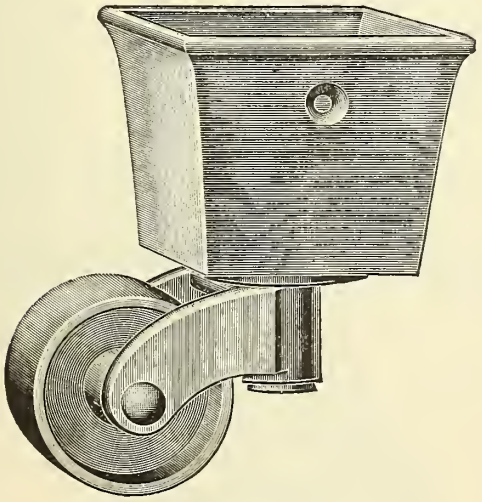


Round Shallow Socket

Cast Brass Horn and Socket

Per Set of Four

Size	1	2	3	4	5	6
Inside diameter of socket, inches	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
Diameter of wheel, inches.	13/16	15/16	1	1 1/8	1 1/4	1 1/2
Kind of Wheel						
No. 215 Brass	$ .48	.58	.72	.87	1.00	1.20
No. 216 Hard Rubber	.69	.82	1.00	1.15	1.30	1.45
No. 217 Leather	.90	.96	1.06	1.16	1.50	2.00

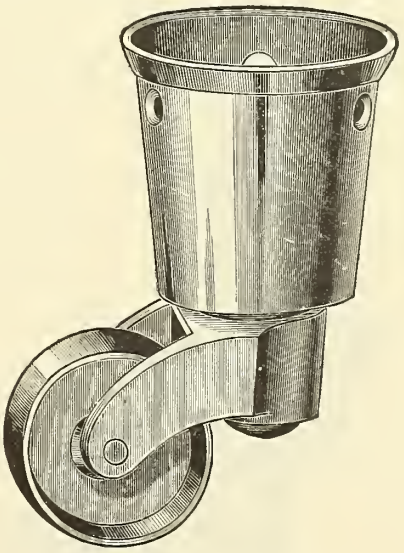


Square Deep Socket

Cast Brass Horn and Socket

Per Set of Four

Size	1	2	3	4	5	6	7	8
Inside diameter of socket, inches	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Diameter of wheel, inches	13/16	1	1 1/8	1 3/16	1 5/16	1 7/16	1 11/16	1 11/16
Kind of Wheel								
No. 220 Brass	$1.20	.55	1.70	2.15	2.75	3.55	4.80	5.60
No. 221 Leather	1.50	1.70	2.00	2.25	3.00	3.75	5.00	



Round Deep Socket

Cast Brass Horn and Socket

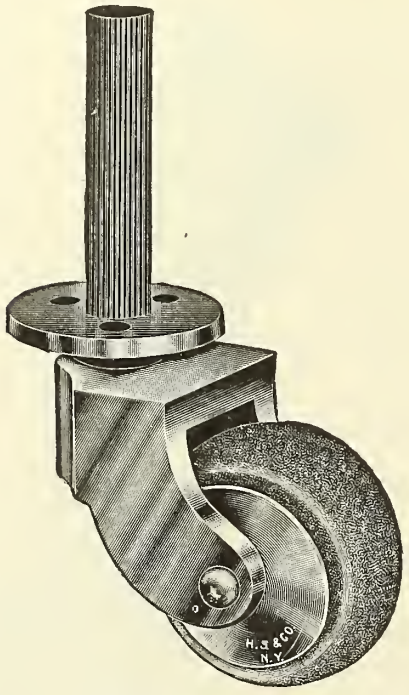
Per Set of Four

Size	1	2	3	4	5	6	7	8
Inside diameter of socket, inches	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2
Diameter of wheels, inches	13/16	1	1 1/8	1 3/16	1 5/16	1 7/16	1 11/16	1 13/16
Kind of Wheel								
No. 222 Brass	$ .72	.80	.95	1.12	1.30	1.65	2.70	3.80
No. 223 Leather	1.40	1.65	1.95	2.20	2.90	3.65	4.85	5.50

For Casters of this type with Feltoid Wheels, see page 830

Casters with Feltoid Wheels

Full Size Cuts

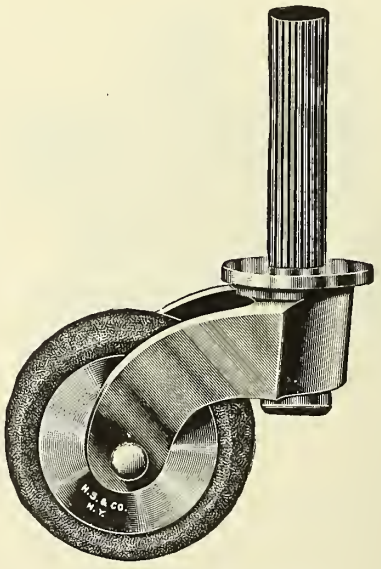


English Plate

No. 230

Cast Brass Horn and Plate

Size	0	1	2	3	4
Diameter of wheel, inches	1	1 1/16	1 3/16	1 5/16	1 1/2
Per set of four	$1.50	1.60	1.72	1.92	2.60



Philadelphia Stem

No. 231

Cast Brass Horn

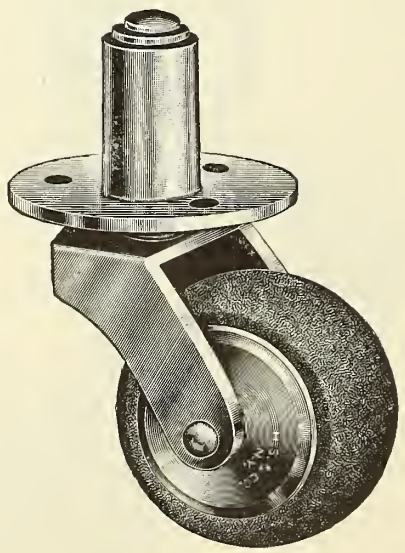
Size	1	2	3	4	5	6	7
Diameter of wheel, inches	13/16	1	1 1/16	1 3/16	1 5/16	1 3/8	1 1/2
Per Set of four	$ .92	.98	1.10	1.30	1.50	1.80	2.40

"Steel Gem" Roller-Bearing—Brass-plated Steel Horn

See page 822 for illustration.

Size	379B	479B	679B	779B
Diameter of wheel, inches	1 1/32	1 3/16	1 3/8	1 1/2
Per set of four	$ .88	1.10	1.34	1.90

When nickel-plated finish is desired, suffix "N" instead of "B"

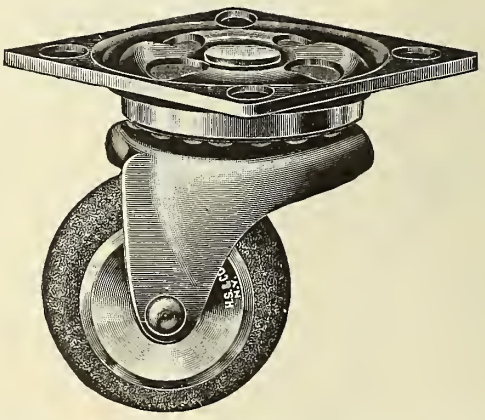


Common Plate

No. 233

Cast Brass Horn and Plate

Size	1	2	3	4	5	6	7	8
Diameter of wheel, inches	13/16	1	1 1/16	1 3/16	1 5/16	1 3/8	1 1/2	1 11/16
Per set of four	$1.00	1.10	1.22	1.40	1.68	2.00	2.60	4.00



"Steel Gem" Square Plate, Roller-Bearing

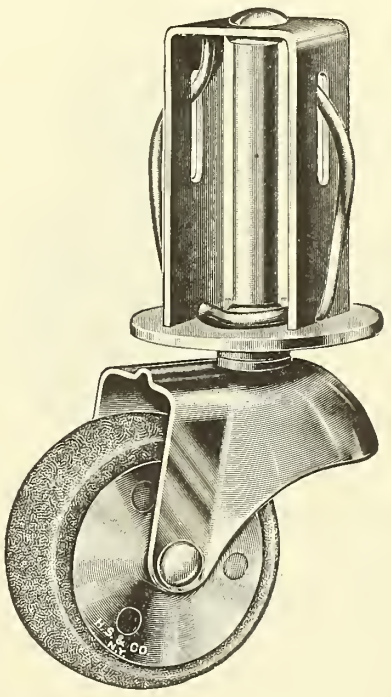
Brass-plated Steel Horn and Plate

Size	377B	477B	677B	777B	877B	977B
Diameter of wheel, inches	1 1/32	1 3/16	1 3/8	1 1/2	1 5/8	2
Diameter of plate, inches	1 1/2	1 1/2	1 7/8	1 7/8	2 1/4	2 1/4
Per set of four	$ .88	1.10	1.34	1.90	2.40	3.10

When nickel-plated finish is desired, suffix "N" instead of "B"

Casters with Feltoid Wheels

Full Size Cuts



Metal Bed

Brass-plated Steel Horn

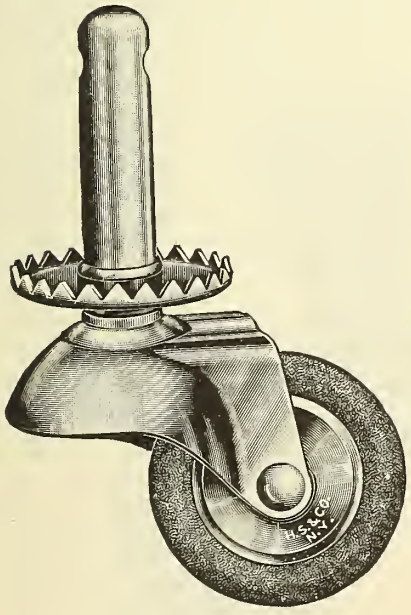
Per Set of Four

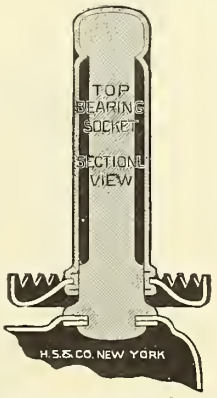
Size	Diameter of Wheel Inches	Outside Diameter of Post Inches	No 245* Square Post	No 246 Round Post
50	1 5/16	3/4 and 7/8	$1.50	$1.66
60	1 3/8	1 and 1 1/16	1.76	1.60
70	1 1/2	1, 1 1/4 and 1 5/16	2.20	2.00
80	1 5/8	1 1/2 and 2	2.70	2.50
90	2	1 1/2 and 2	3.30	3.10

*Square Post No. 245 Casters furnished to order only.

Nos. 60 and 70 packed 6 sets in a box.

Nos. 80 and 90 packed 3 sets in a box.





Sectional view showing Top Bearing Socket fitting all Grip Neck Casters

"Bell Form" Grip-Neck

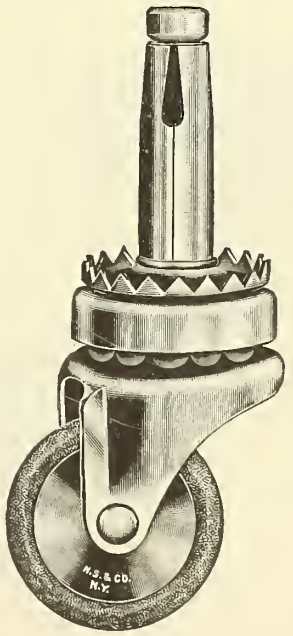
With Top Bearing Socket

No. 250

Brass-plated Steel Horn

Size	20	30	40	50	60	70
Diameter of wheel, inches	13/16	1 1/16	1 3/16	1 5/16	1 3/8	1 1/2
Per set of four	$ .70	.80	.96	1.16	1.20	1.62

Can also be furnished with Spring Socket as shown on cut of No. 478B (to the right).



"Steel Gem" Roller-Bearing Grip-Neck

With 3/8-inch Spring Socket

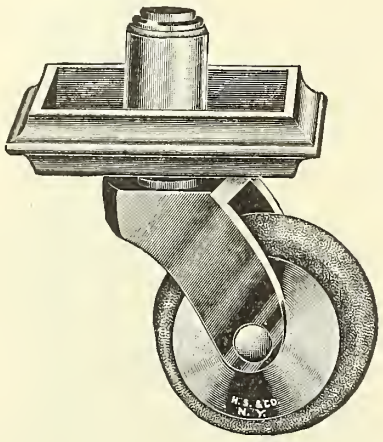
Brass-plated Steel Horn

Number	378B	478B	678B	778B	878B	978B
Diameter of wheel, inches	1 1/32	1 3/16	1 3/8	1 1/2	1 5/8	2
Per set of four	$ .88	1.10	1.34	1.90	2.40	3.10

When nickel-plated finish is desired suffix "N" instead of "B"

Socket Casters with Feltoid Wheels

Full Size Cuts



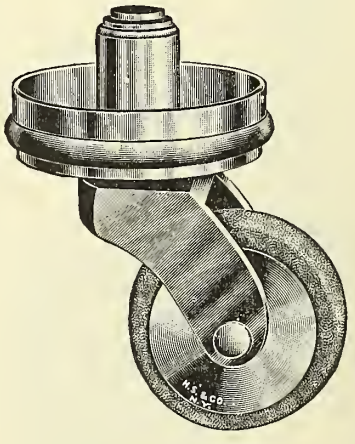
Size 5

Square Shallow Socket

No. 260

Cast Brass Horn and Socket

Size	1	2	3	4	5	6	7
Inside diameter at top of socket, inches	¾	⅞	1	1⅛	1¼	1⅜	1½
Diameter of wheel, inches	13/16	13/16	1	1 1/16	1 3/16	1 3/16	1 5/16
Per set of four	$ .95	.95	1.00	1.10	1.20	1.60	2.10



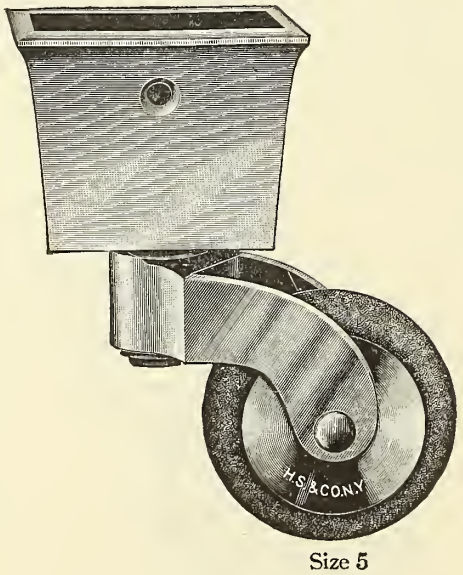
Size 5

Round Shallow Socket

No. 261

Cast Brass Horn and Socket

Size	1	2	3	4	5	6	7
Inside diameter at top of socket, inches	¾	⅞	1	1⅛	1¼	1⅜	1½
Diameter of wheel, inches	13/16	13/16	1	1 1/16	1 3/16	1 3/16	1 5/16
Per set of four	$ .90	.90	.96	1.06	1.16	1.50	2.00



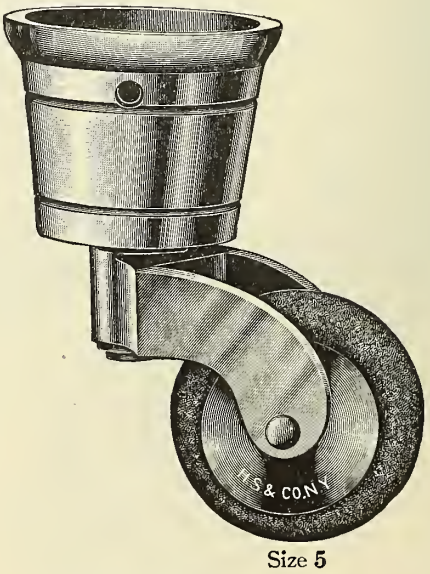
Size 5

Square Deep Socket

No. 262

Cast Brass Horn and Socket

Size	1	2	3	4	5	6	7
Inside diameter at top of socket, inches	¾	⅞	1	1⅛	1¼	1⅜	1½
Diameter of wheel, inches	13/16	13/16	1	1	1	1 3/16	1 5/16
Per set of four	$1.50	1.50	1.70	2.00	2.25	3.00	3.75



Size 5

Round Deep Socket

No. 263

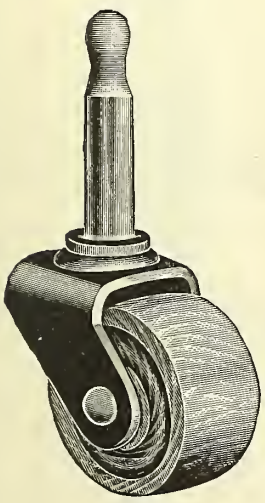
Cast Brass Horn and Socket

Size	1	2	3	4	5	6	7
Inside diameter at top of socket, inches	¾	⅞	1	1⅛	1¼	1⅜	1½
Diameter of wheel, inches	13/16	13/16	1	1	1	1 3/16	1 5/16
Per set of four	$1.40	1.40	1.65	1.95	2.20	2.90	3.65

SEE DISCOUNT SHEET

Faultless Casters

Full Size Cuts



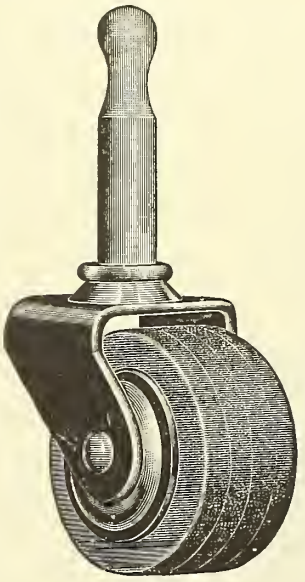
A-2-3



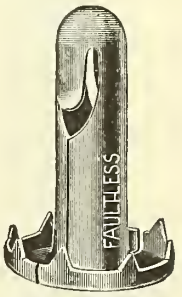
Socket No. 1, $\frac{5}{16}$ in. Diam.

In Ordering, give style number and number of wheel, which includes style, size and kind of wheel.

Packed 6 sets in a box including Sockets.



B-10-5



Socket No. 5, $\frac{3}{8}$ in. Diam.

Daisy

Steel Horn, with Socket No. 1

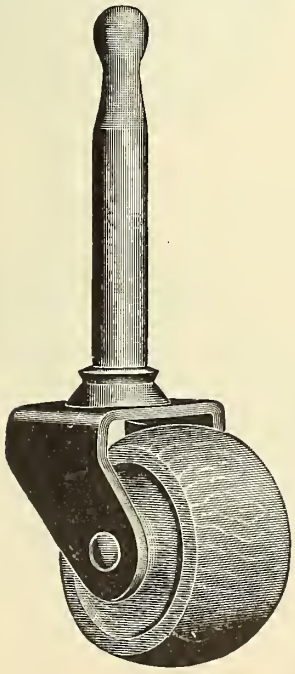
Per Set of Four

Number	2	3
Diameter of wheel, inches	1	$1\frac{1}{16}$
Style Kind of Wheel		
No. A 2 Lignumvitæ	$ .22	.23
No. A 5 Steel or iron	.26	.27

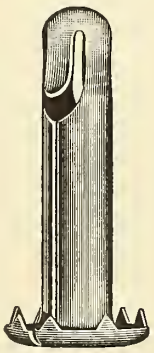
Brass-Plated Steel Horn, with Socket No. 1

Per Set of Four

Number	2	3
Diameter of wheel, inches	1	$1\frac{1}{16}$
Style Kind of Wheel		
No. A 4 Lignumvitæ	$ .30	.32
No. A 7 Steel or iron, brass-plated	.38	.40
No. A10 Leather	....	1.15



C-2-5



Socket No. 10, $\frac{3}{8}$ in. Diam.

Short Stem

Steel Horn, with Socket No. 5

Per Set of Four

Number	2	3	4	5	6
Diameter of wheel, inches	1	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$
Style Kind of Wheel					
No. B 2 Lignumvitæ	$ .23	.24	.26	.28	.32
No. B 5 Steel or iron	.30	.31	.34	.36	.42

Brass-Plated Steel Horn, with Socket No. 5

Per Set of Four

Number	2	3	4	5	6
Diameter of wheel, inches	1	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$
Style Kind of Wheel					
No. B 4 Lignumvitæ	$ .31	.33	.36	.38	.42
No. B 7 Steel or iron, brass-plated	.45	.46	.50	.54	.60
No. B10 Leather	....	1.15	....	1.45	1.65
No. B12 Glass (insulator)	....	....	....	....	1.25

Long Stem

Steel Horn, with Socket No. 10

Per Set of Four

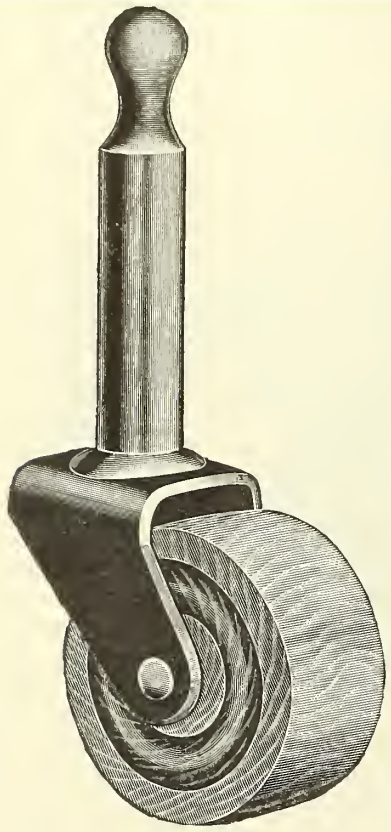
Number	3	4	5	6	7	8	9
Diameter of wheel, inches	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$
Style Kind of Wheel							
No. C 2 Lignumvitæ	$ .24	.26	.28	.32	.36	.38	.43
No. C 5 Steel or iron	.28	.30	.32	.36	...	.42	.48

Brass-Plated Steel Horn, with Socket No. 10

Per Set of Four

Number	3	4	5	6	7	8	9
Diameter of wheel, inches	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$
Style Kind of Wheel							
No. C 4 Lignumvitœ	$ .33	.36	.38	.42	.45	.48	.55
No. C 7 Steel or iron, brass-plated	.41	.44	.46	.50	...	.60	
No. C10 Leather	1.15	...	1.45	1.65	...	1.85	
No. C12 Glass (insulator)	...	...	...	1.25	1.50	...	1.65

Medium socket for hospital stands, etc., shown on page 833 can be used with Long Stem Casters. Furnished only upon request.



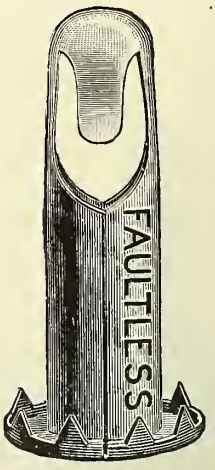
D-2-8

Faultless Casters

Full Size Cuts

Packed 4 sets in a box, including Sockets

In ordering, give style number and number of wheel, which includes style, size and kind of wheel.



Wooden Bed Socket No. 20, $\frac{9}{16}$ in. Diameter.

Wooden Bed

Plain Steel Horn, with Socket No. 20

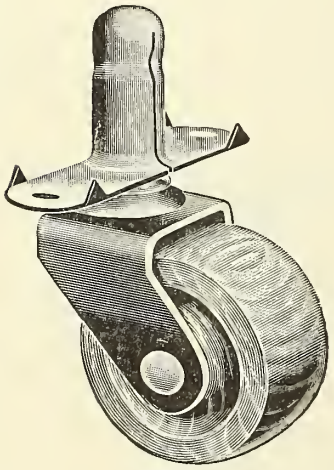
Per Set of Four

Number		5	6	7	8	9	10	11
Diameter of wheel, inches		1¼	1⅜	1½	1⅝	1¾	2	2½
Style No.	Kind of Wheel							
D 2	Lignumvitæ	$ .44	.50	.54	.56	.60	1.00	1.25
D 5	Steel or iron	.45	.54	...	.60	.65	1.10	

Brass-Plated Steel Horn with Socket No. 20

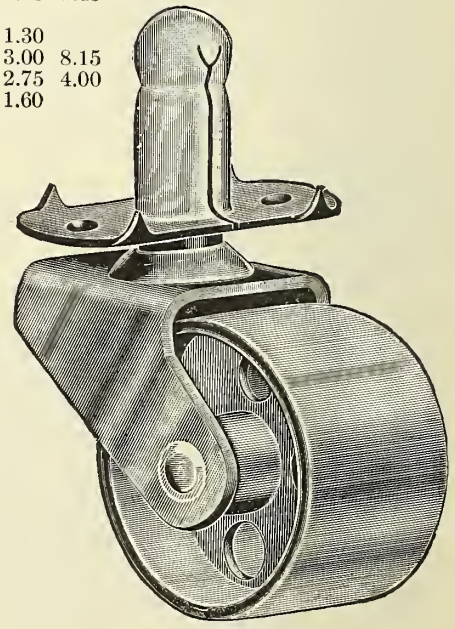
Per Set of Four

Number		5	6	7	8	9	10	11
Diameter of wheel, inches		1¼	1⅜	1½	1⅝	1¾	2	2½
Style No.	Kind of Wheel							
D 4	Lignumvitæ	$ .54	.60	.64	.66	.70	1.15	1.45
D 7	Steel or iron, brass-plated	.65	.68	...	.78	.85	1.30	
D10	Leather	1.70	1.90	...	2.10	....	3.00	8.15
D12	Glass (insulator)	....	....	....	....	....	2.10	2.75	4.00
D15	Brass covered	....	....	...	1.25	....	1.60	



S-2-5

Combination Plate Casters



T-7-8

Steel Horn, Oblong Plate ½ x 1½ inches

With ⅜-inch Diameter Steel Socket

Per Set of Four

Number		3	4	5
Diameter of wheel, inches		1 1/16	1⅛	1¼
Style No.	Kind of Wheel			
S 2	Lignumvitæ	$ .26	.28	.30
S 5	Steel or iron	.30	.32	.34

Steel Horn, Oblong Plate ¾ x 1⅞ inches

With ½-inch Diameter Steel Socket

Per Set of Four

Number		6	7	8	9
Diameter of wheel, inches		1⅜	1½	1⅝	1¾
Style No.	Kind of Wheel				
T 2	Lignumvitæ	$ .50	.54	.56	.60
T 5	Iron	.54	...	.60	.65

Brass-Plated Steel Horn, Oblong Plate ½ x 1½ inches

With ⅜-inch Diameter Steel Socket

Per Set of Four

Number		3	4	5
Diameter of wheel, inches		1 1/16	1⅛	1¼
Style No.	Kind of Wheel			
S 4	Lignumvitæ	$ .35	.38	.40
S 7	Steel or iron, brass-plated	.43	.46	.48
S10	Leather	1.15	...	1.45

Brass-Plated Steel Horn, Oblong Plate ¾ x 1⅞ inches

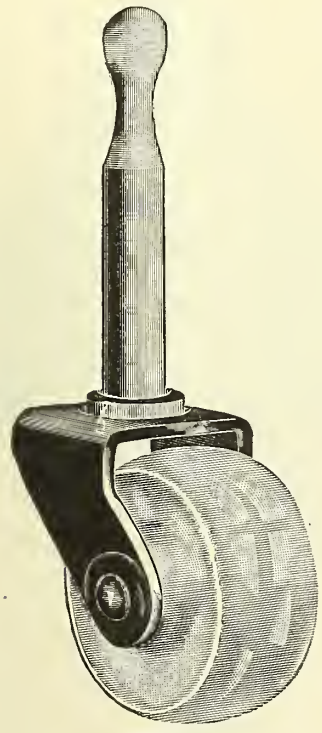
With ½-inch Diameter Steel Socket

Per Set of Four

Number		6	7	8	9
Diameter of wheel inches		1⅜	1½	1⅝	1¾
Style No.	Kind of Wheel				
T 4	Lignumvitæ	$. 60	.64	.66	.70
T 7	Steel or iron, brass-plated	.68	....	.78	.90
T10	Leather	1.90	....	2.10	.85

Faultless Casters

Full Size Cuts



E-12-6

Packed 6 sets in a box, including Sockets

Steel Horn, with Socket No. 1

Per Set of Four

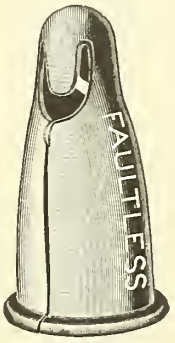
Number		3	4	5	6	7	8
Diameter of wheel, inches		1 1/16	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8
Style No.	Kind of Wheel						
E 2	Lignumvitæ	$ .33	.37	.40	.47	.52	.54
E 5	Steel or iron	.37	.41	.46	.51	...	.58

Brass-Plated Steel Horn, with Socket No. 1

Per Set of Four

Number		3	4	5	6	7	8
Diameter of wheel, inches		1 1/16	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8
Style No.	Kind of Wheel						
E 4	Lignumvitæ	$ .40	.46	.50	.57	.62	.64
E 7	Steel or iron, brass-plated	.48	.54	.58	.65	...	.76
E10	Leather	1.30	...	1.60	1.80	...	2.00
E12	Glass (insulator)	...	...	...	1.40	1.70	

In ordering, give style number and number of wheel, which includes style, size and kind of wheel. Also state whether for 3/4 or 7/8 inch outside diameter tubing. Furnished regularly with No. 1 Socket. Medium Socket furnished at same prices when specially ordered.



Socket No. 1



Medium Socket for Hospital Stands, etc.

Packed 4 sets in a box, including Sockets.

Steel Horn with Socket No. 2*

Per Set of Four

Number		5	6	7	8	9	10	11
Diameter wheel, inches		1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	2	2 1/2
Style No.	Kind of Wheel							
F 2	Lignumvitæ	$ .45	.51	.56	.58	.62	1.15	1.30
F 5	Steel or iron	.49	.55	...	.62	.67		

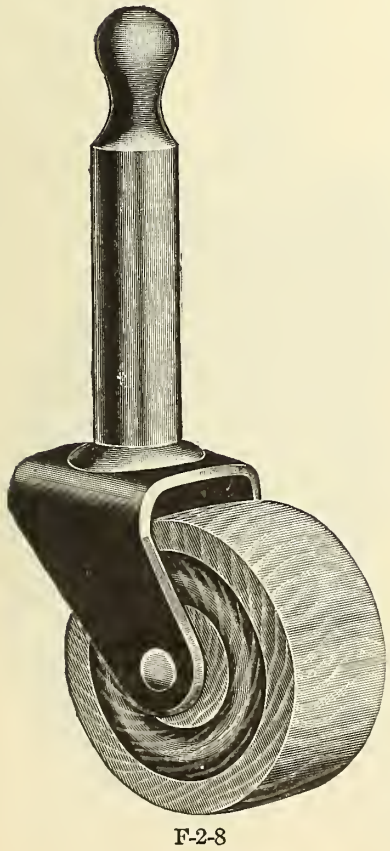
Brass-Plated Steel Horn, with Socket No. 2*

Per Set of Four

Number		5	6	7	8	9	10	11
Diameter wheel, inches		1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	2	2 1/2
Style No.	Kind of Wheel							
F 4	Lignumvitæ	$ .55	.61	.66	.68	.72	1.20	1.50
F 7	Steel or iron, brass-plated	.63	.69	...	.80	.87	1.35	
F10	Leather	1.85	2.05	...	2.25	...	3.15	8.25
F12	Glass (insulator)	...	...	...	...	2.25	2.90	4.10
F15	Brass covered	...	...	...	1.30	...	1.65	



Socket No. 2



F-2-8

Steel Horn, with Socket No. 3*

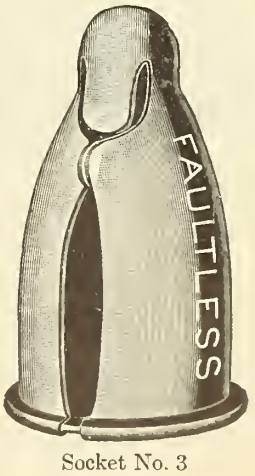
Per Set of Four

Number		7	8	9	10	11
Diameter wheel, inches		1 1/2	1 5/8	1 3/4	2	2 1/2
Style No.	Kind of Wheel					
G 2	Lignumvitæ	$ .60	.62	.64	1.10	1.35
G 5	Steel or iron	....	.66	.69	1.20	

Brass-Plated Steel Horn, with Socket No. 3*

Per Set of Four

Number		7	8	9	10	11
Diameter wheel, inches		1 1/2	1 5/8	1 3/4	2	2 1/2
Style No.	Kind of Wheel					
G 4	Lignumvitæ	$ .70	.72	.76	1.25	1.55
G 7	Steel or iron, brass-plated	....	.84	.91	1.40	
G10	Leather	...	2.40	....	3.30	8.40
G12	Glass (insulator)	....	....	2.40	3.30	4.25
G15	Brass covered	....	1.35	....	1.70	



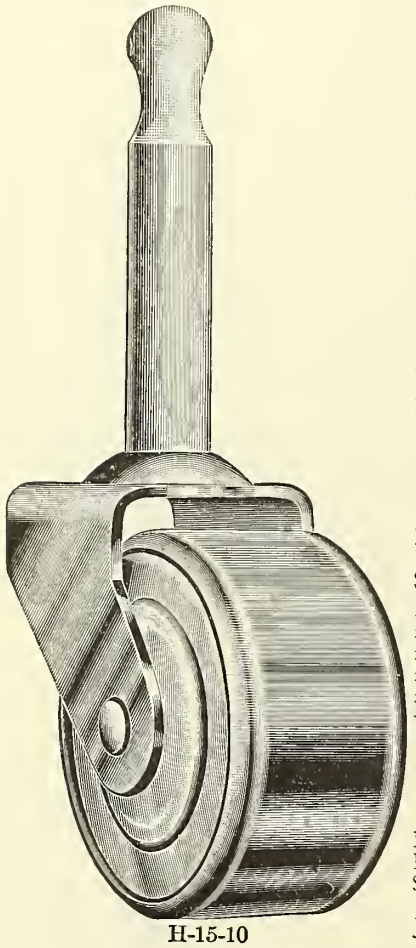
Socket No. 3

* In ordering Socket No. 2, state whether for 1-inch or 1 1/16-inch outside diameter tubing. In ordering Socket No. 3, state whether for 1 1/4-inch or 1 5/16-inch outside diameter tubing.

Faultless Casters

Full Size Cuts

Packed 2 sets in a box including Sockets
In ordering, give style number and number of wheel, which includes style, size and kind of wheel.



H-15-10

Steel Horn, with Socket No. 4

Per Set of Four

Number		8	9	10	11
Diameter of wheel, inches		1⅝	1¾	2	2½
Style No.	Kind of Wheel				
H 2	Lignumvitæ	$.74	.78	1.20	1.45

Brass-Plated Steel Horn, with Socket No. 4

Per Set of Four

Number		8	9	10	11
Diameter of wheel, inches		1⅝	1¾	2	2½
Style No.	Kind of Wheel				
H 4	Lignumvitæ	$.84	.88	1.30	1.65
H 7	Steel or iron, brass-plated	1.10	1.15		
H10	Leather	2.55	....	3.50	8.65
H12	Glass (insulator)	....	....	3.50	4.50
H15	Brass covered	1.35	....	1.75	

Steel Horn, with Socket No. 5

Per Set of Four

Number		9	10	11
Diameter of wheel, inches		1¾	2	2½
Style No.	Kind of Wheel			
J2	Lignumvitæ	$.90	1.30	1.65

Brass-Plated Steel Horn, with Socket No. 5

Per Set of Four

Number		9	10	11
Diameter of wheel, inches		1¾	2	2½
Style No.	Kind of Wheel			
J 4	Lignumvitæ	$1.00	1.40	1.85
J 7	Steel or iron, brass-plated	1.30		
J10	Leather	....	3.65	8.80
J12	Glass (insulator)	....	3.95	5.00
J15	Brass covered	....	1.80	



No. 4 Iron and Brass Bed Socket Fitting 1½inch O. D. Tubing.

Hospital Furniture Caster

Full Size Cuts

An ideal caster for use on all kinds of metal and wood furniture. The steel stem fits Steel Sockets Nos. 20, 2, 3, 4, and 5 (shown above and on preceding pages) with equal firmness and can be applied to all furniture with tubing measuring from 1 to 2 inches outside diameter.

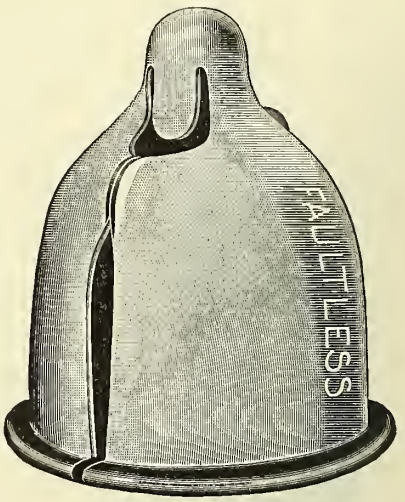
The soft rubber tired wheel moves at will in any direction upon a roller bearing axle, and, in conjunction with Steel Sockets, reduces labor in moving heavy furniture such as metal beds, operating tables, cabinets, etc., to a minimum.

Horn and stem are nickel-plated.

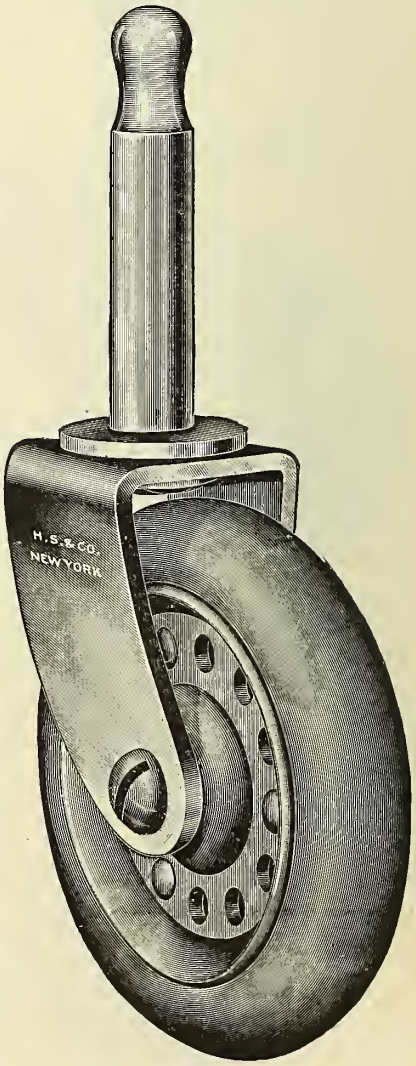
Rubber tires can be replaced by removing axle.

Sockets Nos. 2, 3, 4 and 5 are recommended for all metal furniture; No. 20 for wood furniture.

		Per Set of Four
No. 495	Casters only, without sockets	$3.75
No. 496	For Wood Beds with No. 20 Socket	3.90
	For Metal Beds and Furniture	
No. 497	With No. 2 Socket, 1 and 1 1/16-inch O. D. Tubing	4.00
No. 498	With No. 3 Socket, 1¼ and 1 5/16-inch O. D. Tubing	4.10
No. 499	With No. 4 Socket, 1½-inch O. D. Tubing	4.10
No. 500	With No. 5 Socket, 2-inch O. D. Tubing	4.20



No. 5 Iron and Brass Bed Socket. Fitting 2-inch O. D. Tubing. In ordering state whether for iron or brass bed.

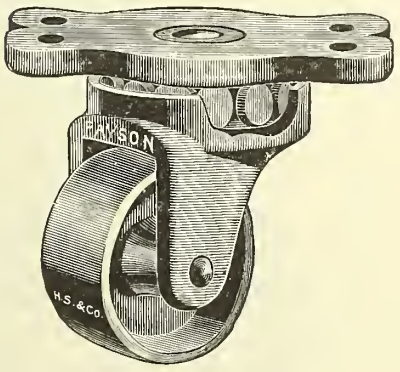


No. 495

Payson's Patent Casters

Full Size Cuts

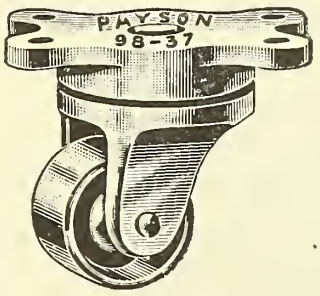
Order by Number Only



Iron Horn, Oblong Plate, $1\frac{3}{16}$ x 2 inches

Roller Bearing, Capacity 250 lbs.

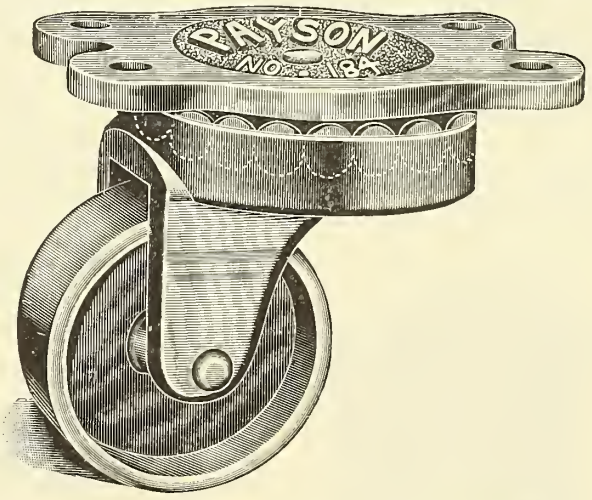
No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
182-37	Iron	$1\frac{1}{8}$	$1\frac{3}{4}$	$ .60
182-38	Lignumvitæ	$1\frac{1}{8}$	$1\frac{3}{4}$	.65
182-39	Brass	$1\frac{1}{8}$	$1\frac{3}{4}$	1.80



Iron Horn, Oblong Plate $1\frac{1}{16}$ x $1\frac{5}{8}$ inches

Ball Bearing, Capacity 50 lbs.

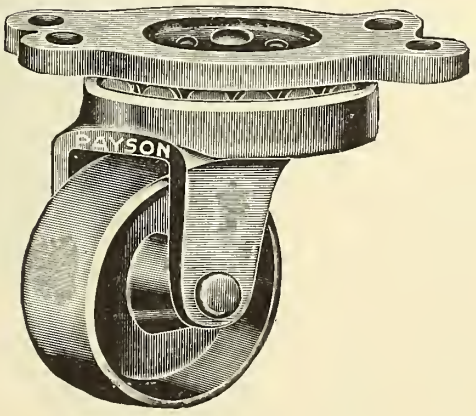
No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
98-37	Iron	$\frac{3}{4}$	$1\frac{3}{8}$	$ .80
98-38	Lignumvitæ	$\frac{3}{4}$	$1\frac{3}{8}$	.85
98-39	Brass	$\frac{3}{4}$	$1\frac{3}{8}$	2.25



Iron Horn, Oblong Plate, $1\frac{7}{8}$ x $2\frac{3}{4}$ inches

Roller Bearing, Capacity 450 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
184-37	Iron	$1\frac{5}{8}$	$2\frac{3}{8}$	$ .95
184-38	Lignumvitæ	$1\frac{5}{8}$	$2\frac{3}{8}$	1.00
184-39	Brass	$1\frac{5}{8}$	$2\frac{3}{8}$	3.40



Iron Horn, Oblong Plate, $1\frac{5}{8}$ x $2\frac{3}{8}$ inches

Roller Bearing, Capacity 350 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
183-37	Iron	$1\frac{3}{8}$	2	$ .75
183-38	Lignumvitæ	$1\frac{3}{8}$	2	.80
183-39	Brass	$1\frac{3}{8}$	2	2.75

Iron Horn, Oblong Plate, $2\frac{1}{8}$ x $3\frac{1}{8}$ inches

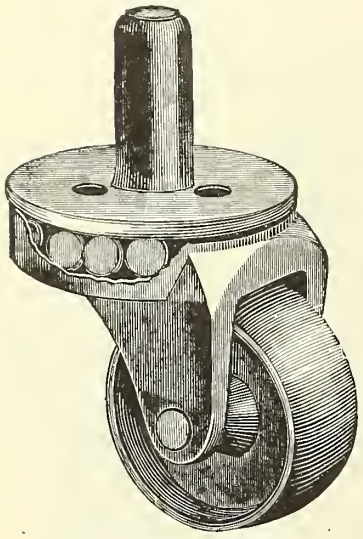
Roller Bearing, Capacity 600 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
186-37	Iron	$2\frac{1}{8}$	$2\frac{3}{4}$	$1.25
186-38	Lignumvitæ	$2\frac{1}{8}$	$2\frac{3}{4}$	1.35
186-39	Brass	$2\frac{1}{8}$	$2\frac{3}{4}$	5.00

Payson's Patent Casters

Full Size Cuts

Order by Number Only

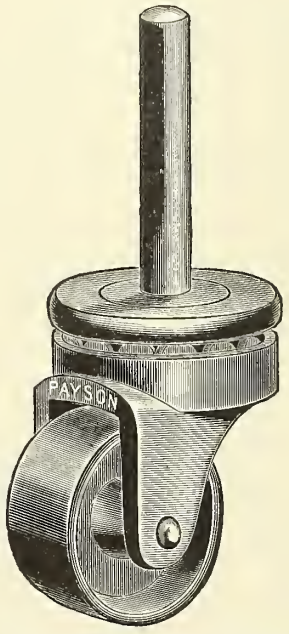


Common Stem

Iron Horn and Plate. Stem $\frac{7}{16}$ x $\frac{15}{16}$ in.

Roller-Bearing, Capacity 350 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
183-33	Iron.....	1⅜	2	$.75
183-34	Lignumvitæ.	1⅜	2	.80

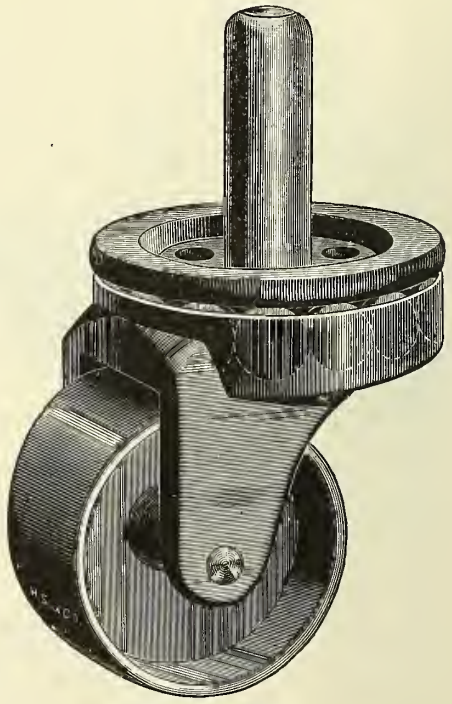


Philadelphia Stem

Iron Horn and Plate. Stem $\frac{9}{32}$x1½ in.

Roller-Bearing, Capacity 250 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
182-45	Iron.....	1⅛	1¾	$.60
182-46	Lignumvitæ.	1⅛	1¾	.65
182-47	Brass.....	1⅛	1¾	1.80



Bed Stem

Iron Horn and Plate. Stem ½x1⅛ in.

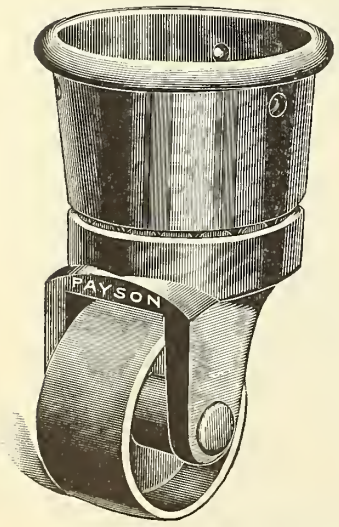
Roller-Bearing, Capacity 450 lbs.

No.	Kind of Wheel	Diam. of Wheel, Inches	Height, Inches	Per Set of Four
184-29	Iron.....	1⅝	2⅜	$.95
184-30	Lignumvitæ.	1⅝	2⅜	1.00

Iron Horn and Plate. Stem $\frac{9}{16}$x1½ in.

Roller-Bearing, Capacity 600 lbs.

186-29	Iron.....	2⅛	2¾	$1.25
186-30	Lignumvitæ.	2⅛	2¾	1.35



Polished Bronze Horn and Plate
Stem ¼ x 1⅛ in.

Roller-Bearing, Capacity 150 lbs.

181-045	Brass.....	1	1½	$2.75

Polished Bronze Horn and Plate
Stem $\frac{9}{32}$ x 1½ in.

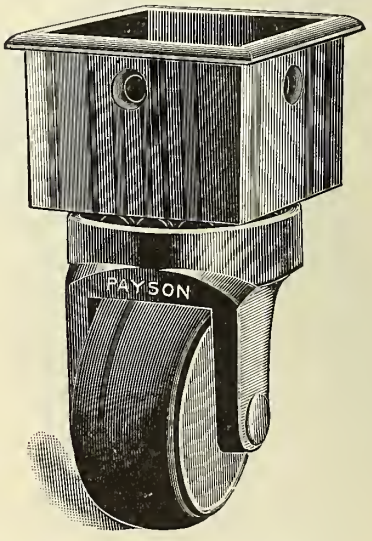
Roller-Bearing, Capacity 250 lbs.

182-045	Brass.....	1⅛	1¾	$3.40

Polished Bronze Horn and Socket, Square

Roller-Bearing, Capacity 250 lbs.

No.	Kind of Wheel	Outside Diameter of Socket	Depth of Socket	Diameter of Wheel	Per Set of 4
182-049	Bronze.....	1 $\frac{5}{16}$ in.	$\frac{27}{32}$ in.	1⅛ in.	$4.30
182-0491	Leather.....	1 $\frac{5}{16}$ in.	$\frac{27}{32}$ in.	1⅛ in.	7.50



Polished Bronze Horn and Socket, Round

Roller-Bearing, Capacity 250 lbs.

No.	Kind of Wheel	Outside Diameter of Socket	Depth of Socket	Diameter of Wheel	Per Set of 4
182-048	Bronze.....	1 $\frac{7}{16}$ in.	⅞ in.	1⅛ in.	$4.20
182-0481	Leather.....	1 $\frac{7}{16}$ in.	⅞ in.	1⅛ in.	7.00

Polished Bronze Horn and Socket, Square

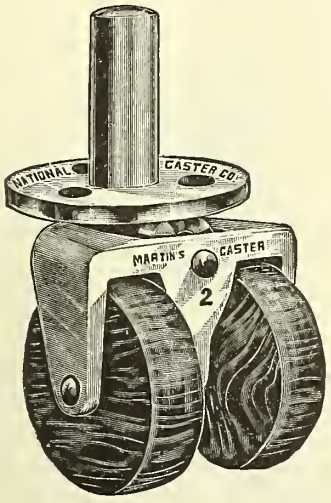
Roller Bearing, Capacity 350 lbs.

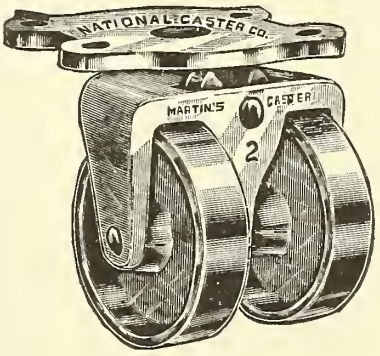
No.	Kind of Wheel	Outside Diameter of Socket	Depth of Socket	Diameter of Wheel	Per Set of 4
183-049	Bronze.....	1 $\frac{15}{16}$ in.	1 $\frac{7}{32}$ in.	1⅜ in.	$ 7.60
183-0491	Leather.....	1 $\frac{15}{16}$ in.	1 $\frac{7}{32}$ in.	1⅜ in.	10.60

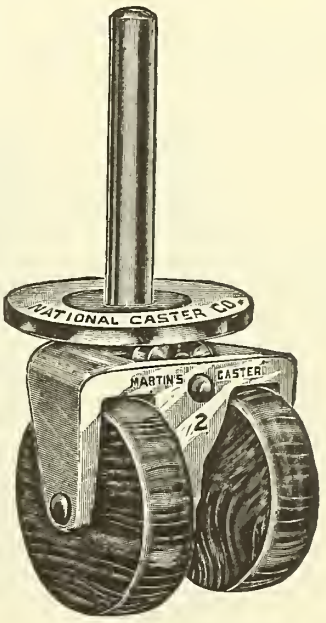
SEE DISCOUNT SHEET

Martin's Patent Casters

Full Size Cuts







Short Stem

Iron Horn, Plate and Stem

No.	Kind of Wheel	Diameter Wh. Ins.	Diameter Pl. Ins.	Size of Stem, Ins.	Height Ins.	Per Set of Four
23	Iron	1	1¼	⅜x1	1½	$ .80
29	Lignumvitæ...	1	1¼	⅜x1	1½	.85
33	Iron	1⅜	1⅝	⅞x1⅛	1⅞	.95
39	Lignumvitæ...	1⅜	1⅝	⅞x1⅛	1⅞	1.00
43	Iron	1⅝	1⅞	½x1¼	2¼	1.10
49	Lignumvitæ...	1⅝	1⅞	½x1¼	2¼	1.15

Carrying capacity, Nos. 23 and 29, 250 lbs.; Nos. 33 and 39, 500 lbs.; Nos. 43 and 49, 750 lbs.

Oblong Plate

Iron Horn and Plate

No.	Kind of Wheel	Diam. of Wheel, Ins.	Size of Plate, Ins.	Height Ins.	Capacity	Per Set of Four
22	Iron	1	1⅜x1⅞	1½	250 lb.	$ .80
28	Lignumvitæ...	1	1⅜x1⅞	1½	250 lb.	.85
32	Iron	1⅜	1⅝x2¼	1⅞	500 lb.	.95
38	Lignumvitæ...	1⅜	1⅝x2¼	1⅞	500 lb.	1.00
42	Iron	1⅝	1⅞x2¾	2¼	750 lb.	1.10
48	Lignumvitæ...	1⅝	1⅞x2¾	2¼	750 lb.	1.15

Philadelphia Stem

Iron Horn and Plate. Wrought Stem

No.	Kind of Wheel	Diameter Wh. Ins.	Diameter Pl. Ins.	Size of Stem, Ins.	Height Ins.	Per Set of Four
203	Iron	1	1¼	¼x1⅝	1½	$ .80
209	Lignumvitæ...	1	1¼	¼x1⅝	1½	.85
303	Iron	1⅜	1⅝	⅜x1⅝	1⅞	.95
309	Lignumvitæ...	1⅜	1⅝	⅜x1⅝	1⅞	1.00
403	Iron	1⅝	1⅞	⅜x1⅝	2¼	1.10
409	Lignumvitæ...	1⅝	1⅞	⅜x1⅝	2¼	1.15

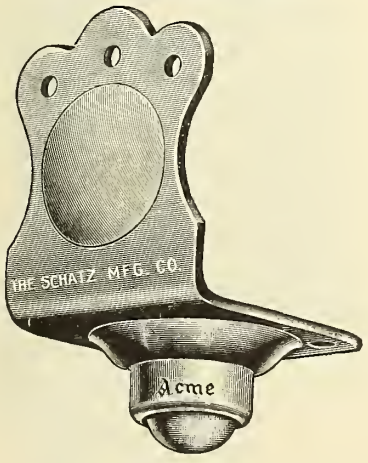
Carrying capacity, Nos. 203 and 209, 250 lbs.; Nos. 303 and 309, 500 lbs.; Nos. 403 and 409, 750 lbs.

For larger sizes of Martin Casters in above styles see truck casters, pages 850 and 851

Acme Ball-Bearing Casters

The Acme Ball-Bearing Caster is made in one piece from sheet steel, copper bronzed. The weight imposed upon it falls directly over the center of gravity. There being no lateral strain upon it, there is no possibility of its breaking or getting out of order. As shown by the illustrations, the surface ball revolves upon a number of small balls that are automatically interchanged upon a steel disc, and moves in any direction with the slightest pressure.

Three-Quarter Size Cut

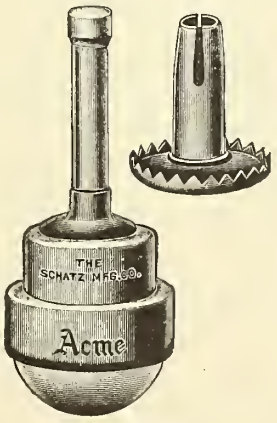


Steel ball-bearing trunk caster and knee brace combined. Especially designed for metal bottom and wardrobe trunks where the caster can be securely fastened without a slat. Five rivets are all that is necessary to secure caster to trunk.

No. 730 ¾ inch diameter ball, brassed.

Per Set of Four..... $.75

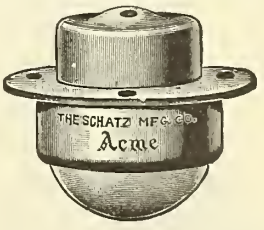
Full Size Cuts



No. 658

Steel ball-bearing brass-plated Grip Neck furniture caster with spring socket and toothed track plate.

Diameter of Ball	Per Set of Four
¾ in.	$.70
1 in.	.75
1⅛ in.	.80
1¼ in.	.85





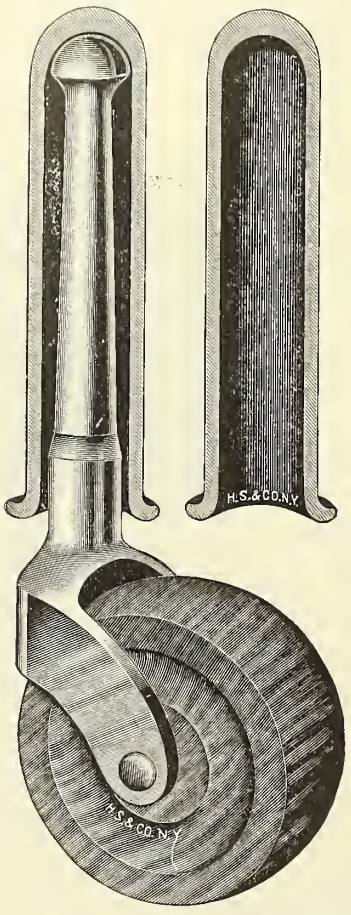
No. 656 Round Plate

Steel ball-bearing furniture caster.

Diam. ball ins.....	¾	1	1⅛	1¼
Per Set of Four....	$ 65	.70	.75	.80

Common Bed Casters

Full Size Cut

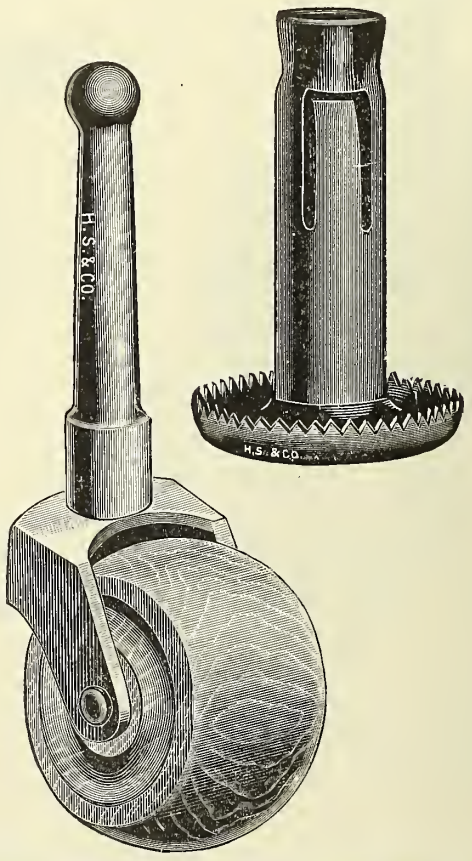


No. 270 Coppered Iron Horn, with Cast Iron Socket
2 In. Diameter Lignumvitæ Wheel

Per Set of Four ..... $ .32

Fox Patent Bed Casters

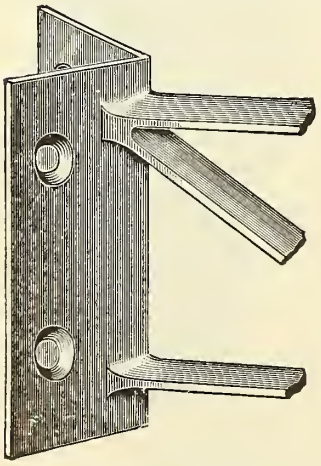
Full Size Cuts



Coppered Iron Horn, with Wrought Steel Socket
Lignumvitæ Wheel.

No. 271 1⅝-inch diameter wheel ..... Per Set of Four $ .44
No. 272 1⅞-inch diameter wheel ..... " " " " .48

Bracket Bed Casters



View of Outside Corner Bracket

In Ordering, state whether straight or corner brackets are desired.

Coppered Iron Horn and Brackets

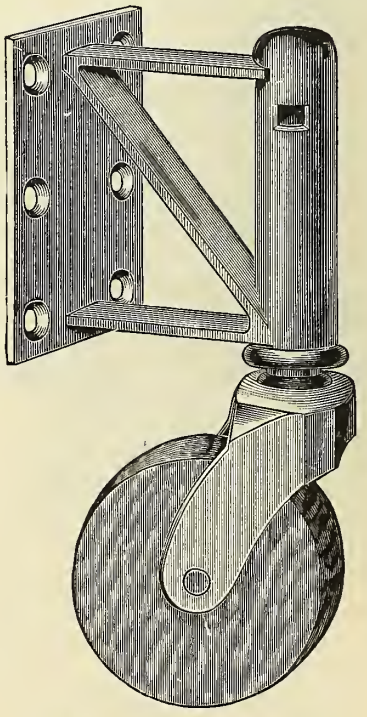
Per Set of Four

Diameter of wheel, inches.....	2	2½	3	4
Kind of Wheel				
No. 280 Iron.....	$ .65	.80	1.00	1.60
No. 281 Lignumvitæ.....	.70	.90	1.15	1.75

Brass Plated Horn and Coppered Iron Brackets

Number 282
Per Set of Four

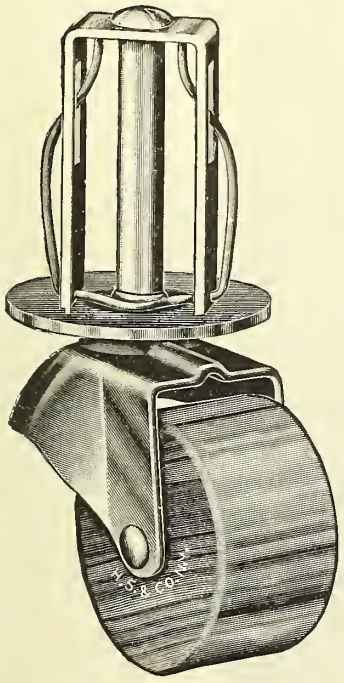
Diameter of wheel, inches.....	2	2½	3	4
Leather wheel.....	$5.65	6.25	7.50	8.15



Half Size Cut 3 Inch with Straight Bracket

Metal Bed Caster with Spring Retainer

Full Size Cuts



In ordering state number and size.

Bright Steel Horn

Per Set of Four

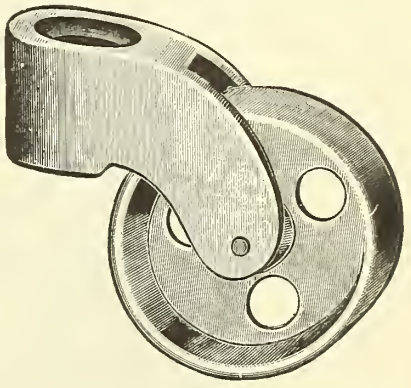
Size	30	40	50	60	70	80	90
Diameter of wheel, inches	1 1/32	1 3/16	1 5/16	1 3/8	1 1/2	1 1/2	1 7/8
For outside diameter of tubing, inches	3/4 and 7/8	3/4 and 7/8	1 and 1 1/16	1 and 1 1/16	1 1/4 and 1 5/16	1 1/2 and 1 5/16	1 1/2 and 2
Kind of Wheel							
No. 285 Maple	$ .21	.22	.25	.28	.30		
No. 286 Lignumvitæ	.23	.26	.30	.34	.39	.56	.67
No. 287 Iron	.25	.28	.33	.37	.42	.61	.72

Brass-plated Steel Horn

Per Set of Four

Size	30	40	50	60	70	80	90
Diameter of wheel, inches	1 1/32	1 3/16	1 5/16	1 3/8	1 1/2	1 1/2	1 7/8
For outside diameter of tubing, inches	3/4 and 7/8	3/4 and 7/8	3/4 and 7/8	1 and 1 1/16	1 1/4 and 1 5/16	1 1/2 and 2	1 1/2 and 2
Kind of Wheel							
No. 288 Lignumvitæ	$ .35	.37	.43	.49	.60	.82	1.04
No. 289 Iron	.42	.44	.53	.65	.77	.94	1.23

Metal Furniture Caster



Grey Iron Horn and Wheel

No. 290

Diameter of wheel, inches	1 1/4	1 3/8	1 1/2
Per Set of four	$ .12	.13	.17

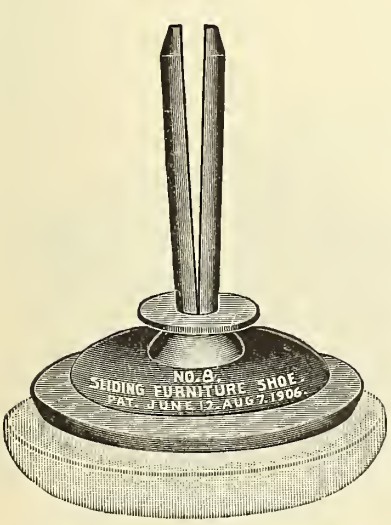
Coppered Iron Horn and Lignumvitæ Wheel

No. 291

Diameter of wheel, inches	1 3/8	1 1/2
Per Set of four	$ .25	.30

The Onward Sliding Furniture Shoe

Full Size Cuts



For Wood Furniture

The glass base is designed especially to withstand rough usage and, in conjunction with ball and socket joint at base of steel stem, allows shoe to adjust itself properly to uneven surfaces; hence the shoe slides where casters will not roll. Will not injure the surface upon which it rests. Varnished floors or new linoleum must be coated with oil or floor wax where these shoes are used.

No. 8 recommended for morris chairs, couches, etc; Nos. 10 and 12 for heavier furniture.



For Metal Furniture

Glass Base, Short Steel Stem

Per Set of Four

Size	5	6	8	10	12
Diameter of base, inches	1 1/4	1 1/2	2	2 1/2	3
Style of Housing					
No. 300 Palm Oil Tin	$...	....	.60	.90	1.40
No. 301 Nickel-plated	.50	.55	.70	1.00	1.50
No. 302 Solid Brass	.60	.65	.80	1.15	1.65

Glass Base, Wishbone Bushing. Long Steel Stem

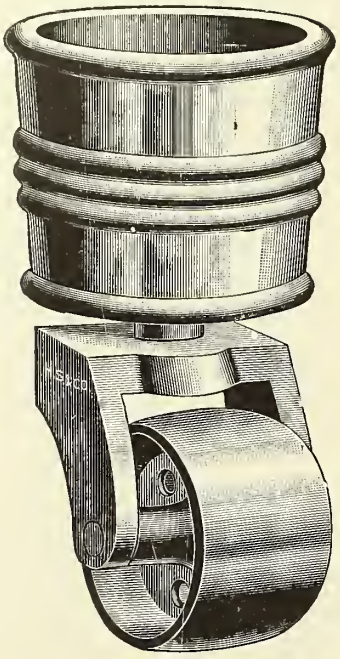
Per Set of Four

Size	80	100	120
Diameter of base, inches	2	2 1/2	3
Style of Housing			
No. 304 Palm Oil Tin	$ .70	1.05	1.60
No. 305 Nickel-plated	.80	1.15	1.70
No. 306 Solid Brass	.90	1.25	1.85

Grand Piano Casters

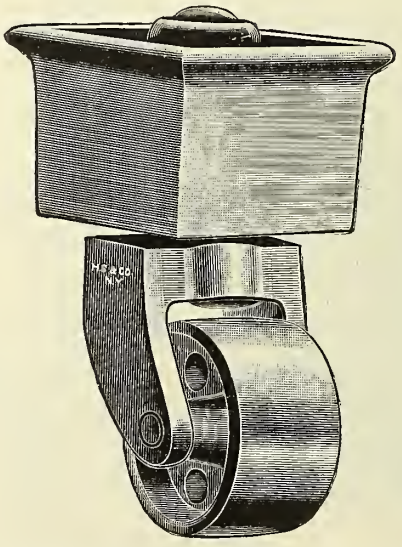
(Two-Thirds Size Cuts)

These casters are primarily designed for pianos; they can also be used to advantage on many kinds of heavy furniture.



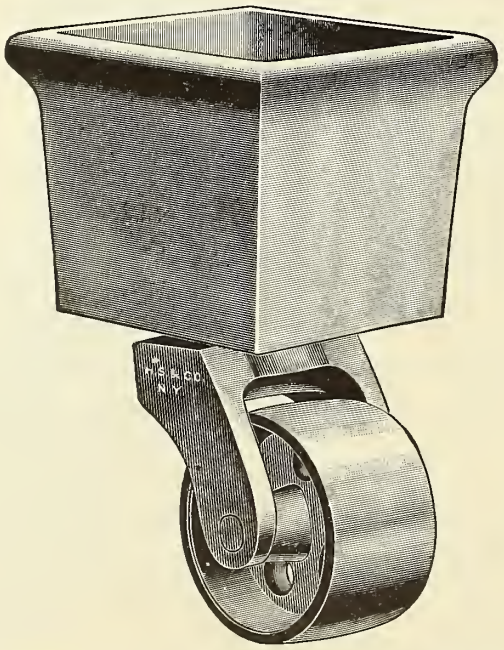
Cast brass socket, horn and wheel, all highly polished. Has loose socket 2¼ inches inside diameter at top, tapering to $2\frac{1}{16}$ inches inside diameter at bottom. Round plate or flange of caster is beveled to fit socket.

No. 1, Casters complete with sockets,	Per Set of Three	$4.90
Casters only	" " " "	2.90
Sockets only	" " " "	2.30



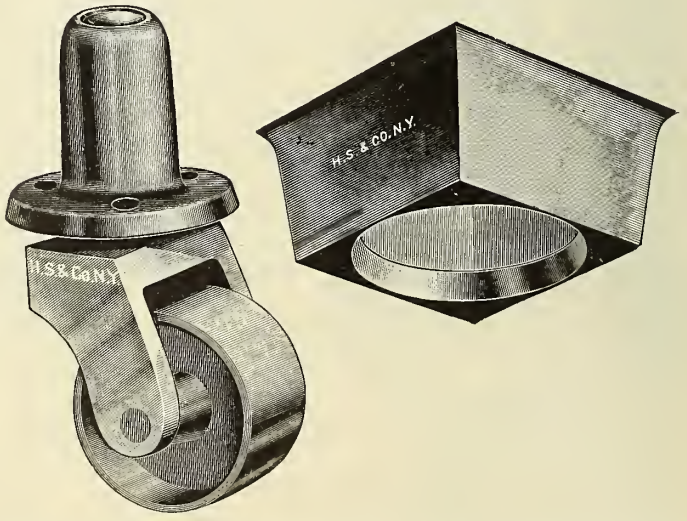
Cast brass socket, horn and wheel, all highly polished. Has loose socket 1¾ inches inside diameter at top, tapering to 1⅝ inches inside diameter at bottom. Square plate or flange is beveled to fit square socket.

No. 15, Caster complete with sockets,	Per Set of Three	$4.50
Casters only	" " " "	2.90
Sockets only	" " " "	1.70



Cast brass socket, horn and wheel, all highly polished. Has loose socket 2⅛ inches inside diameter at top, tapering to 1⅞ inches at bottom. Square plate or flange of caster is beveled to fit socket.

No. 9, Casters complete with sockets,	Per Set of Three	$5.50
Casters only	" " " "	2.90
Sockets only	" " " "	2.90

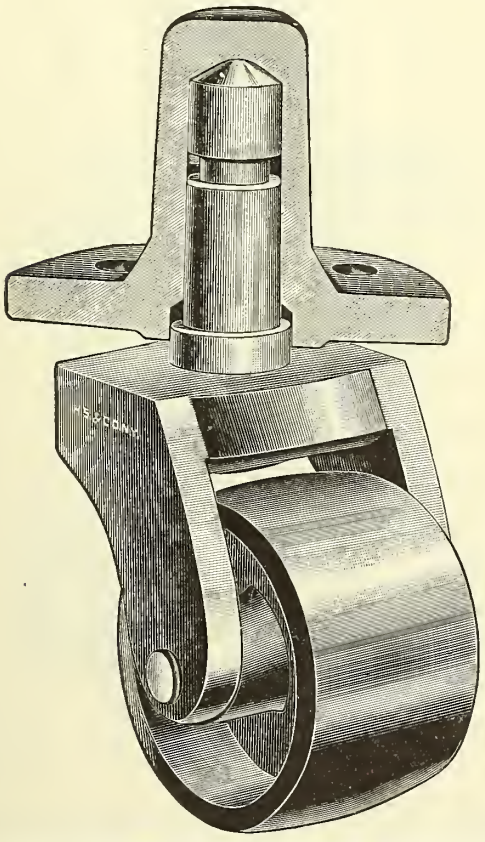


Cast brass socket, horn and wheel, all highly polished. Has loose socket 2 inches inside top diameter, tapering to $1\frac{13}{16}$ inches at bottom. Round plate or flange of caster is beveled to fit socket, as shown in illustration.

No. 10, Casters complete with sockets,	Per Set of Three	$4.60
Casters only	" " " "	2.90
Sockets only	" " " "	1.90

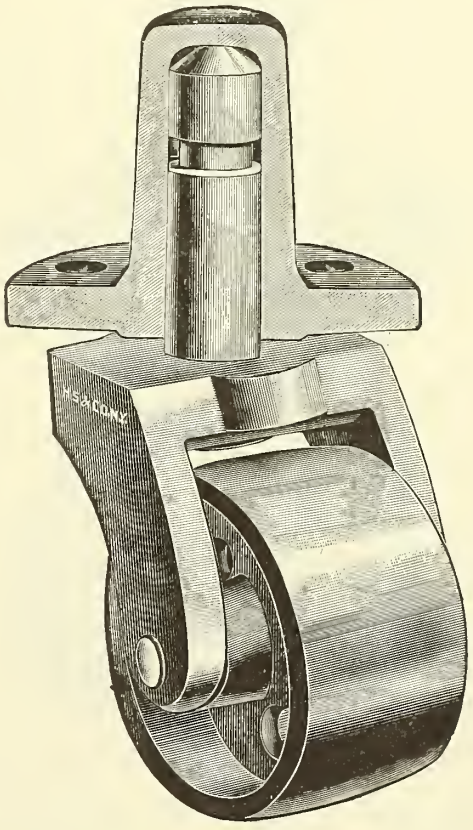
Piano Casters

Full Size Cuts



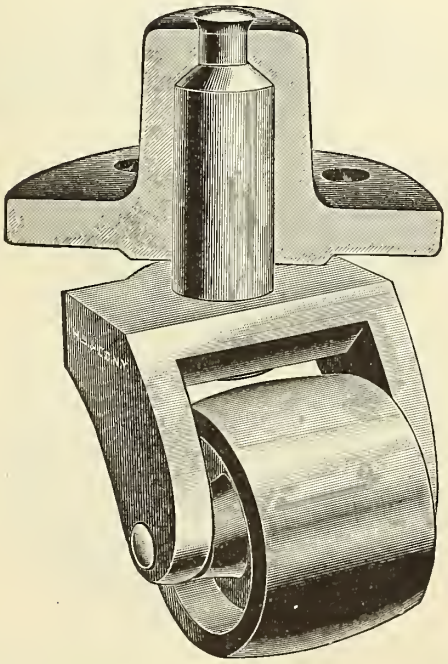
No. 20—Wrought Steel Horn, Cast Iron Plate and Wheel, Wheel Polished on Face

Per Set of Four.....$.70



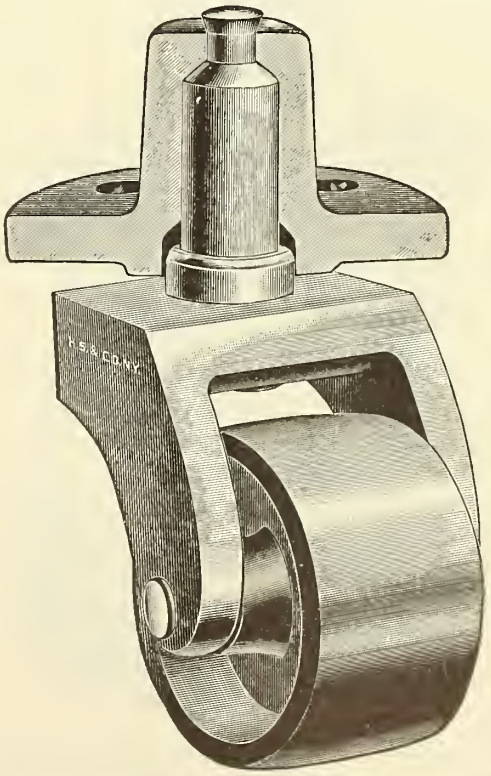
No. 1X—All Cast Iron, Wheel Polished on Face

Per Set of Four.....$.58



No. 3½—All Cast Iron, Wheel Polished on Face

Per Set of Four.....$.54

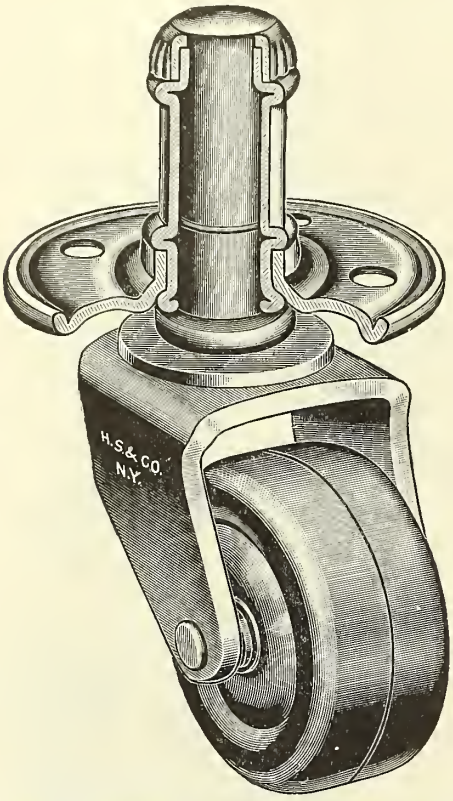


No. 4X—All Cast Iron, Wheel Polished on Face

Per Set of Four.....$.62

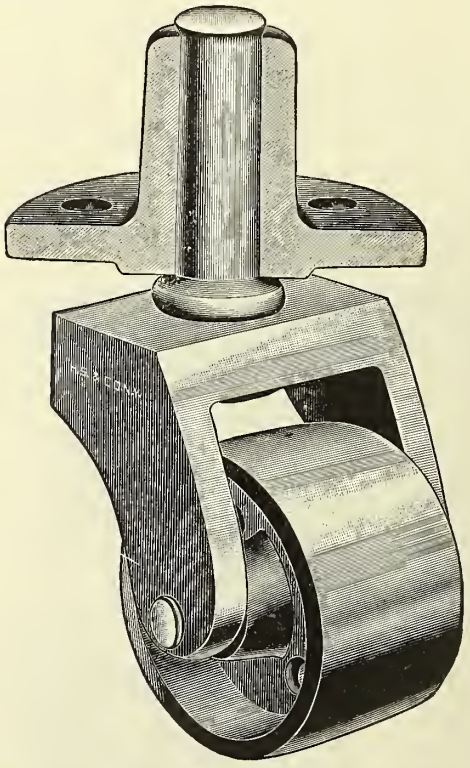
Piano Casters

Full Size Cuts



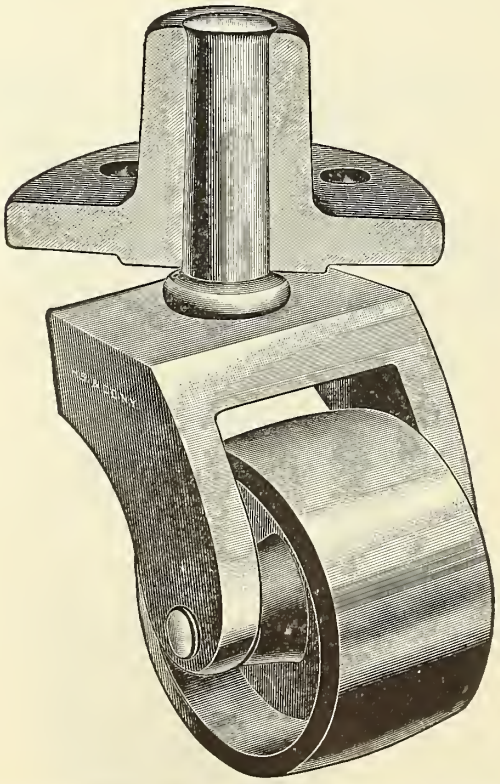
No. 61½—All Wrought Steel, Reinforced Hollow Steel Wheel

No. 61½	Plain Steel	Per Set of Four	$ .50
No. 61½	Brass Plated	" " " "	.60
No. 61½	Brass Plated and Buffed	" " " "	.80



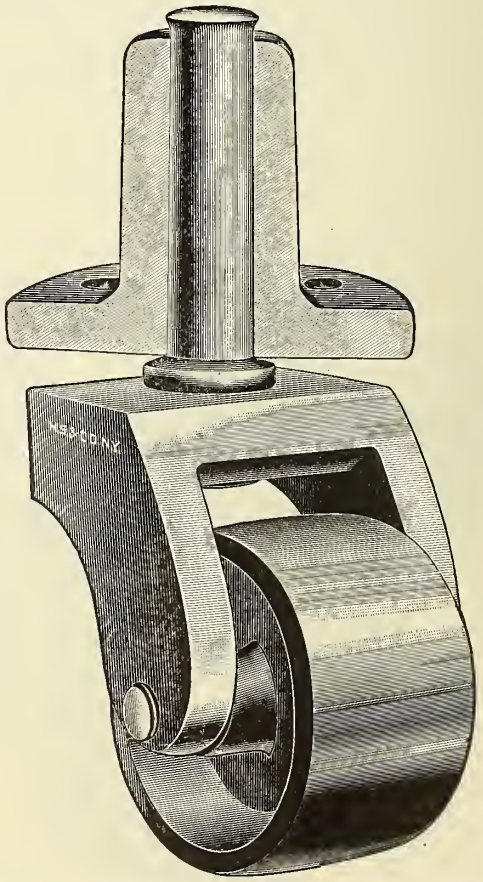
No. 64—Steel Horn, Cast Iron Plate and Wheel Wheel Ground on Face

Per Set of Four ..... $.48



No. 104—Steel Horn, Cast Iron Plate and Wheel, Wheel Ground on Face

Per Set of Four ..... $.52



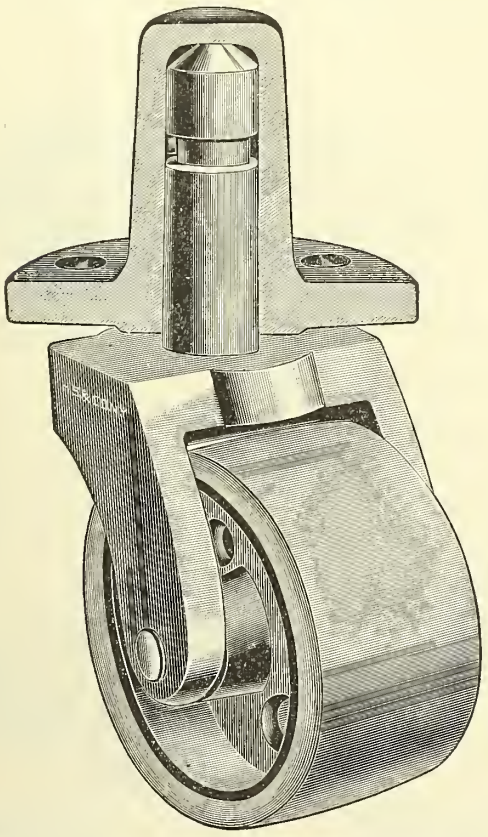
No. 101—Wrought Steel Horn, Cast Iron Plate and Wheel, Wheel Ground on Face

Per Set of Four ..... $.56

SEE DISCOUNT SHEET

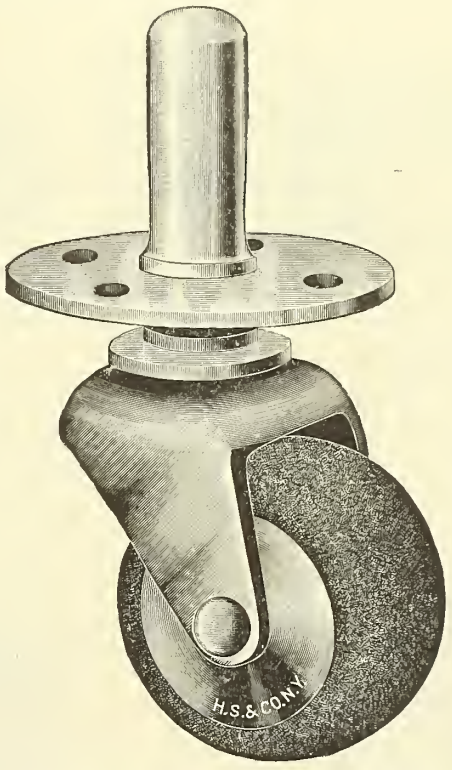
Piano Casters

Full Size Cuts



No. 1 XR—All Cast Iron, Vulcanized Rubber Covered Wheel

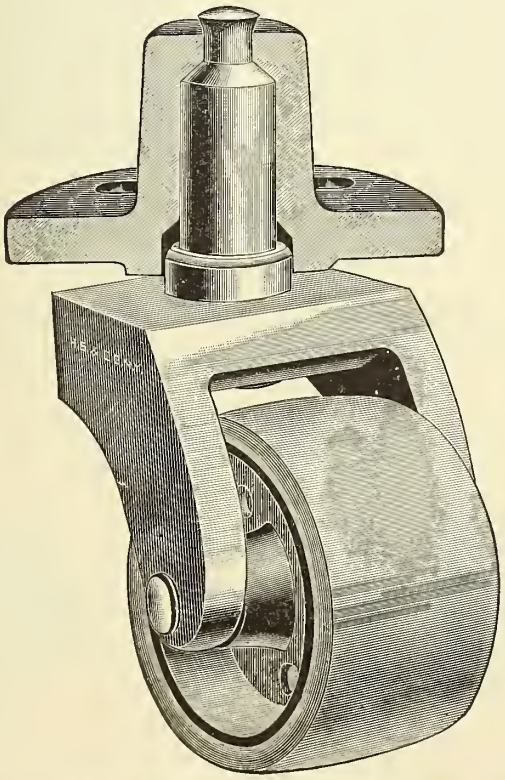
Per Set of Four..... $4.00



No. 5—Brass Plated Steel Horn and Plate, Feltoid Wheel

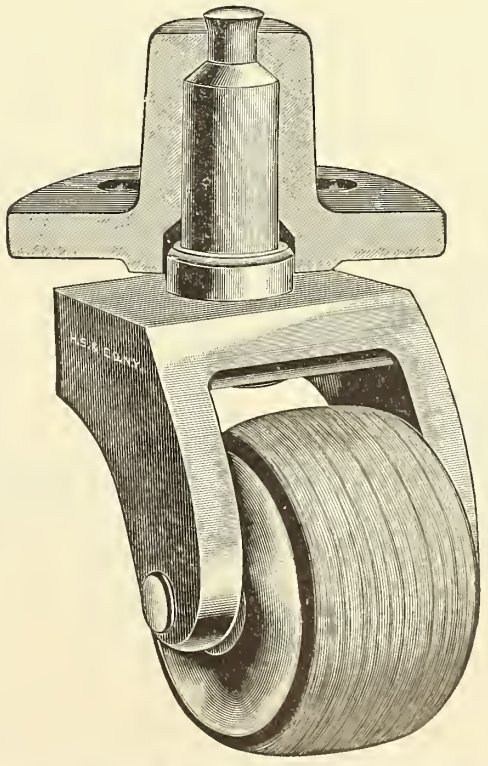
Wood bushings furnished where old holes are too large for this stem.

Per Set of Four..... $3.50



No. 4 XR—All Cast Iron, Vulcanized Rubber Covered Wheel

Per Set of Four..... $4.00

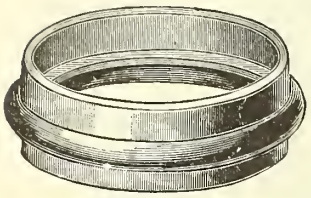


No. 4 XL—Wrought Steel Horn, Brass Plated, Cast Iron Plate, Solid Leather Wheel

Per Set of Four..... $6.00

Cast Brass Caster Rings

Full Size Cuts

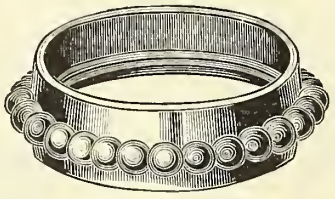


No. 6E.

No. 6E. Round Plain, English Pattern
No. 11. Round Plain, Philadelphia Pattern

Per Set of Four, Either Style

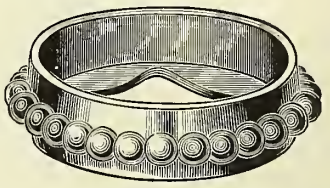
Inside diam. ins.	⅞	1	1⅛	1¼	1⅜	1½
	$.16	.18	.22	.26	.30	.34



No. 3. Round Beaded, English Pattern

Per Set of Four

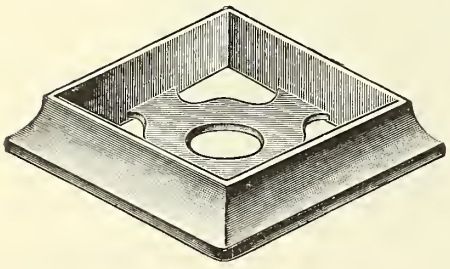
Inside diam. ins.....	⅞	1	1⅛	1¼	1⅜	1½
	$.15	.17	.20	.24	.31	.40



No. 4. Round Beaded, Philadelphia Pattern

Per Set of Four

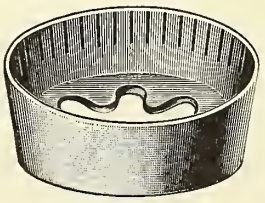
Inside diam. ins.....	⅞	1	1⅛	1¼	1⅜	1½	1¾
	$.15	.17	.20	.24	.31	.40	.56



No. 14. Square Plain, Philadelphia Pattern

Per Set of Four

Inside diam. ins.....	⅞	1	1⅛	1¼	1⅜	1½	1¾
	$.26	.31	.38	.44	.48	.55	.75

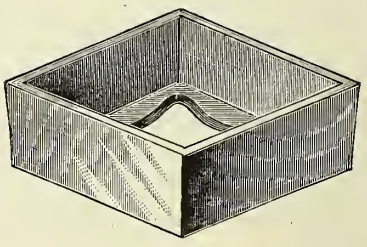


No. 10P

No. 10P. Round Plain, Philadelphia Pattern
No. 9E. Round Plain, English Pattern

Per Set of Four, Either Style

Inside diam. ins.	⅞	1	1⅛	1¼	1⅜
	$.20	.24	.28	.32	.36



No. 7. Square Plain, Philadelphia Pattern

Per Set of Four

Inside diam. ins.	⅞	1	1⅛	1¼	1⅜	1½	1¾
	$.20	.24	.26	.28	.32	.36	.56

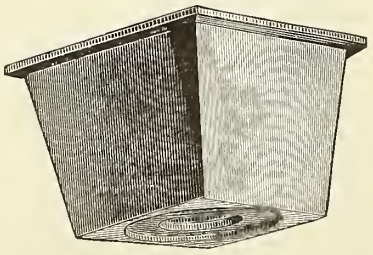
In Ordering, specify number and inside diameter of ring desired.

Cast Brass Sockets

Old Brass Finish

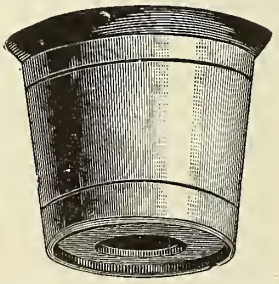
Full Size Cuts

These Sockets are for use with Philadelphia Casters, in the same manner as the Round and Square Rings, the object being to supply a cheap deep Socket Caster. These Sockets, both Round and Square, are perfectly uniform in size.
Square Sockets should be used with a larger Caster than round, making a better proportioned and much more durable Caster.



No. 31—Square Deep

Inside diameter of Socket, inches.....	⅞	1	1⅛	1¼	1⅜	1½
Per Set of Four.....	$.44	.48	.52	.60	.76	.96



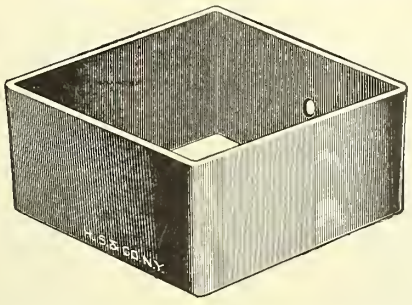
No. 30—Round Deep

Inside diameter of socket, inches.....	⅞	1	1⅛	1¼	1⅜	1½
Per Set of Four.....	$.28	.32	.36	.40	.50	.64

Brass Leg Sockets

Full Size Cut

All sockets are measured inside at top



No. 50 Wrought Brass, Old Brass Finish

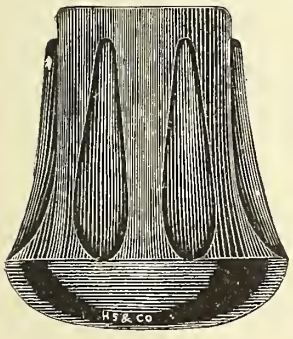
Inside top diameter, inches	1⅛	1¼	1⅜	1½	1¾	1½	1¾
Height, inches	¾	¾	¾	¾	¾	1⅜	1⅜
Per Dozen Sets of Four	$2.60	3.50	3.50	3.50	3.85	6.40	6.70

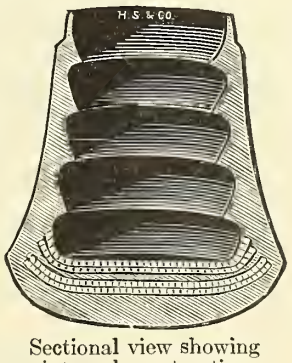
No. 32 Cast Brass, Old Brass Finish

Inside top diameter, inches	1⅜	1½	1¾	2
Height, inches	1	1⅜	1¾	2
Per Set of Four	$ .65	.90	1.20	1.50

Rubber Sockets

Full Size Cuts





Sectional view showing internal construction

Inside corrugated end with canvas bottoms; outside ribbed.

Numbers	15	16	17	18	19	20	21	22	23
Inside diam. inches	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½
Per Doz	$.75	.80	.95	1.10	1.20	1.40	1.60	2.50	3.00

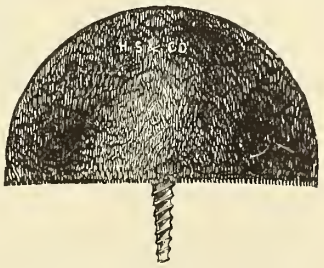
Nos. 15 and 16 used for cane or crutch tips; Nos. 22 and 23 for table socket tips.

Furniture Fenders

Full Size Cuts



No. 1



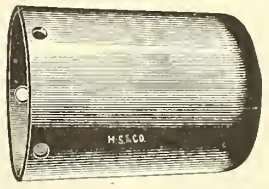
No. 2

For backs of couches, chairs, buffets, etc. With plush cover.

No. 1 Green or Crimson, Per gross $12.00
No. 2 Crimson, Per gross 13.65

Chair Ferrules

Full Size Cut

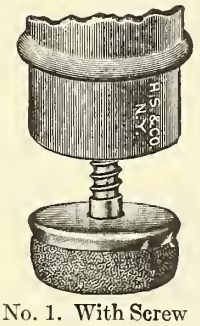


With or without pin-holes.
In Ordering, state which is wanted.

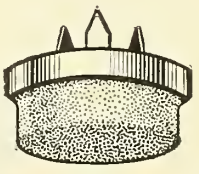
No.		Diameter, Inches	Per Gross with Pin Holes	Per Gross without Pin Holes
501	Wrought brass	¾	$2.50	$2.60
502	Wrought brass	⅞	2.60	2.70
503	Wrought brass	1	3.10	3.30

Chair Tips

Full Size Cuts



No. 1. With Screw

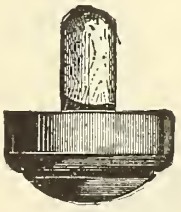


No. 6. With Prongs

Feltoid

For chair and furniture legs where casters are not practical the Feltoid Tip gives perfect satisfaction. Suitable for the smallest chair leg, having a neat finished appearance; extremely durable. Will not wear loose, nor injure the surface of polished floors.

No. 1 with screw, Per Set of Four ..... $.20
No. 6 with prongs, Per Set of Four ..... .20

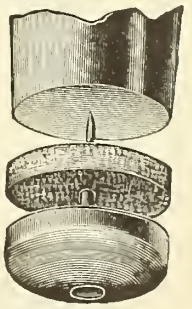


No. 100

Wood Peg

Solid rubber tip fitted firmly. Hard wood peg.

No. 100, Per gross $2.70



No. 140

Leather

Made of selected sole leather. The piece of felt used on this tip gives elasticity and smoothness without injuring the surface of any floor. A screw can be used instead of nail in attaching tip if desired.

No. 140, per gross $4.50

Chair Slides

H. O.



No. 4 No. 3 No. 2



No. 1 No. 0

Made of hardened, highly-polished nickel-plated steel. Glide easily, silently and smoothly over carpets and floors. Can be attached in a few seconds; requires neither screws nor nails. Can be fitted to all light furniture such as chairs, tables, etc., by a slight tap of hammer and to heavy furniture by simply placing one under each corner—they adjust themselves to all kinds of furniture.

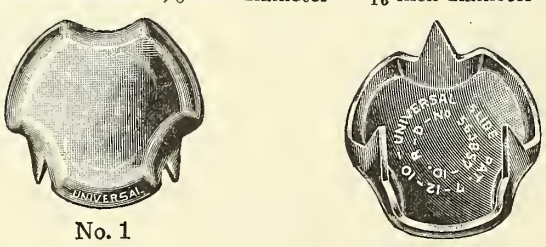
Number	0	1	2	3	4
Diameter, inches	1⅛	⅞	¾	⅝	½
Per gross sets of 4	$15.00	7.20	7.20	7.20	7.20
Per 1000 sets of 4	....	35.00	35.00	35.00	35.00

Universal



No. 4 No. 3 No. 2

½ inch diameter ⅝ inch diameter $\frac{13}{16}$ inch diameter



No. 1 Bottom view

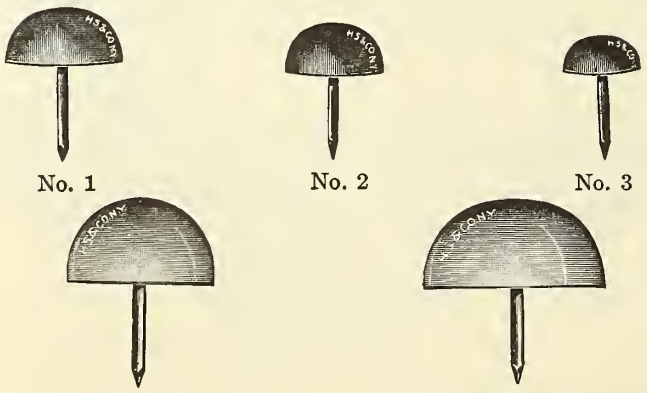
1 inch diameter

These slides can be attached to the most fragile piece of furniture—the unique position of the prongs reducing to a minimum the possibility of splitting the piece or causing an ugly projection.

Per 1000 sets of any size $30.00

Rubber Head Nails

Full Size Cuts



No. 1 No. 2 No. 3

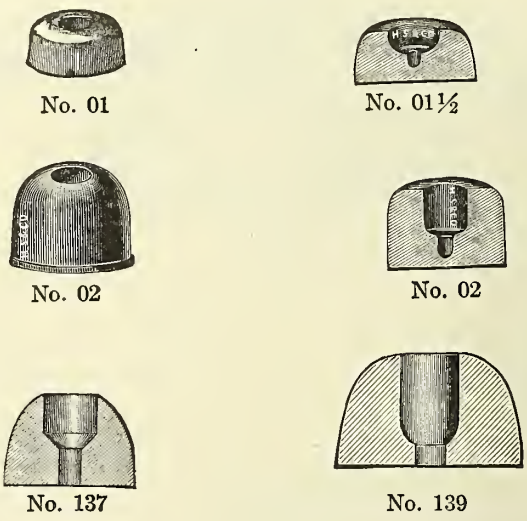
No. 0 No. 00

Large brass-headed nails only are used in the manufacture of these rubber-head nails.

Number	1	2	3	0	00
Per Gross	$ .80	.64	.46	1.20	1.40

Rubber Tips

Full Size Cuts



No. 01 No. 01½

No. 02 No. 02

No. 137 No. 139

Number	01	01½	02	137	139
Per Gross	$1.00	1.20	1.50	2.40	3.50

Rubber Tips

With Slotted Screw and Brass Washer

Full Size Cuts



No. 231 No. 232



Cut shows how the screw seats itself into the washer when the tip is applied.



No. 233 No. 234

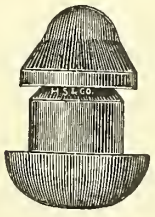
The perforations in the washer (see illustration) allow the rubber to flow through, thereby preventing the head from coming off and in addition making a strong durable tip.

Number	231	232	233	234
Per Gross	$3.20	3.60	4.30	5.00

SEE DISCOUNT SHEET

Rubber Tips for Chairs

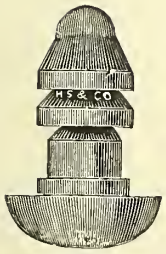
Full Size Cuts



No. 303



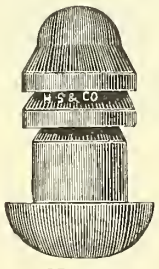
No. 307



No. 310



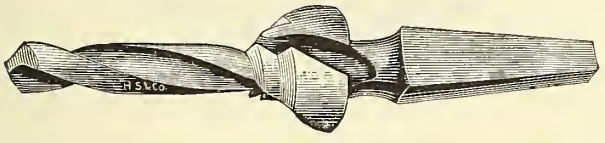
No. 304



No. 301

Numbers	301	303	304	307	310
Per Dozen	$ .70	.60	.50	.40	.60

Bit for Rubber Tips



For Tips Nos. 301, 303, 304, 307 and 310 ..... Each $1.50

Metal Cap for Rubber Tips

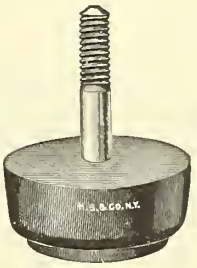


Used with Tips Nos. 301, 303, 304, 307 and 310 on Hardwood or Marble Floors

Nickel plated ..... Per gross, $5.60

New Century Tip with Brass Socket

Full Size Cuts





Practical, durable and economical. Consists of a solid piece of rubber moulded over the convex head of a brass screw, threaded on end to fit corresponding threads on inside of brass socket. Socket has corrugated sides to clinch firmly into chair leg and has a spreading shoulder to bear the strain usually placed on tip itself. All three sizes of tips fit same socket with equal security and can be replaced as often as required by simply unscrewing old tip and inserting the new; very desirable features that save time, trouble and expense, to boring new holes for new tips with the consequent weakening of chair leg.

Number	1	2	3
Diameter, inches	¾	1	1⅛
Per gross, with socket	$7.50	9.00	9.75
Per gross, without socket	5.65	7.50	8.50

New Century Bits



Used in putting on New Century Tips, making it impossible to split the most slender chair leg. It countersinks the head of socket when in position.

Each ..... $ .70

Rubber Buttons

Full Size Cuts



Nos. 7 and 7½



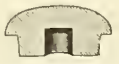
Nos. 10 and 10½



Nos. 12 and 12½



Nos. 8 and 8½



Sectional View



Nos. 9 and 9½

Used to prevent scratching on highly polished furniture.

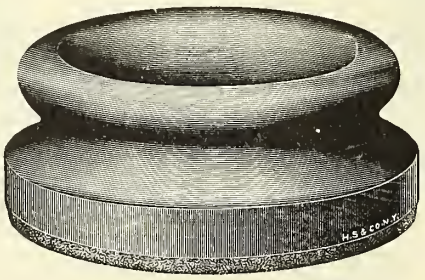
No. 7	Plain	Per 1000	$3.00		
" 7½	Japanned	"	4.00		
" 10	Plain	"	3.40		
" 10½	Japanned	"	4.40		
" 12	Plain	"	4.00		
No. 12½	Japanned	Per 1000	$5.00		
" 8	Plain	"	3.00		
" 8½	Japanned	"	4.00		
" 9	Plain	"	4.00		
" 9½	Japanned	"	5.00		

Caster Cups

2¼ in. Diameter. Felt Bottom

No. 5. Antique oak, polished
Per dozen $2.10

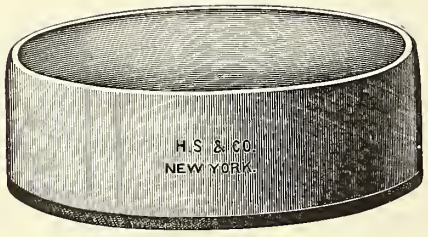
No. 6. Cherry, polished
Per dozen $2.10



3 in. Diameter. Felt Bottom

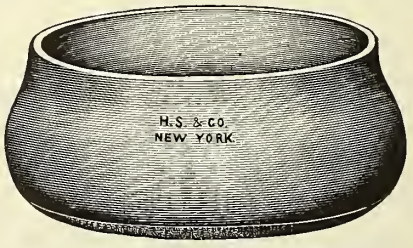
No. 10. Antique oak, polished
Per dozen $2.10

No. 11. Cherry, polished
Per dozen $2.10



2 3/8 in. Diameter. Felt Bottom

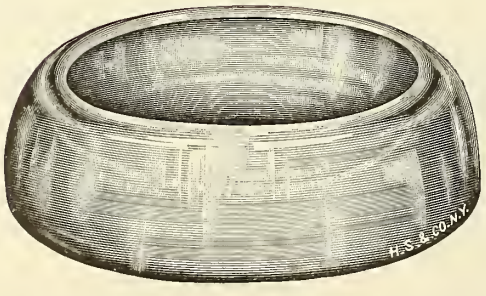
No. 20. Oak, unfinished
Per gross $8.00



2 3/8 in. Diameter. Felt Bottom

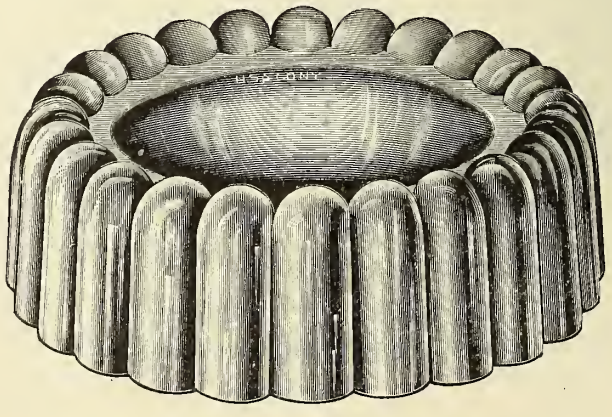
No. 4. Oak, shellacked
Per gross $12.00

Glass Insulator Cups



Clear Glass, Polished, 2⅞ Inches Diameter

No. 350 ..... Per dozen sets of four $5.00

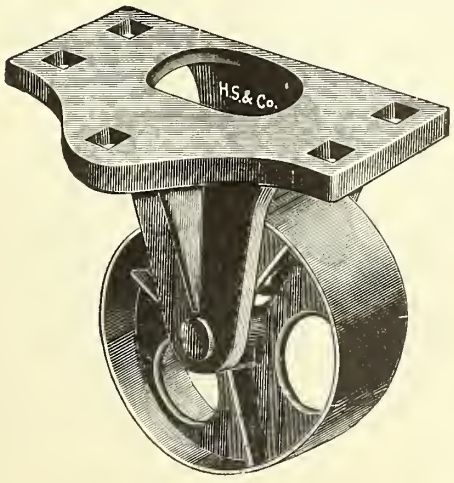


Crystal, Amber or Blue, 3½ Inches Diameter

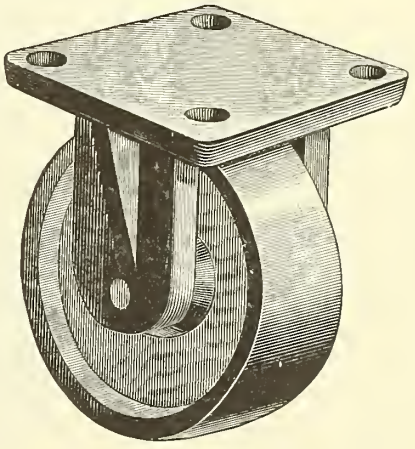
No. 450 ..... Per dozen sets of four $6.50

SEE DISCOUNT SHEET

Stationary Truck Casters

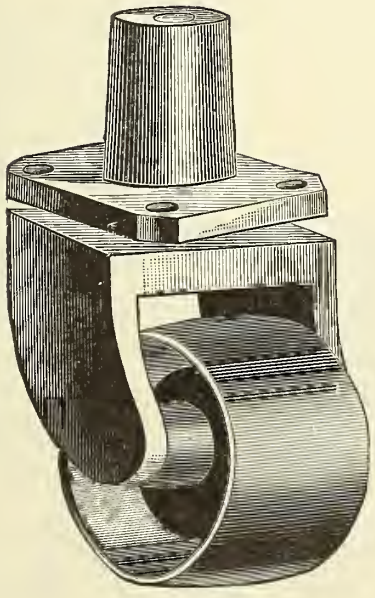


No.	Size of Wheel	Height Over All	Size of Plate	Per Set of Four
823	2⅞x1 in.	4 in.	4¾x2⅞ in.	$1.20
824	3⅞x1⅛ in.	5⅛ in.	5 x3 in.	1.72
1825	4½x2⅛ in.	5¼ in.	6 x4¼ in.	3.60



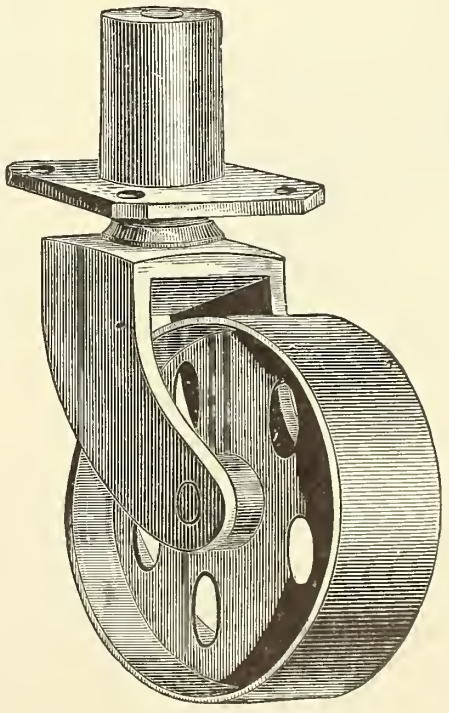
No.	Size of Wheel	Size of Plate	Height Over All	Per Set of Four
3	3½x1 in.	3⅜x3⅜ in.	4 in.	$1.60

Swivel Truck Casters



Extra Heavy Solid Wheels, with Wrought Iron Pins Riveted in the Horns

No.	Size of Wheel	Size of Plate	Height to Top of Plate	Per Set of Four
110	2½x1⅝ in.	2⅝x2⅝ in.	4 in.	$2.40

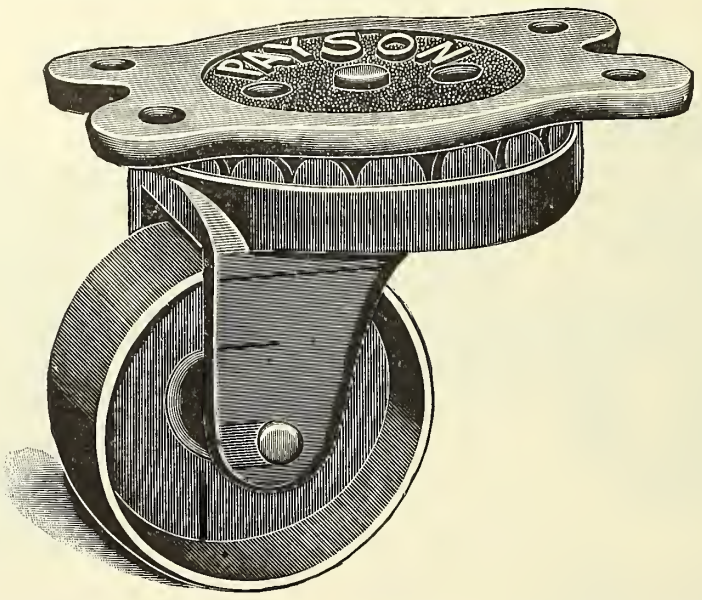


No.	Size of Wheel	Size of Plate	Height Over All	Per Set of Four
2111	2¾x1 in.	2½x2½ in.	4 in.	$1.00
2112	4 x1⅛ in.	2¾x2¾ in.	5¼ in.	1.66
2113*	4 x1¼ in.	2¾x2¾ in.	5¼ in.	1.90
1835	4½x2⅛ in.	2⅞x2⅞ in.	5⅞ in.	4.60

* Extra Heavy.

SEE DISCOUNT SHEET

Payson Truck Casters



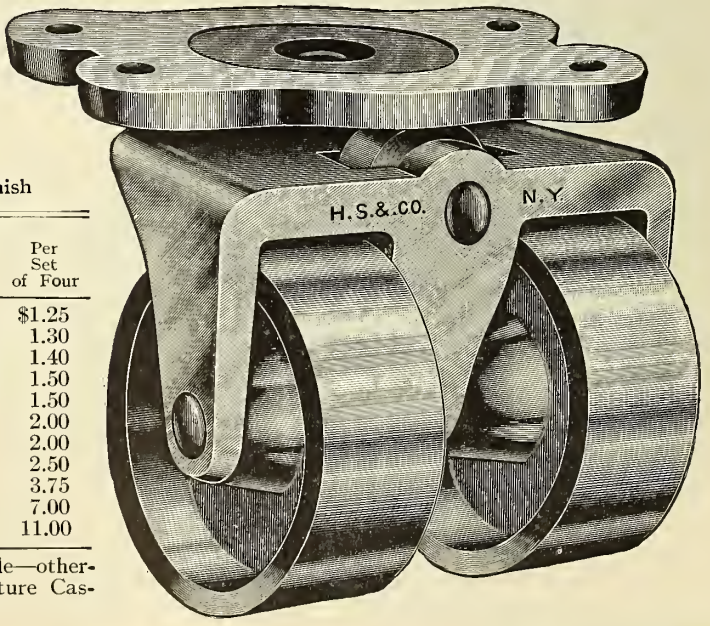
These Casters revolve upon a series of steel rollers or discs, placed in an annular chamber and carry the weight outside the center of the main wheel.

This gives an even bearing upon the circle of discs, and relieves all friction upon the pivot or strain upon the fastening screws. The parts are riveted together firmly, and free access is given to the screws through an opening in the plate.

Size of Plate Inches	Diameter of Wheel Inches	Face of Wheel Inches	Height Inches	Capacity Pounds	Iron Wheels Number	Iron Wheels Per Set of Four	Rubber Wheels Number	Rubber Wheels Per Set of Four
3 x4¼	2½	1¼	3½	1000	188	$2.75	188½	$9.00
3 x4¼	3¼	1 5/16	4¾	1000	188S	3.50	188S½	11.00
3⅜x4⅞	3⅛	1⅜	4½	1500	190	4.00	190½	12.00
3⅜x4⅞	3⅛	1⅜	4½	2500	*190H	5.50		
3⅜x4⅞	4⅛	1⅜	5¼	1500	190L	5.00	190L½	15.00
3¼x4⅞	4½	1¾	6	1500	190S	6.50	190S½	17.50
3¼x4⅞	3⅛	2½	4½	1500	190W	7.00		
3¼x4⅞	3½	1¾	5	1500	191	6.50	191½	15.60
4¼x5¾	5	1½	6¾	1500	191L	12.00	191L½	32.00
4¼x6¼	4	2¼	6	2000	192	12.00	192½	25.00
4¼x6¼	5	2¼	7	4000	193	17.50	193½	40.00
5¾x7	6	2¼	8¼	4000	193L	25.00	193L½	65.00
6⅜x9¼	6	3¼	9	6000	195	45.00	195½	80.00

*No. 190H is extra heavy construction

Martin Anti-Friction Truck Casters



Oblong Plate

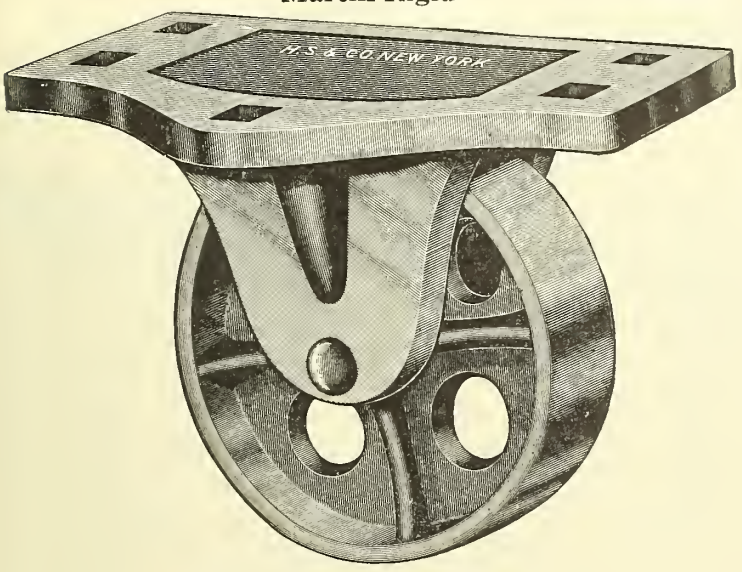
Nos. 52 to 72, Bronze Lacquer Finish. No. 82 to 142, Oil Finish

Number	Style of Wheel	Size of Plate Inches	Diameter of Wheels Inches	Face of Wheels Inches	Height Over All Inches	Carrying Capacity Pounds	Weight per Set Pounds	Per Set of Four
52	Iron	2⅛x3⅛	1⅞	9/16	2⅝	1000	4	$1.25
58	Lignumvitæ	2⅛x3⅛	1⅞	9/16	2⅝	1000	4	1.30
62	Iron	2½x3½	1¾	¾	2¾	1500	6½	1.40
68	Lignumvitæ	2½x3½	1¾	¾	2¾	1500	6½	1.50
72	Iron	2½x3½	2¼	¾	3¼	1500	8	1.50
82	Iron	3¼x4⅜	2½	¾	3½	2000	11	2.00
182	Iron	3¼x4⅜	2½	¾	3½	2000	11	2.00
102	Iron	3⅜x4½	3⅛	¾	4⅛	2500	13	2.50
112	Iron	3½x5⅛	3⅝	⅞	4⅝	3000	19	3.75
122	Iron	4¼x6⅜	4⅜	1⅛	5⅞	4000	40	7.00
142	Iron	5⅛x7⅛	4½	1¼	6	5000	64	11.00

No. 182 has turned wheels, also holes for purpose of oiling the axle—otherwise as No. 82. For smaller casters of this style see Martin's Furniture Casters on page 837.

Truck Casters

Martin Rigid



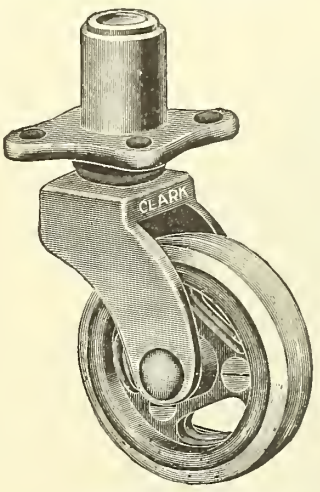
Oblong Plate, Iron Wheels

Carrying Capacity, 1000 to 5000 Pounds

Number	Size of Plate Inches	Diam. of Wheel Inches	Face of Wheel Inches	Height Over All Inches	Weight Each Pounds	Each
6	3 x4¼	2½	1⅛	2¾	1⅓	$ .30
7	3 x4¾	2⅞	1	3¼	1⅔	.35
8	3 x4¾	3⅛	1	3½	2	.40
*18	3 x4¾	3⅛	1	3½	2	.40
10	3⅛x4¾	3⅝	1	4⅛	2½	.50
11	3⅜x5⅛	4⅛	1⅛	4⅝	3¾	.75
12	3⅞x7	5¼	1½	5⅞	6½	1.10
14	4⅜x7	5⅜	1¾	6	8½	1.40
16	4⅜x8¼	7	1⅞	7½	12	2.00

*No. 18 has turned wheels, also holes for purpose of oiling axle—otherwise as No. 8.

Clark Swivel Stem

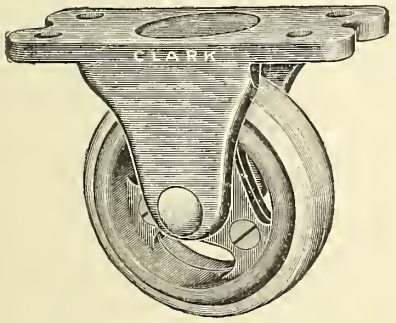


With Rubber Wheels

No. 6. Medium

Diameter of Wheel Inches	Size of Stem Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces
2⅛	13/16x1 1/16	2 x2	3⅛	$7.70
2½	13/16x1 1/16	2 x2	3½	9.50
3	1 1/16x1¼	2½x2½	4⅜	11.50
3½	1 5/16x1½	3 x3	5⅜	15.75
4	1 5/16x1½	3 x3	5⅝	17.00
5	1 5/16x1½	3 x3	6⅝	25.35
6	1½x1¾	3½x3½	8⅛	35.00
7	1¾x2	4 x4	9⅛	46.00
8	1¾x2	4 x4	10⅛	57.00

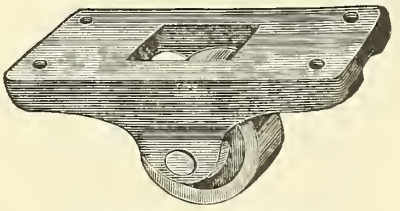
Clark Stationary Plate with Rubber Wheels



No. 10

Size of Wheel Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces Either Style
2⅛x ¾	1⅝x2 11/16	2 7/16	$6.85
2½x ⅞	2 x3 5/8	2 15/16	8.85
3 x1	2⅜x4⅛	3 9/16	9.95
3½x1	2⅝x4⅞	4¼	13.25
4 x1	2⅝x4⅞	4 9/16	14.50
5 x1	3⅛x5⅝	5¾	22.15
6 x1⅜	3⅝x6¼	7⅛	31.45
7 x1⅜	3¾x7⅛	7 15/16	42.30
8 x1½	4¼x8	9	54.40
9 x1¾	4½x8¼	9 15/16	68.30
10 x1¾	5 x8¾	11 1/16	81.40

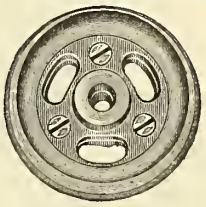
Truck Rollers



Iron Wheels. No. 43

Diameter of wheel, inches	1⅝
Width of wheel, inches	1¼
Size of plate, inches	2⅜x4⅝
Height, inches	1⅞
Per dozen pieces	$4.45

Noiseless Rubber Wheels and Tires



Clark. No. 12

Adapted for use in mills, warehouses, stores, offices, banks, hotels, hospitals, etc.

In ordering, care should be taken not to select a wheel too light for the work required.

The size of wheel is the outside diameter of rubber tire.

When ordering tires only, always give outside diameter.

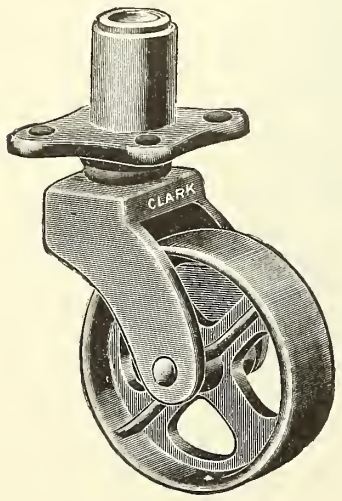
When ordering complete wheels, always give distance through hub and bore required.

Unless otherwise stated, our standard distance through hub and bore will be furnished.

Diameter Wheel Inches	Width Rubber Face Inches	Through Hub Inches	Bore Inches	Wheels Complete per Dozen Pieces	Rubber Tires Only per Dozen Pieces
2½	⅞	1¼	5/16	$6.75	$2.50
3	⅞	1½	5/16	7.25	4.00
3½	⅞	1⅝	⅜	8.25	5.25
4	1	1⅝	⅜	10.00	6.50
5	1	1⅞	½	15.50	10.00
6	1⅜	2¼	½	22.25	14.50
7	1⅜	2 7/16	⅝	30.00	19.00
8	1½	2⅝	⅝	38.75	24.00
9	1¾	2⅞	⅝	49.00	29.00
10	1¾	3¼	⅝	58.00	34.50
11	1¾	3¼	⅝	67.50	39.00
12	1¾	3¼	¾	77.50	44.00
14	1¾	3⅜	⅞	97.00	55.00
15	1¾	3⅞	⅞	106.00	60.00
16	2	3½	⅞	116.50	65.00
20	2	4⅜	⅞	155.00	85.50
25	2	4	⅞	220.00	120.00

Truck Casters

Clark



Swivel Stem With Iron Wheels

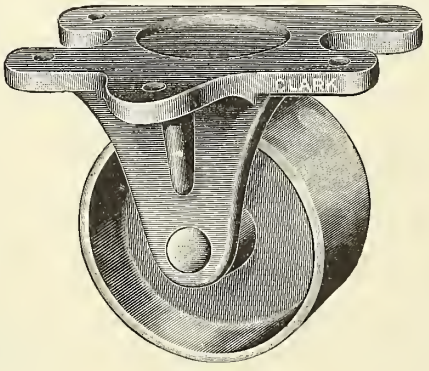
No. 54 Medium

Diameter of Wheel Inches	Size of Stem Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces
2	$\frac{13}{16}$x1 $\frac{1}{16}$	2 x2	3 $\frac{1}{16}$	$5.25
2 $\frac{1}{2}$	$\frac{13}{16}$x1 $\frac{1}{16}$	2 x2	3 $\frac{1}{2}$	6.50
3	1 $\frac{1}{16}$x1 $\frac{1}{4}$	2 $\frac{1}{2}$x2 $\frac{1}{2}$	4 $\frac{3}{8}$	8.25
3 $\frac{1}{2}$	1 $\frac{5}{16}$x1 $\frac{1}{2}$	3 x3	5 $\frac{3}{8}$	11.85
4	1 $\frac{5}{16}$x1 $\frac{1}{2}$	3 x3	5 $\frac{5}{8}$	12.50
5	1 $\frac{5}{16}$x1 $\frac{1}{2}$	3 x3	6 $\frac{1}{2}$	17.75
6	1 $\frac{1}{2}$x1 $\frac{3}{4}$	3 $\frac{1}{2}$x3 $\frac{1}{2}$	8	24.00
7	1 $\frac{3}{4}$x2	4 x4	9	31.25
8	1 $\frac{3}{4}$x2	4 x4	10	39.00

Stationary Plate, with Iron Wheels

No. 64 Extra Heavy

Size of Wheel Inches	Size of Plate Inches	Height to Top of Plate, Inches	Per Dozen Pieces
4x2 $\frac{1}{8}$	4 $\frac{3}{8}$x5 $\frac{3}{4}$	4 $\frac{3}{4}$	$13.35
5x2 $\frac{1}{2}$	5 $\frac{1}{16}$x6 $\frac{1}{4}$	5 $\frac{3}{4}$	20.45
6x2 $\frac{3}{4}$	5 $\frac{1}{2}$x6 $\frac{5}{8}$	6 $\frac{11}{16}$	27.50
7x2 $\frac{3}{4}$	5 $\frac{7}{8}$x7 $\frac{1}{4}$	7 $\frac{3}{4}$	35.00
8x3	6 $\frac{1}{16}$x7 $\frac{5}{8}$	8 $\frac{13}{16}$	42.00
9x3 $\frac{1}{4}$	6 $\frac{7}{16}$x8	9 $\frac{7}{8}$	49.25
10x3 $\frac{1}{2}$	6 $\frac{13}{16}$x8 $\frac{3}{8}$	10 $\frac{15}{16}$	58.00



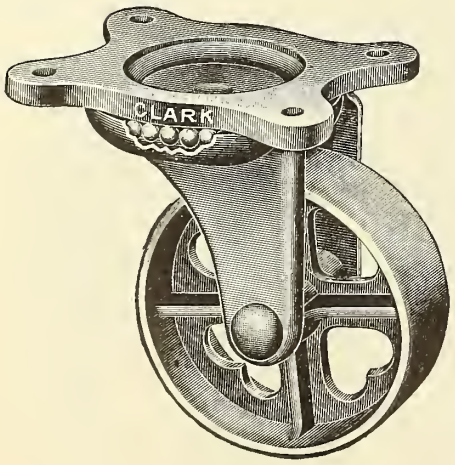
No. 64

No. 56

Size of Wheel Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces Either Style
2 x $\frac{3}{4}$	1 $\frac{5}{8}$x2 $\frac{11}{16}$	2 $\frac{3}{8}$	$4.00
2 $\frac{1}{2}$x1 $\frac{1}{8}$	2 x3 $\frac{5}{8}$	2 $\frac{15}{16}$	4.25
3 x1 $\frac{1}{8}$	2 $\frac{3}{8}$x4 $\frac{1}{8}$	3 $\frac{1}{2}$	5.50
3 $\frac{1}{2}$x1 $\frac{1}{2}$	2 $\frac{5}{8}$x4 $\frac{7}{8}$	4 $\frac{1}{4}$	8.35
4 x1 $\frac{1}{2}$	2 $\frac{5}{8}$x4 $\frac{7}{8}$	4 $\frac{1}{2}$	9.00
5 x1 $\frac{5}{8}$	3 $\frac{1}{8}$x5 $\frac{5}{8}$	5 $\frac{11}{16}$	13.50
6 x1 $\frac{7}{8}$	3 $\frac{5}{8}$x6 $\frac{1}{4}$	6 $\frac{7}{8}$	19.75
7 x2 $\frac{1}{4}$	3 $\frac{3}{4}$x7 $\frac{1}{8}$	7 $\frac{13}{16}$	27.00
8 x2 $\frac{3}{8}$	4 $\frac{1}{4}$x8	8 $\frac{13}{16}$	36.00
9 x2 $\frac{1}{2}$	4 $\frac{1}{2}$x8 $\frac{1}{4}$	9 $\frac{13}{16}$	45.50
10 x2 $\frac{3}{4}$	5 x8 $\frac{3}{4}$	10 $\frac{7}{8}$	56.00

Anti-Friction Plate

Practical and durable. Provided with hardened steel balls in order to swivel easily under heavy loads



No. 60 Iron Wheels

Diameter of Wheel Inches	Size of Plate Inches	Height to Top of Plate, Inches	Per Dozen Pieces
1 $\frac{5}{8}$	2 $\frac{1}{16}$x2 $\frac{11}{16}$	2 $\frac{7}{16}$	$3.75
2	2 $\frac{1}{4}$x3	3	4.25
2 $\frac{1}{2}$	2 $\frac{7}{8}$x3 $\frac{5}{8}$	3 $\frac{1}{2}$	7.50
3	3 $\frac{5}{16}$x4 $\frac{3}{16}$	4 $\frac{1}{8}$	9.00
3 $\frac{1}{2}$	3 $\frac{5}{8}$x4 $\frac{5}{8}$	4 $\frac{7}{8}$	11.60
4	3 $\frac{5}{8}$x4 $\frac{5}{8}$	5 $\frac{3}{8}$	12.25
5	4 $\frac{1}{4}$x5 $\frac{3}{4}$	6 $\frac{1}{2}$	20.00
6	5 $\frac{1}{4}$x7 $\frac{1}{4}$	7 $\frac{5}{8}$	30.00
7	5 $\frac{11}{16}$x7 $\frac{11}{16}$	8 $\frac{1}{2}$	41.00
8	6 $\frac{1}{2}$x8 $\frac{1}{2}$	9 $\frac{5}{8}$	56.00

No. 59 Rubber Wheels

Diameter of Wheel Inches	Size of Plate Inches	Height to Top of Plate, Inches	Per Dozen Pieces
2 $\frac{1}{8}$	2 $\frac{1}{4}$x3	3	$8.50
2 $\frac{1}{2}$	2 $\frac{7}{8}$x3 $\frac{5}{8}$	3 $\frac{1}{2}$	10.25
3	3 $\frac{5}{16}$x4 $\frac{3}{16}$	4 $\frac{3}{16}$	12.30
3 $\frac{1}{2}$	3 $\frac{5}{8}$x4 $\frac{5}{8}$	4 $\frac{7}{8}$	16.75
4	3 $\frac{5}{8}$x4 $\frac{5}{8}$	5 $\frac{1}{4}$	18.00
5	4 $\frac{1}{4}$x5 $\frac{3}{4}$	6 $\frac{1}{2}$	27.00
6	5 $\frac{1}{4}$x7 $\frac{1}{4}$	7 $\frac{3}{4}$	37.75
7	5 $\frac{11}{16}$x7 $\frac{11}{16}$	8 $\frac{5}{8}$	51.00
8	6 $\frac{1}{2}$x8 $\frac{1}{2}$	9 $\frac{3}{4}$	67.50

No. 61 Extra Heavy Iron Wheels

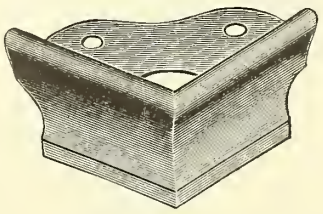
Diameter of Wheel Inches	Size of Plate Inches	Height to Top of Plate Inches	Per Dozen Pieces
2 $\frac{1}{2}$	3 $\frac{1}{2}$x4 $\frac{1}{4}$	4	$17.00
4	4 $\frac{11}{16}$x5 $\frac{3}{4}$	5 $\frac{1}{2}$	22.50
5	5 x 6 $\frac{1}{2}$	6 $\frac{7}{8}$	34.50
6	5 $\frac{3}{4}$x7 $\frac{1}{4}$	8 $\frac{1}{4}$	46.50
7	5 $\frac{3}{4}$x7 $\frac{1}{4}$	8 $\frac{3}{4}$	59.00
8	6 $\frac{1}{2}$x8 $\frac{1}{2}$	10 $\frac{1}{8}$	71.50

Furniture Feet



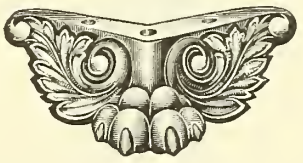
No. 45

Solid brass, polished, gross..... $18.00



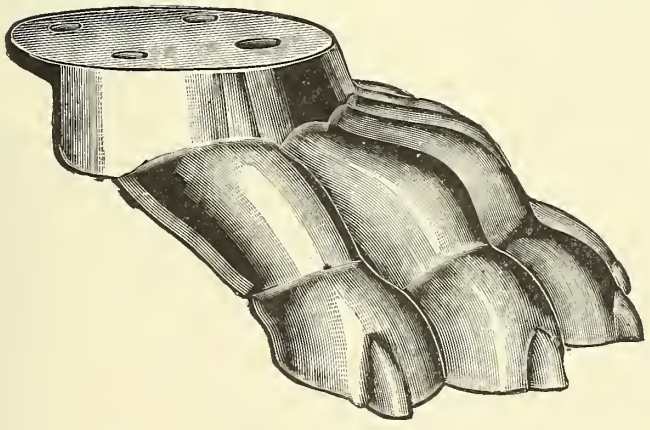
No. 25

Solid brass, polished, gross..... $19.50



No. 6857K

Solid brass, polished, gross..... $9.00



No. 4395

Solid brass, polished, dozen..... $2.40

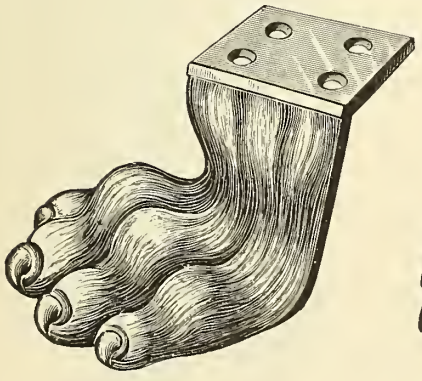
No. 4395½

Iron, brass-plated, polished, dozen $1.35



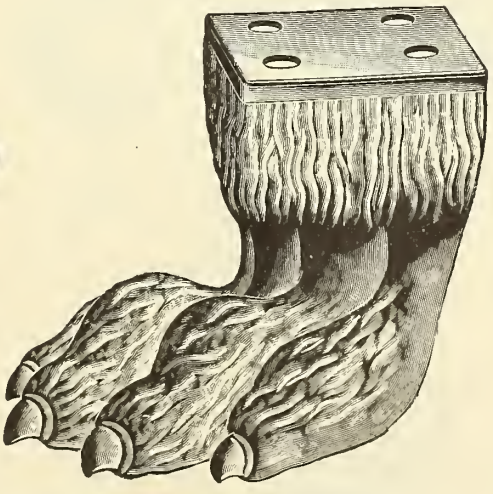
No. 34

Solid brass, polished, dozen..... $4.80



No. 6190

Solid brass, polished, dozen..... $1.60



No. 4586 Solid brass, polished, dozen. $4.50

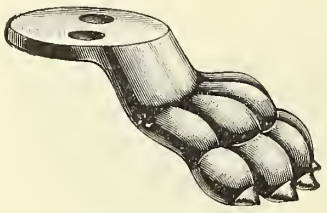
No. 4586½ Iron, brass-plated, polished, dozen..... 1.60

Furniture Feet



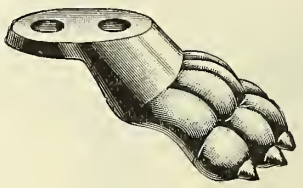
No. 6858

Solid brass, polished, gross..... $3.60



No. 7152

Solid brass, polished, gross..... $12.60



No. 7156

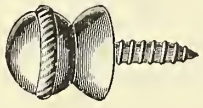
Solid brass, polished, gross..... $14.40



No. 527

Solid brass knob, polished; steel screw, gross..... $4.80

Solid brass, nickel-plated..... 5.40



No. 502

Solid brass knob, polished, steel screw, gross..... $7.50

Solid brass, nickel-plated..... 8.25



No. 3394

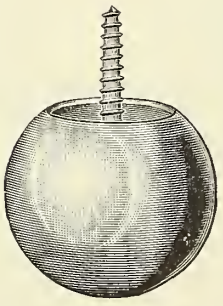
Wrought brass, polished, gross..... $5.30

Wrought brass, nickel-plated..... 5.85

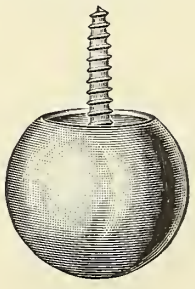
Caddie Balls

Full Size Cuts

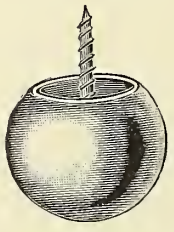
Balls are Polished Brass, with Steel Screws



Number..... 8
Diameter, inch..... 1
Gross..... $10.20



7
7/8
8.60



6
3/4
7.30



5
11/16
6.20



Number..... 4
Diameter, inch..... 9/16
Gross..... $4.80



2
7/16
3.80



1
3/8
4.50



5563
11/16
6.20

Furniture Feet



No. 060

Dozen..... $3.75



No. 77

Cast iron, brass-plated, dozen..... $2.50

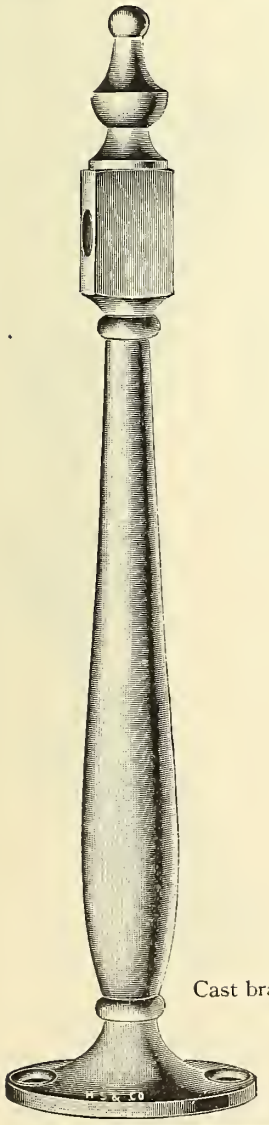


No. 050

Cast iron, glass ball, dozen..... $1.44

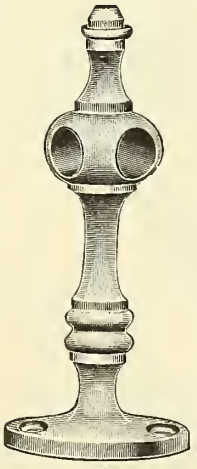
Furniture and Desk Posts

These Posts can be furnished for the corner, center or end. In ordering, state which is required.



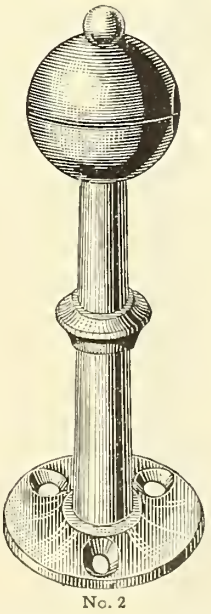
No. 9

Cast brass, dozen.. $4.50



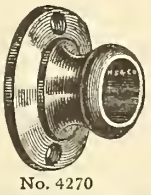
No. 3

Cast brass, polished. For ¼-inch rod, 1½ inches to center of hole, dozen. $1.50



No. 2

Cast brass, polished. For ⅜-inch rod, 2¼ inches to center of hole, dozen. $2.20



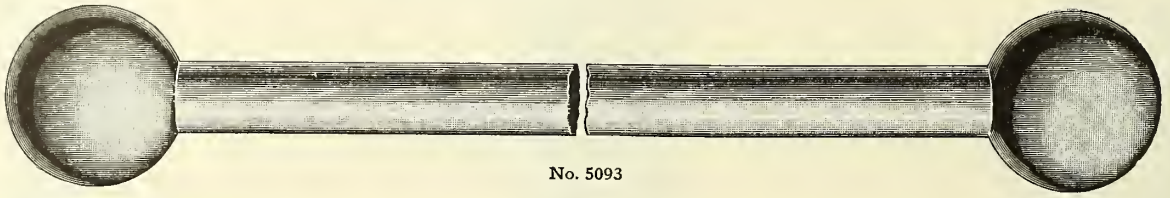
No. 4270

Desk Rail Sockets

Full Size Cut

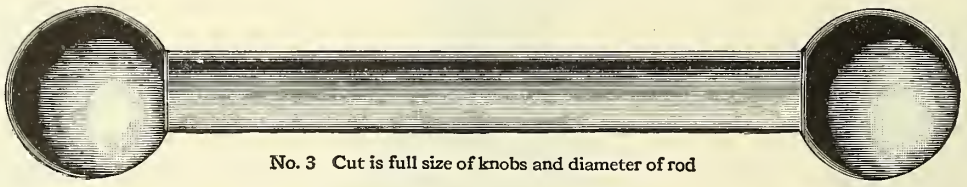
Cast brass, polished. For ¼-inch rod, dozen $1.20

Morris Chair Rods



No. 5093

Brass knobs, polished. Brass-plated rod.
24 inches between knobs, per 100 ..... $33.00
26 inches between knobs, per 100 ..... 33.00

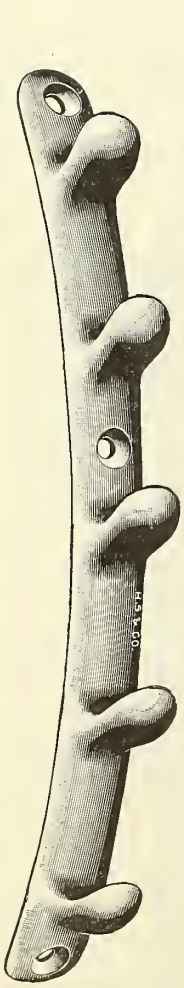


No. 3 Cut is full size of knobs and diameter of rod

Brass knobs polished. Brass-plated rods, 3/8-inch diameter.
26 inches between knobs, per 100 ..... $14.00

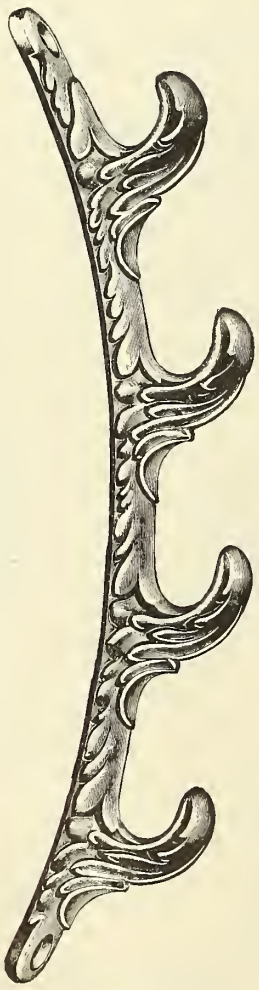
Morris Chair Racks

Half Size Cuts



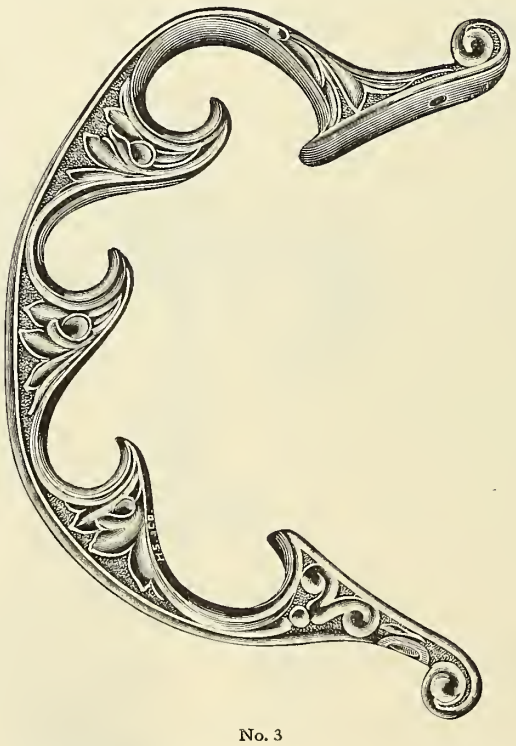
No. 1

Cast brass, polished, dozen $6.00



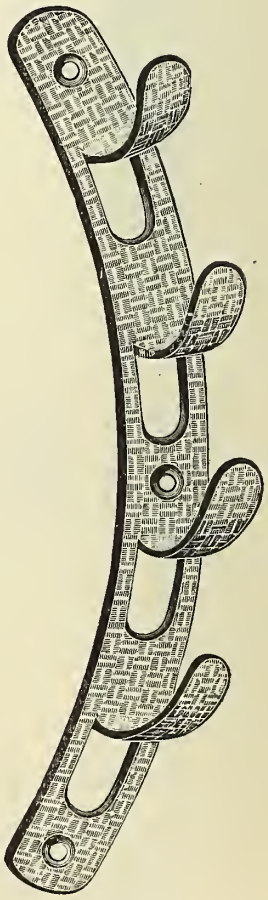
No. 2

Cast brass, dozen .. $3.00



No. 3

Cast brass, dozen $4.35



No. 5

Wrought steel, brass-plated, dozen $1.20

SEE DISCOUNT SHEET

We want *you* to know

that one of the largest departments of our business is devoted to the making of all manner of special parts for manufacturers.

Screw machine and lathe work; die and sand castings; drawn or stamped parts; forgings, spun brass flanges, ferrules, etc.

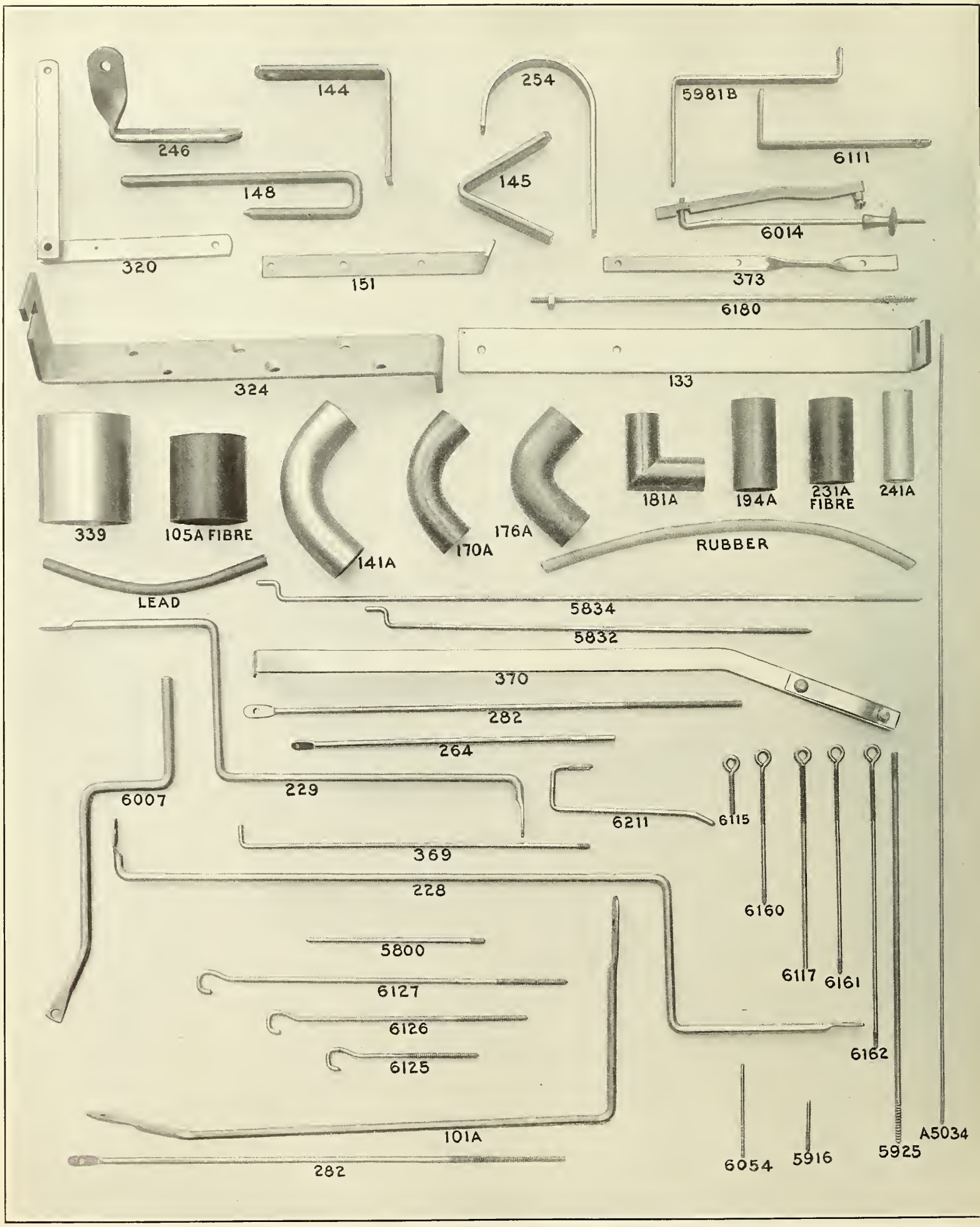
Illustrations herewith (numbered merely for general convenience) are taken at random from work we have produced.

It is necessary to send us samples of your wants, properly marked for correct identification, along with specifications as to quantities and deliveries, and with such detail in hand we are in excellent position to quote the lowest possible prices, consistent with strictly high grade material and workmanship.

Hammacher, Schlemmer & Company

See next page.

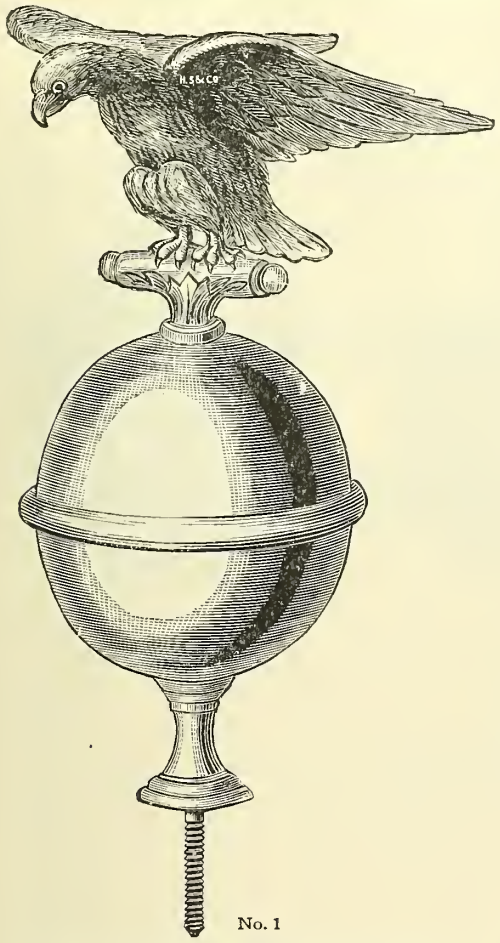
Also pages facing 313, 344 and 888



See reverse side.

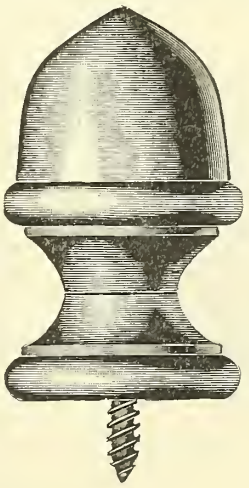
Also pages facing 313, 344 and 888

Clock Spires



No. 1

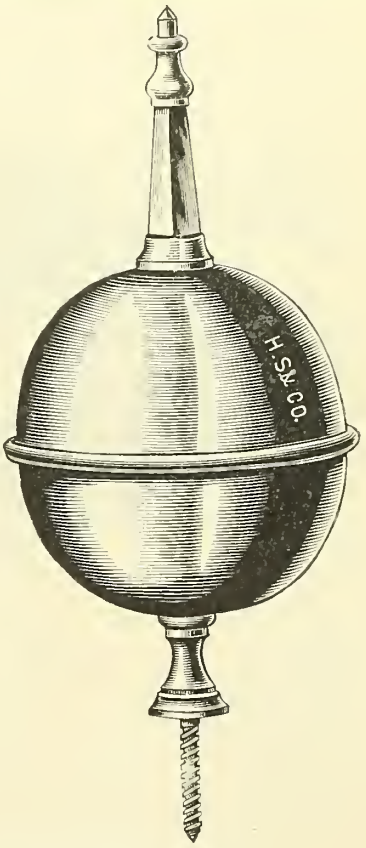
Spun brass ball, 2⅜ inches diameter; cast brass eagle; polished all over; 5¼ inches high over all; dozen $21.00



Full Size Cut of No. 137

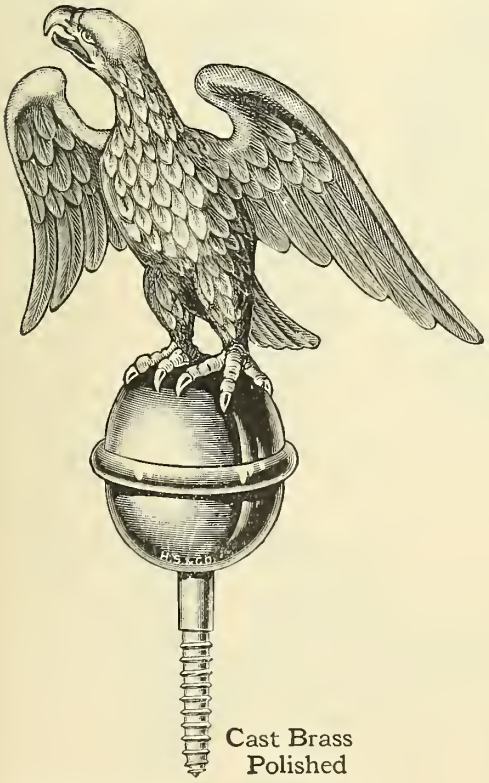
Polished Brass

Number	135	136	137
For pole, inch	½	¾	1
Gross	$7.50	9.00	11.00



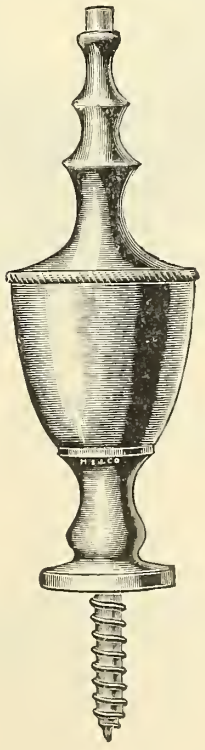
Spun brass ball, cast brass spire, polished all over.

Number	2	2½	3
Diameter, inches	1¾	2⅛	2⅜
Height over all, inches	4¼	5	5
Dozen	$6.00	8.00	9.00



Cast Brass Polished

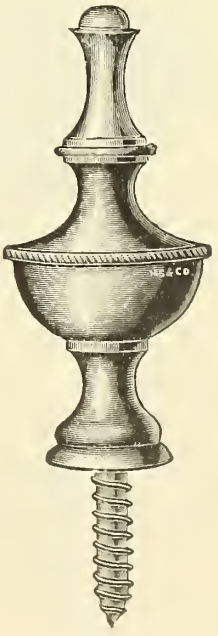
Number	4	5	8
Diameter of ball, inch	⅝	⅞	1
Height over all, inches	2	2⅞	3¼
Dozen	$6.00	9.00	12.00



No. 7

Full Size Cut

Cast brass, polished, dozen $4.50



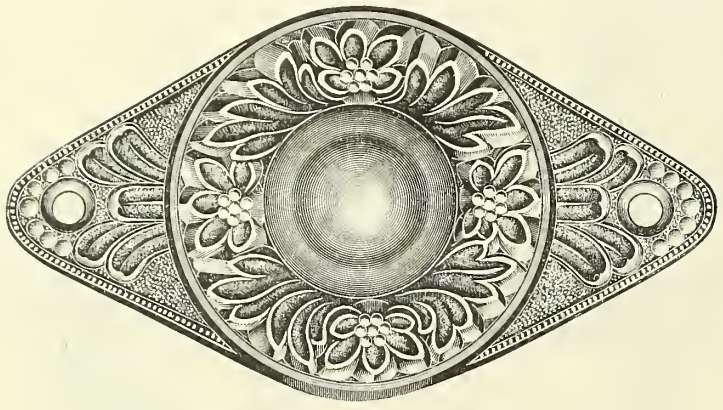
No. 6

Full Size Cut

Cast brass, polished, dozen $3.75

Bedstead Rosettes

Full Size Cuts



No. 114

Cast brass, polished

Dozen $2.40



No. 219A

Cast brass, polished

Dozen $2.64



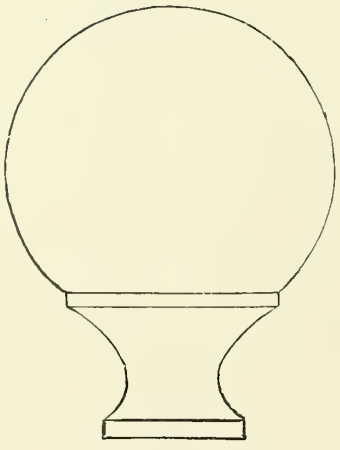
No. 218A

Cast brass, polished

Dozen $2.64

Bedstead Balls

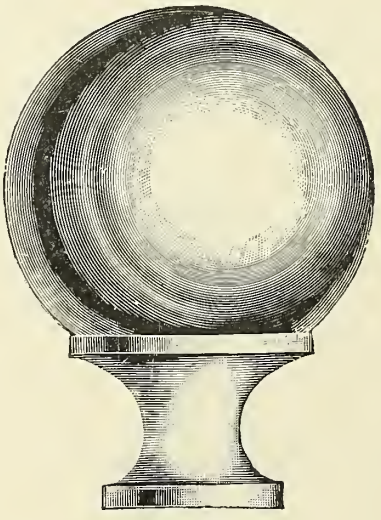
Full Size Cuts



No. 7061

Heavy spun brass, polished.
1¾ inches diameter, ⅜–16 thread.

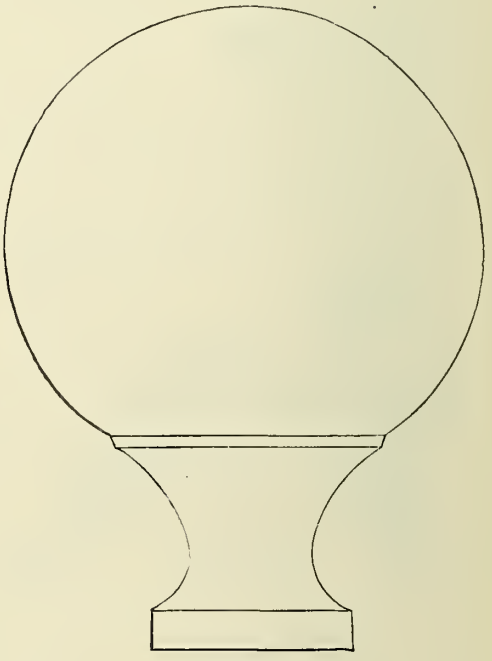
Gross $16.50



No. 6900

Heavy spun brass, polished.
2 inches diameter, ⅜–16 thread.

Gross $21.80

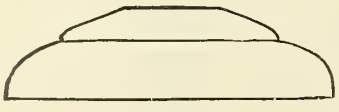


No. 7063

Heavy spun brass, polished.
2½ inches diameter, ⅜–16 thread.

Gross $57.00

Bedstead Caps



No. 6057

Wrought brass, polished.
1¾ inches diameter.

Gross $3.70



Full size cut of ⅜-inch size

Turned brass, polished

Number	Diameter Inch	Threads	Gross
6180	⅜	12–24	$2.50
6181	½	12–24	3.70
7864	19/32	12–24	5.60

Threaded Rods

Made of steel.
12–24 threads to inch. 4 inches long.
Threaded 1 inch on each end.

Gross ..... $ .90

2½ inches long.
Threaded full length.

Gross ..... .65

1½ inches long.
Threaded full length.

Gross ..... .40

Stamped Beading

Made of Sheet Brass, Dipped. Packed with Pins



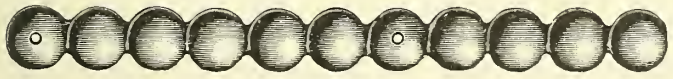
No. 685

Per 100 yards $6.00



No. 30

Per 100 yards $6.50



No. 31

Per 100 yards $7.50



No. 5136

Per 100 yards $7.50



No. 2

Per 100 yards $9.00

Solid Ball Beading

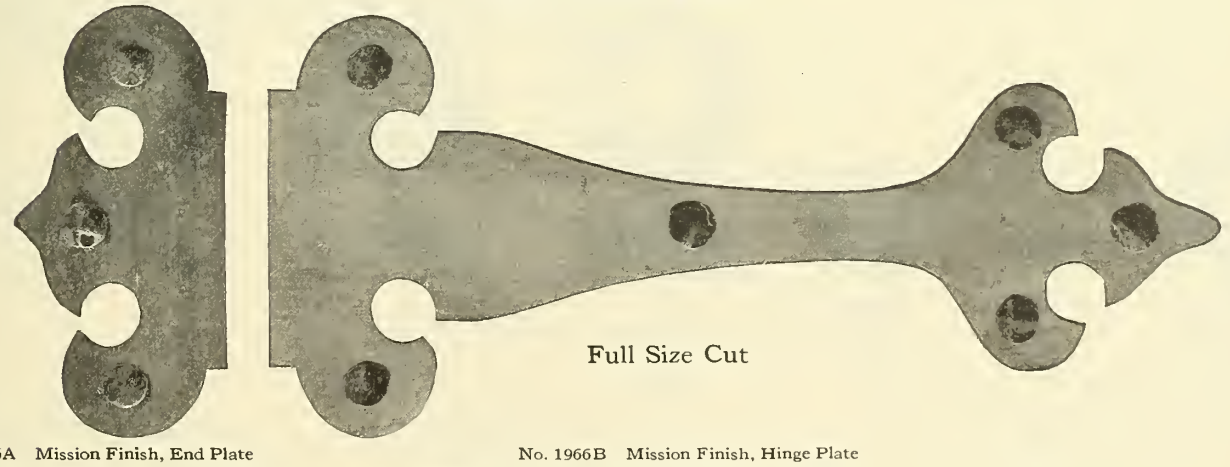
Solid Brass, Polished. Packed with Pins



$\frac{3}{16}$-inch diameter, per 100 yards $50.00

Hinge Plates

Made of Sheet Brass



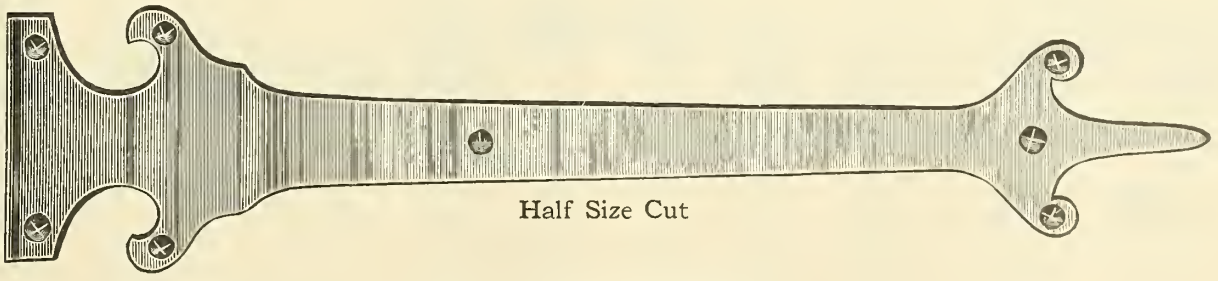
Full Size Cut

No. 1966A Mission Finish, End Plate

Dozen $2.88

No. 1966B Mission Finish, Hinge Plate

Will fit butts from 1½ to 2½ inches. Dozen $4.80



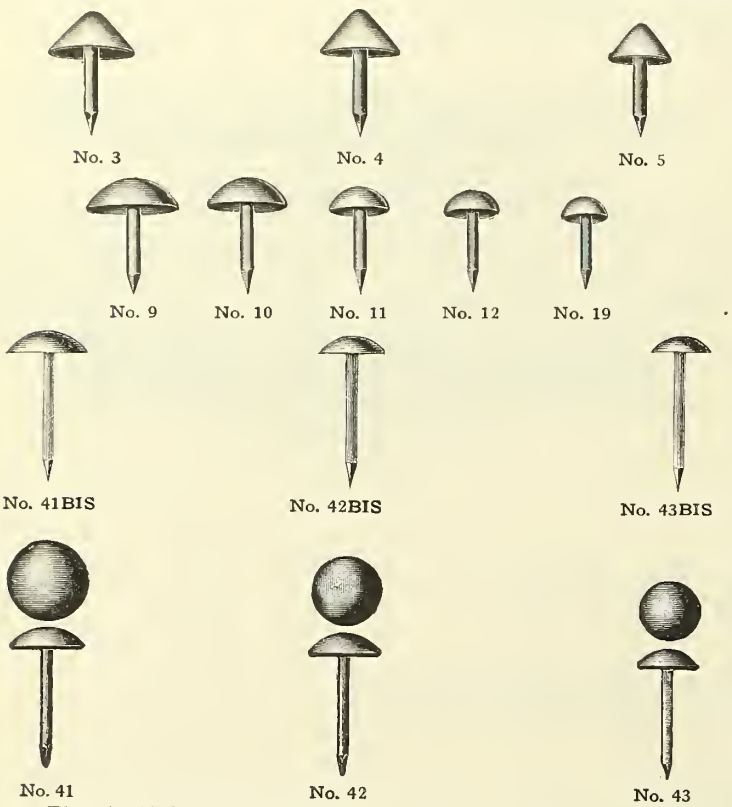
Half Size Cut

No. 1969 Mission Finish, Hinge Plate

Will fit butts from 1½ to 2½ inches. Dozen $9.60

Brass Furniture Nails

Full Size Cuts

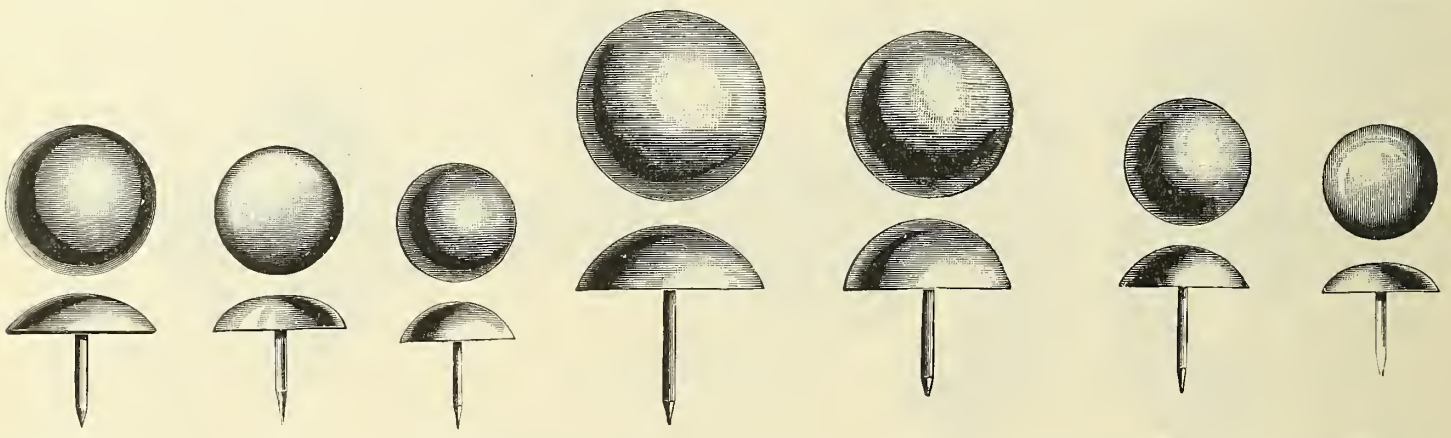


Number	Length of Shank Inch	Price per Thousand Gilt	Nickel-plated	Antique Copper	Natural
3	..	$1.50	$1.70	$2.20	$2.00
4	..	1.30	1.45	1.95	1.80
5	..	1.00	1.15	1.65	1.50
9	..	1.35	1.60	2.10	1.90
10	..	1.15	1.40	1.90	1.75
11	..	.90	1.05	1.55	1.40
12	..	.65	.85	1.35	1.25
19	..	.65	.85	1.35	1.25
41BIS	3/4	1.00	1.20	1.70	1.55
41	5/8	1.00	1.20	1.70	1.55
141	7/16	1.00	1.30	1.70	1.55
141½	3/8	1.10	1.30	1.80	1.65
0141½	5/16	1.10	1.30	1.80	1.65
42BIS	3/4	.70	.85	1.35	1.20
42	5/8	.70	.85	1.35	1.20
142	7/16	.70	.85	1.35	1.20
142½	3/8	.80	.95	1.45	1.30
0142	5/16	.80	.95	1.45	1.30
43BIS	3/4	.60	.75	1.25	1.15
43	5/8	.60	.75	1.25	1.15
143	7/16	.60	.75	1.25	1.15
143½	3/8	.70	.85	1.35	1.25
0143½	5/16	.70	.85	1.35	1.25

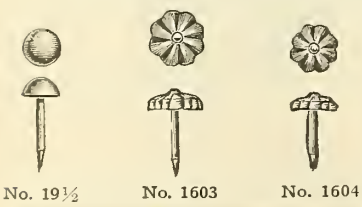
Above are all packed 1000 in a box.

The gilt Nails are packed in paper cartons of 100 each at following prices:

Number	9	10	11	12	19	41	42	43
Price per thousand	$1.50	1.30	1.05	.80	.80	1.15	.85	.75



Number	Quantity in a Box	Length of Shank Inch	Silver Oxidized	Price per Thousand Antique Copper	Natural	Gilt
37	500	..	$12.40	$7.25	$7.05	$6.85
38	500	..	9.75	5.65	5.45	5.25
39	1000	..	8.60	4.95	4.85	4.60
50	250	..	17.40	10.70	10.45	10.15
52	500	..	12.40	7.25	7.05	6.85
54	500	..	9.75	5.65	5.45	5.25
55	1000	..	8.60	4.95	4.80	4.60

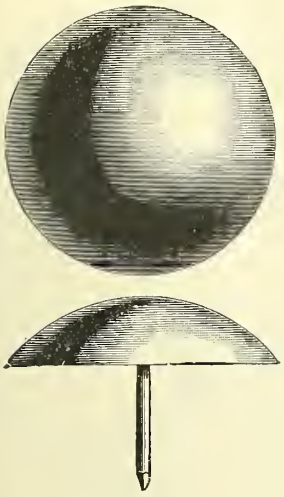


Number	Finish	Quantity in a Box	Price per 1000
19½	Gilt	1000	$1.70
19½	Nickel-plated	1000	1.80
1603	Nickel-plated	1000	2.00
1604	Nickel-plated	1000	1.90

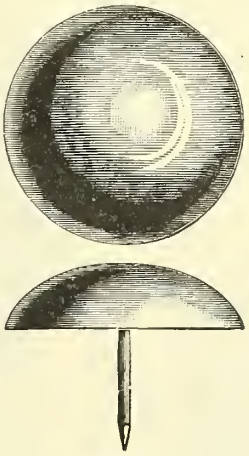
SEE DISCOUNT SHEET

Brass Furniture Nails

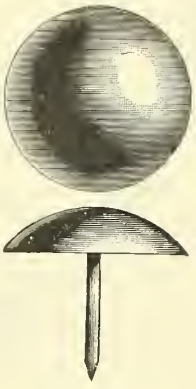
Cuts Full Size



No. 254



No. 256



No. 258

List per 1000

Number	254	256	258
Oxidized Silver	$37.50	30.00	17.40
Antique Copper	25.00	20.00	10.70
Natural	24.50	19.50	10.45
Gilt	24.00	19.10	10.15



No. 1530



No. 1531



No. 1532



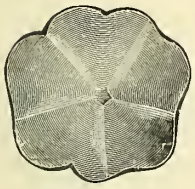
No. 1533



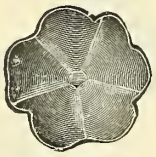
No. 1534

List per 1000

Number	1530	1531	1532	1533	1534
Silver Oxidized	$9.70	8.45	7.20	4.50	3.75
Gilt	7.75	6.75	5.75	3.60	3.00
Antique Copper	5.50	4.80	4.00	2.40	2.00
Natural	5.25	4.55	3.80	2.20	1.90



No. 1617
250 in a Box



No. 1618
500 in a Box



No. 1561
1000 in a Box



No. 1543
1000 in a Box



No. 1548
250 in a Box

List per 1000

Number	1617	1618	1543	1548	1561
Old Brass	$13.50	11.50			
Baur Barff	12.75	10.80			
Natural	12.00	10.00			
Iron	9.50	8.25			
Silver Oxidized	.....	.....	4.50	16.25	4.50
Gilt	.....	.....	3.60	13.00	3.60
Antique Copper	.....	.....	2.40	10.50	2.40
Natural	.....	.....	2.20	10.25	2.20

Double Shank Nails



Used for fastening pulls, handles, catches, etc., to paper boxes and light cabinet work

No. 19½	Nickel-plated, per 1000	$3.20
No. 19½	Gilt, per 1000	3.00
No. 83	Gilt, per 1000	1.00

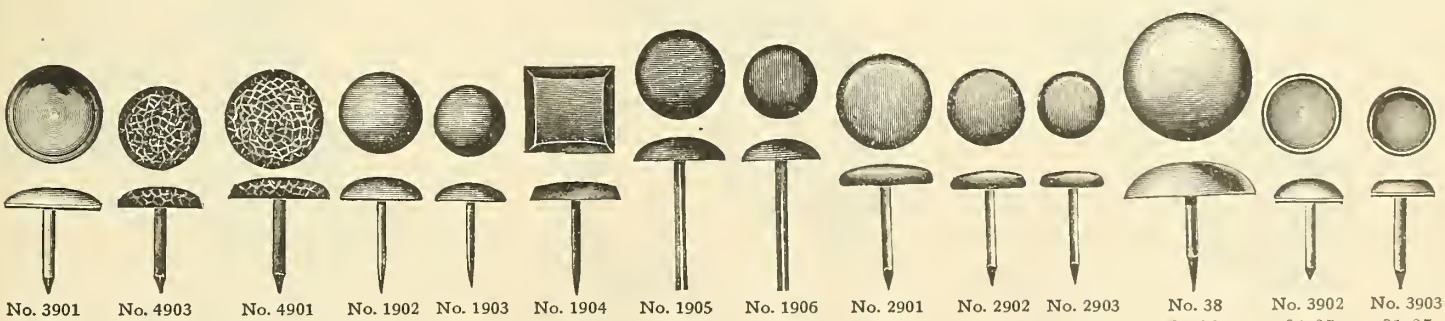
Leather Finish Nails

These nails are enameled to imitate leather. The color numbers used are the same as used to indicate the colors of Pantasote

Color No. 88 Medium Green
Color No. 85 Dark Green
Color No. 77 Very Dark Green
Mottled Brown and Green

Color No. 86 Dark Olive Green
Color No. 82 Tan
Color No. 78 Light Maroon
Mottled Brown and Black

Color No. 75 Dark Maroon
Color No. 74 Very Dark Maroon
Color No. 96 Black
Mottled Red and Black

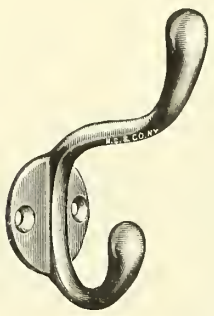


No. 3901	No. 4903	No. 4901	No. 1902	No. 1903	No. 1904	No. 1905	No. 1906	No. 2901	No. 2902	No. 2903	No. 38	No. 3902	No. 3903
$3.00	$2.30	$2.60	$1.65	$1.65	$3.90	$2.85	$2.55	$1.95	$1.65	$1.65	$7.00	$1.65	$1.65

Prices per 1000. Packed 1000 in a box.
For packing in cartons containing 200 or 100, add 10 cents net per 1000; 50, add 15 cents net per 1000; 25, add 25 cents net per 1000.

Coat and Hat Hooks

One Half Size Cuts

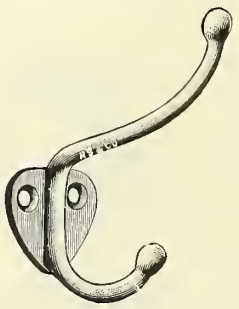


Height 3 inches, projects 2 inches.

Packed with screws.

No. 01030 Bronze, polished, dozen... $2.00

No. OB01030 Brass, old brass finish, dozen..... 2.00

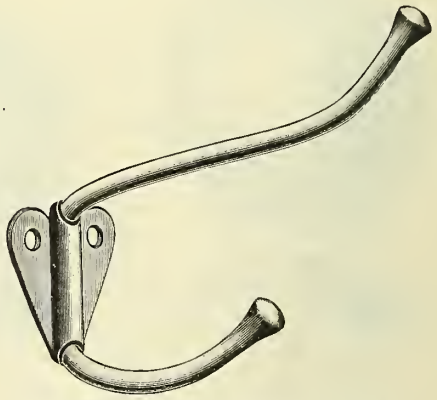


Height 2¾ inches, projects 2⅜ inches.

Packed with screws.

No. 91½ Cast bronze, polished, dozen $2.10

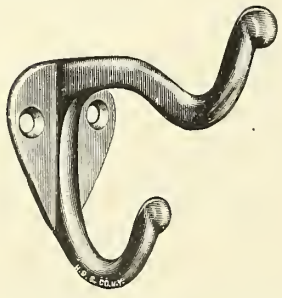
No. 91½ Cast bronze, nickel-plated, dozen..... 2.25



Height 3¾ inches, projects 4 inches.

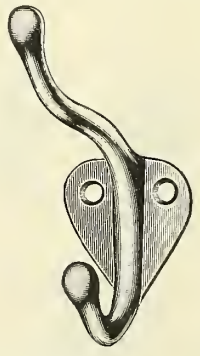
Packed with screws.

No. 2872 Wrought steel, bronze-plated, unpolished, gross..... $13.50



No. 6 Height 2⅝ inches, projects 3⅛ inches. Packed with screws. Polished bronze metal, dozen... $2.50

No. 194 Height 2½ inches, projects 3¼ inches. Cast iron, coppered, gross..... 4.00



Packed with screws.

No. 91 Height 3¼ inches, projects 3⅜ inches.

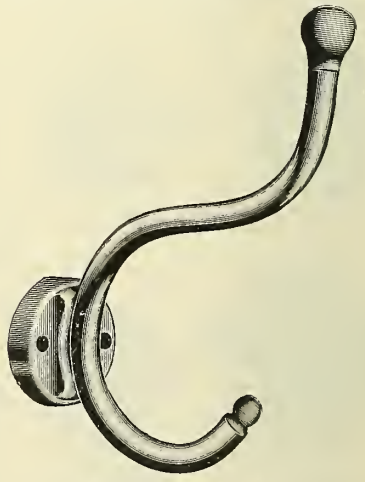
Brass, polished, dozen..... $2.10
Brass, old brass finish, dozen..... 2.10
Bronze, polished, dozen..... 2.25
Bronze, nickel-plated, dozen..... 2.35

No. 402 Height 3½ inches, projects 3 inches..... 6.00

No. YT402 Cast iron, bronze-plated, gross..... 10.80

No. DA402 Cast iron, antique copper finish, gross..... 12.30

No. NT402 Cast iron, nickel-plated, gross..... 12.00

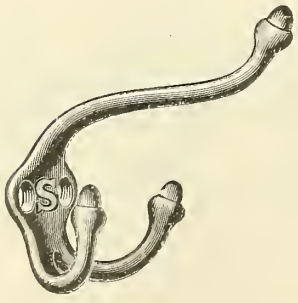


Packed with screws

Height 4⅞ inches, projection 3¾ inches.

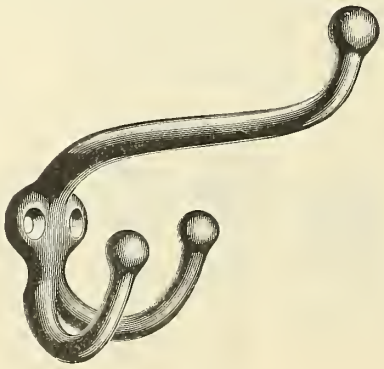
No. 5783 Wrought steel, brass-plated, dozen..... $2.90

No. 5783C Sizes as above, covered with white celluloid, dozen..... 6.00



Height 3½ inches, projects 2½ inches.

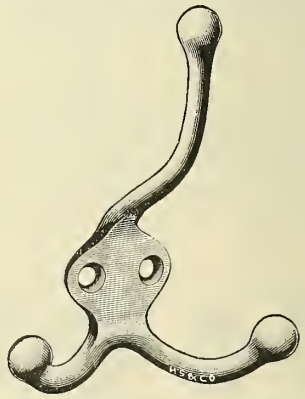
No. 20 Cast iron, japanned, gross... $3.60



Packed with screws.

Height 3½ inches, projects 3⅜ inches.

No. YT422 Cast iron, bronze-plated, polished, gross..... $12.20



Packed with screws.

No. 1890 Height 5¾ inches, projects 2½ inches.

Bronze, polished, dozen..... $4.50

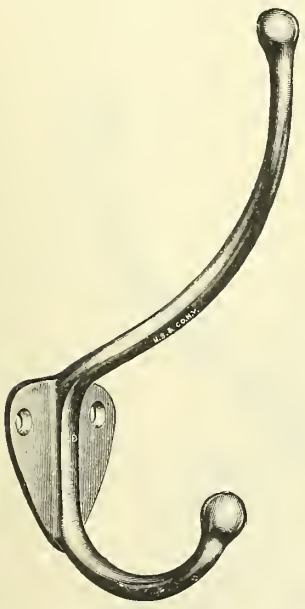
No. OB1890 Sizes as above.

Cast brass, old brass finish, dozen.... 4.50

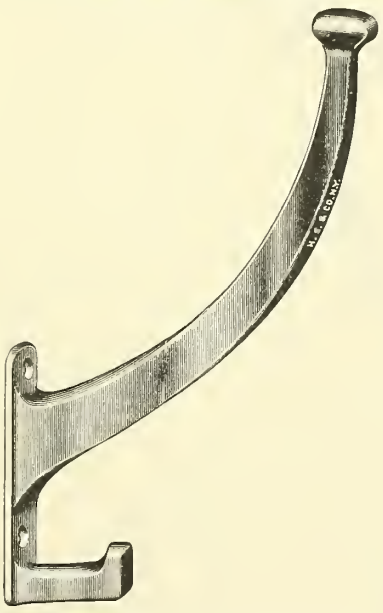
No. 1891½ Bronze, height 4 inches, projects 1½ inches, dozen..... 3.00

Coat and Hat Hooks

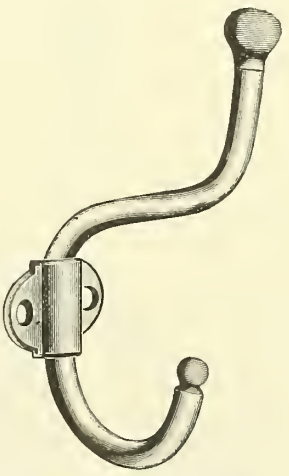
One Half Size Cuts



No. 1889 Packed with screws. Height 6¼ inches, projects 3¼ inches. Bronze, dozen..... $3.75

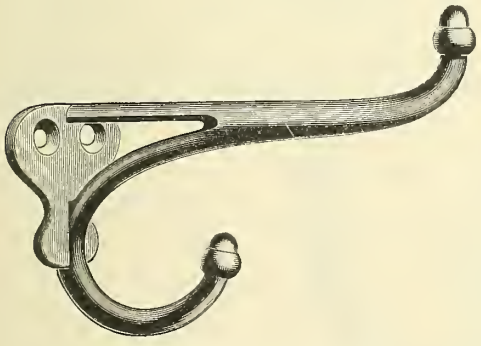


No. 922 Height 6 inches, projects 3½ inches. Cast iron, brass-plated, dozen..... $2.00



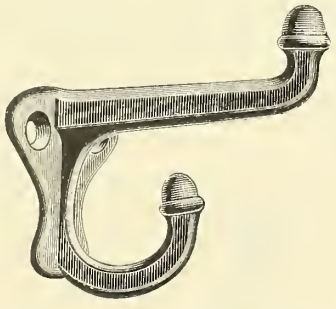
No. 6375 Height 5 inches, projects 3⅛ inches. Packed with screws. Iron, brass-plated, dozen..... $4.00

No. OB6375 Packed with screws. Iron, old brass finish, dozen..... 4.75

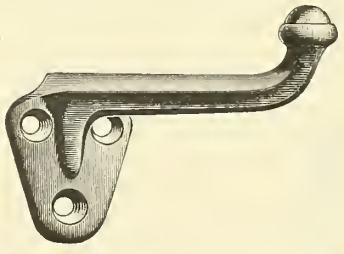


No. 8 Height 3 inches, projects 3⅝ inches. Cast iron, japanned, gross..... $3.00

No. 108 Cast iron, coppered, gross.. 3.00



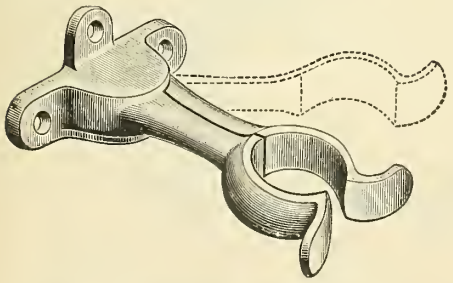
No. 92 Extra heavy, for hotel use. Height 3¼ inches, projects 3 inches. Cast iron, japanned, gross..... $7.20



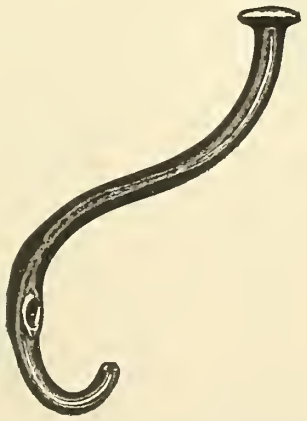
No. 091 For hotel use. Projects 3 inches. Cast iron, japanned, gross..... $4.40

Umbrella Hooks

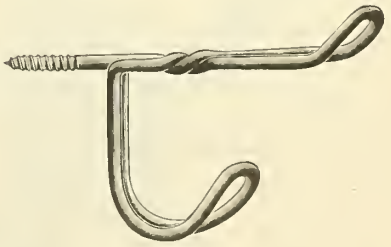
Can also be used for billiard cues



No. 58P Projects 3¼ inches. Packed with screws. Cast bronze, polished, dozen..... $7.60



No. 5593 Height 4 inches, projects 2¾ inches. Cast brass, polished, dozen..... $3.00



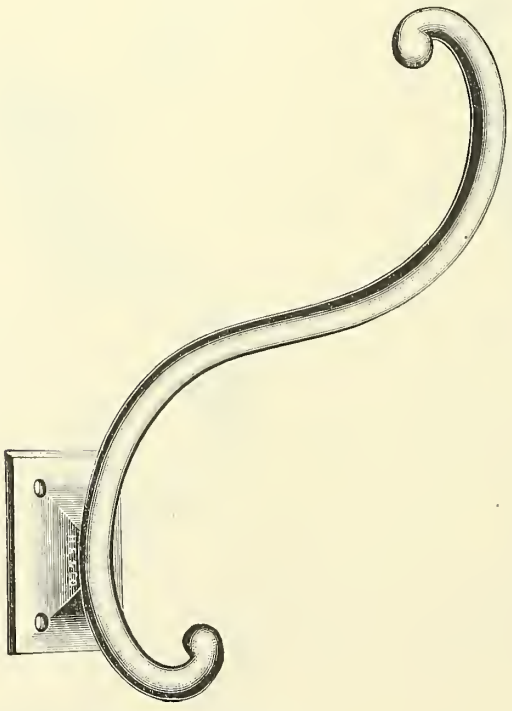
No. 123 Amber. Height 2 inches, projects 3 inches. Gross..... $2.80

No. 170 Coppered. Height 2⅛ inches, projects 3⅛ inches. Gross..... 3.00

No. 5123 Brass-plated. Height 1⅞ inches, projects 3¼ inches. Gross 4.00

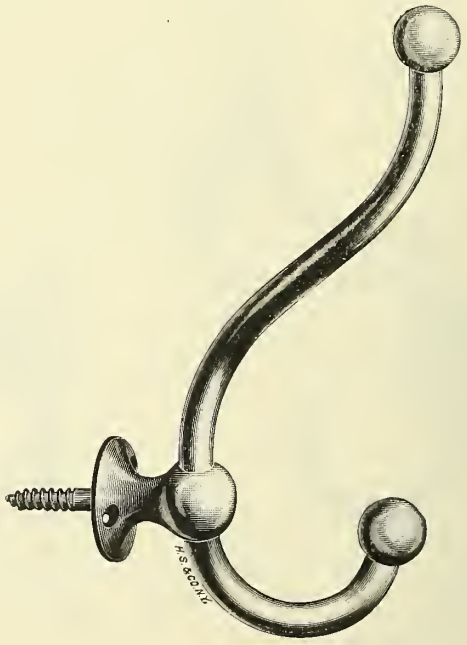
Coat and Hat Hooks

Cuts One Half Size



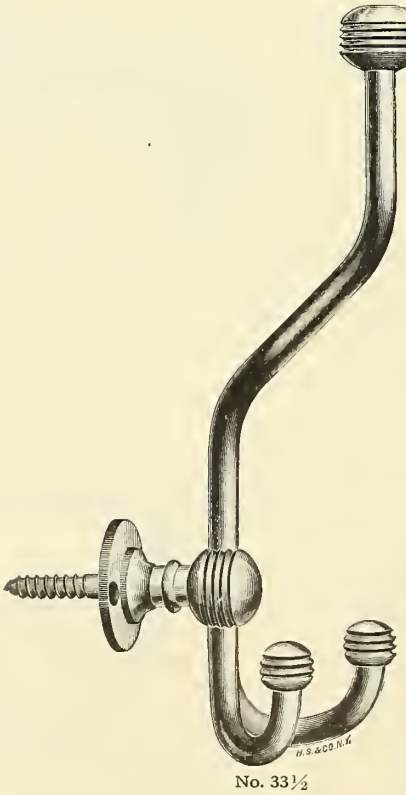
Height 7 inches, projects 5¾ inches.

No. 35½	Cast brass, polished, dozen	$7.00
No. OB35½	Cast brass, old brass finish, dozen	7.00



Height 6½ inches, projects 3¾ inches.

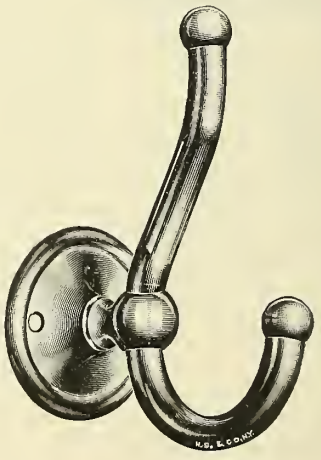
No. 5133	Cast brass, polished, dozen	$4.50
No. OB5133	Cast brass, old brass finish, dozen	4.50



No. 33½

Height 7¾ inches, projects 3½ inches.

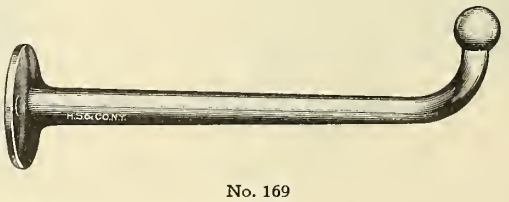
Cast brass, polished, dozen $16.50



No. 1117

Packed with screws.
Height 3½ inches, projects 4¼ inches.

Brass tubing, nickel-plated, dozen $6.00



No. 169

Height 1½ inches, projects 5 inches.

Cast brass, polished, dozen $3.50

Coat and Hat Hooks

One Half Size Cuts



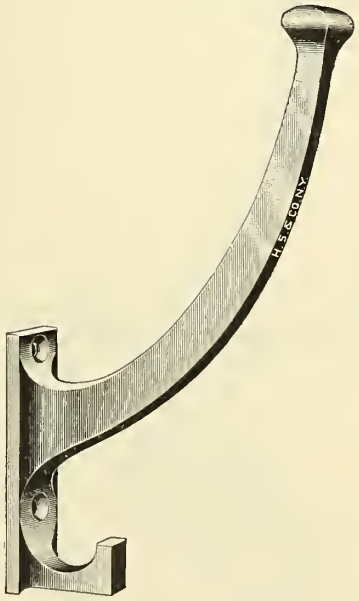
No. 5810

Height 6½ inches, projects 4 inches.
Solid brass, polished, dozen $8.25



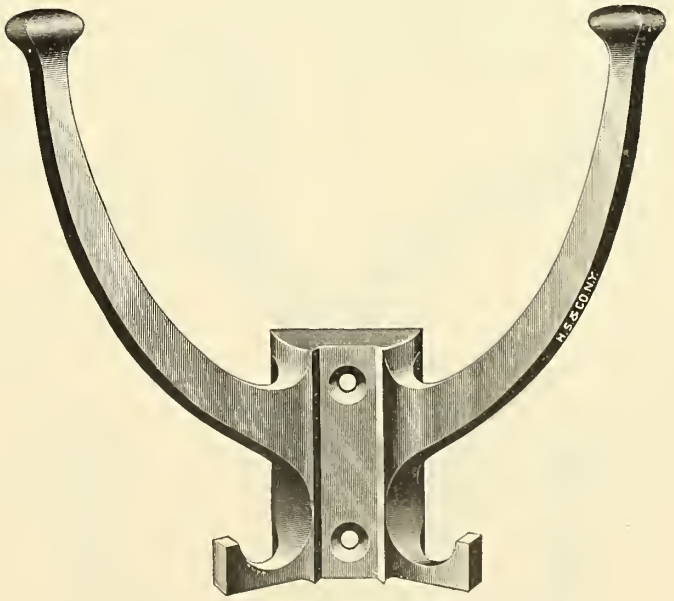
No. 5809

Height 6½ inches, projects 3½ inches.
Solid brass, polished, dozen $10.80



No. 54

Packed with screws.
Height 6¼ inches, projects 3¾ inches.
Cast brass, old brass finish, dozen $5.85



No. 55

Packed with screws.
Height 6¼ inches, projects 3¼ inches.
Cast brass, old brass finish, dozen $15.00

Coat and Hat Hooks



No. 155

One-half Size Cut

Height 7 inches, projects 3½ inches.

Steel, brass-plated, gross $10.00

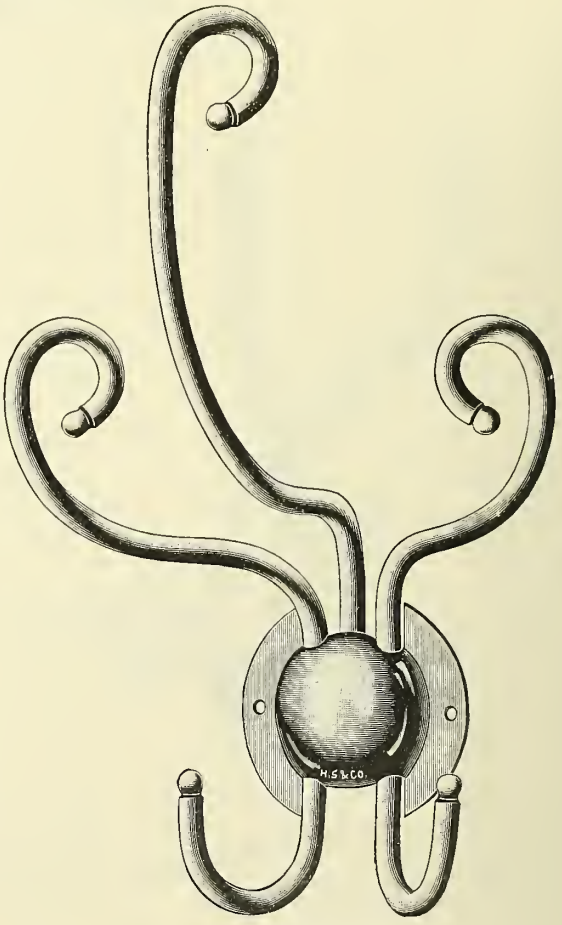


No. 4562

Two-thirds Size Cut

Height 1½ inches, projects 3½ inches.

Steel, brass-plated with solid brass base and ball, gross $12.00

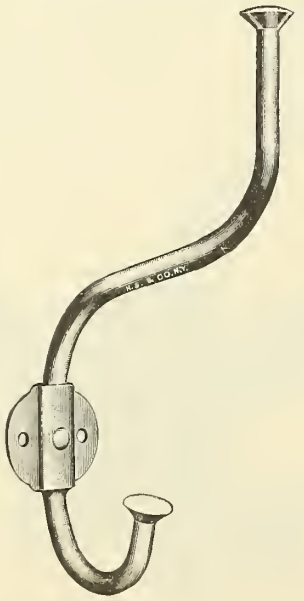


No. 167½

One-third Size Cut

Height 12 inches, projects 9½ inches.

Steel, brass-plated, with spun brass shield, packed with screws, dozen $8.40



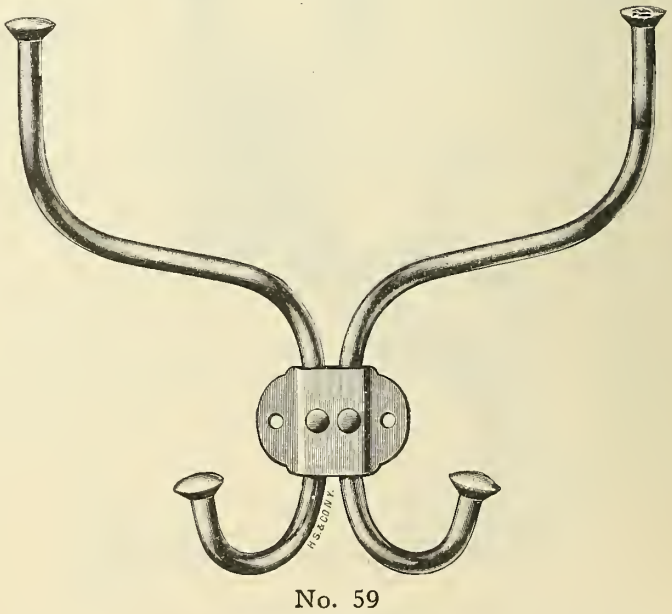
No. 58

One-half Size Cut

Packed with screws.

Height 6 inches, projects 2¾ inches.

Steel, brass-plated, dull brass finish, gross $10.00



No. 59

One-half Size Cut

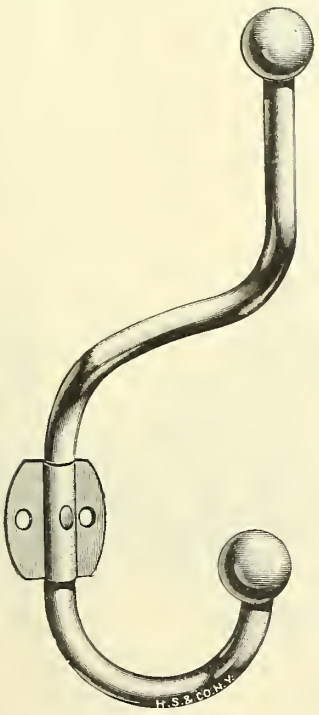
Height 6 inches, projects 2¾ inches.

Spread between hooks 6½ inches.

Steel, brass-plated, gross $20.00

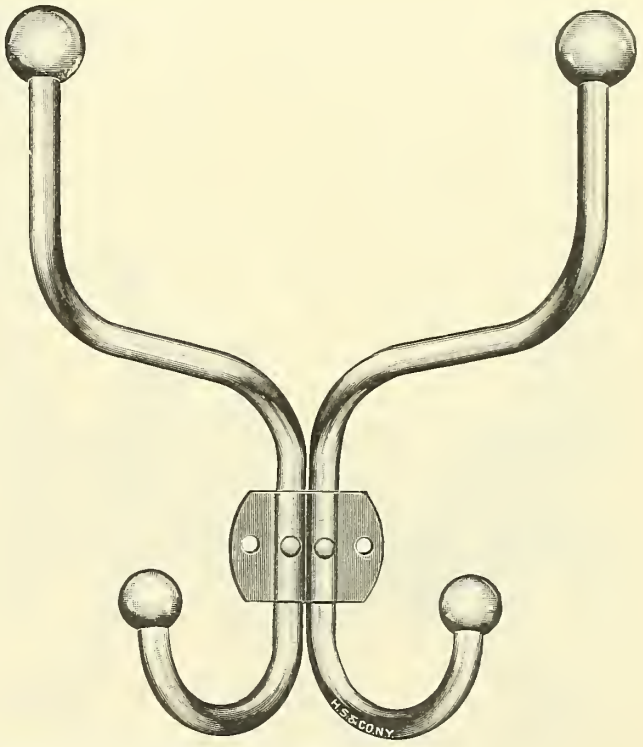
Coat and Hat Hooks

One Half Size Cuts



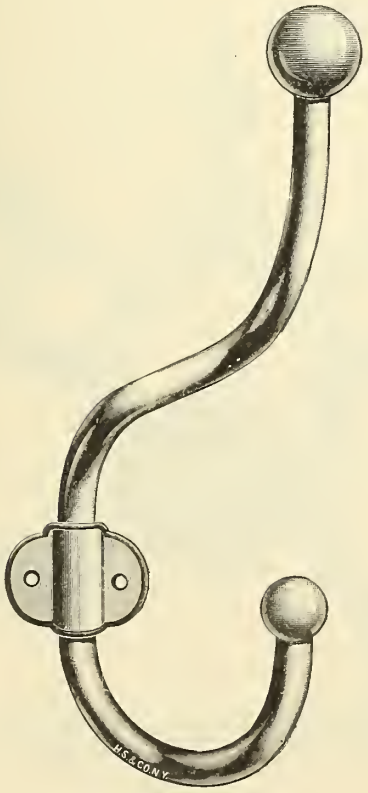
Height 7 inches, projects 2¾ inches.

No. 6340 Steel, brass-plated and polished, dozen..... $4.25
No. OB6340 Same as above, in old brass finish, dozen..... 5.00



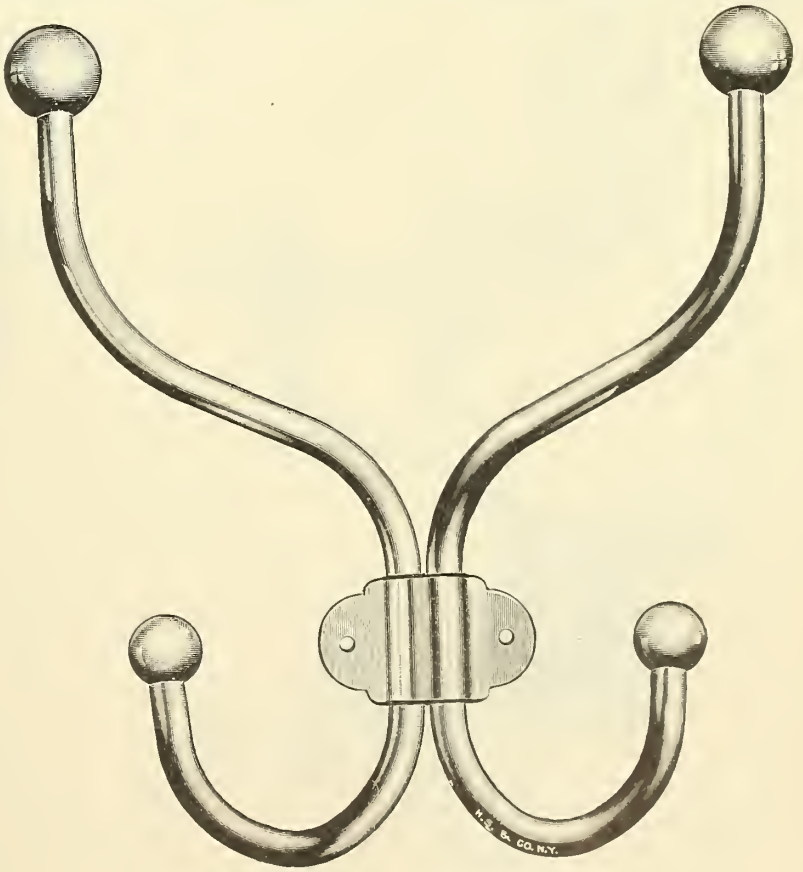
Height 7 inches, projects 2½ inches.

No. 6306 Steel, brass-plated and polished, brass balls polished, dozen..... $9.50
No. OB6306 Same as above, in old brass finish, dozen..... 11.50



Height 8½ inches, projects 4 inches.
Packed with screws.

No. 5776 Solid brass, polished, polished brass balls, dozen.... $8.50
No. OB5776 Same as above, in old brass finish, dozen..... 10.50

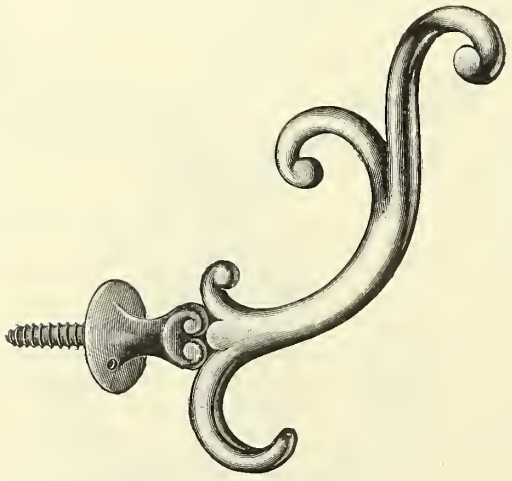


Height 9 inches, projects 3½ inches.
Packed with screws.

No. 5791 Solid brass, polished, brass balls polished, dozen . $20.00
No. OB5791 Same as above, in old brass finish, dozen..... 23.00

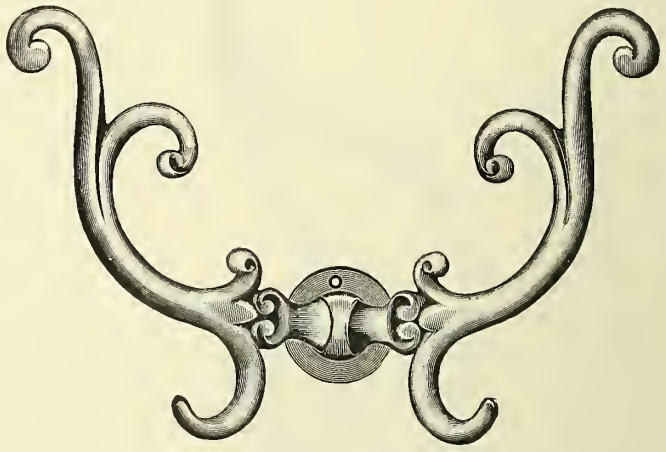
Coat and Hat Hooks

One Half Size Cuts



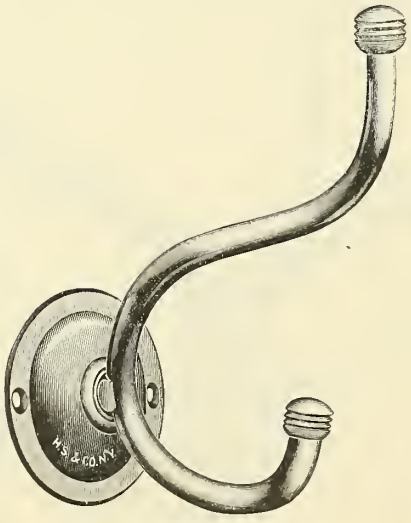
Height 5 inches, projects 4½ inches.

No. 124 Cast brass, polished, dozen..... $4.90
No. OB124 Same as above, in old brass finish, dozen..... 5.20



Height 5 inches, projects 3½ inches.
Packed with screws.

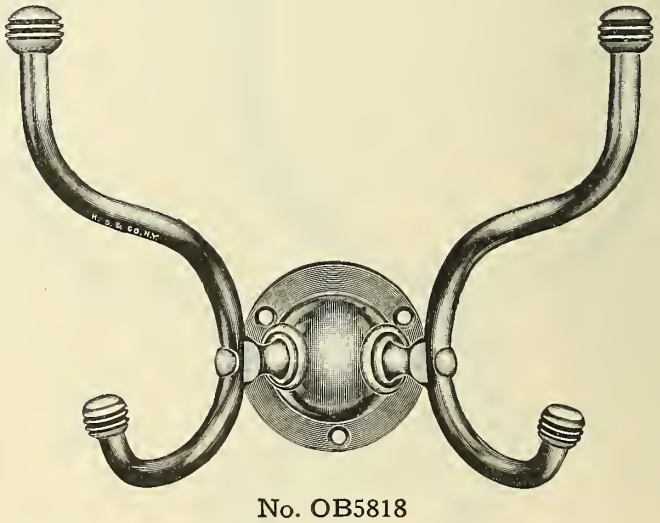
No. 1240 Cast brass, polished, dozen..... $11.00
No. OB1240 Same as above, in old brass finish, dozen..... 11.35



No. OB5953

Height 5¼ inches, projects 4¼ inches.

Solid brass tubing, old brass finish, dozen..... $12.00



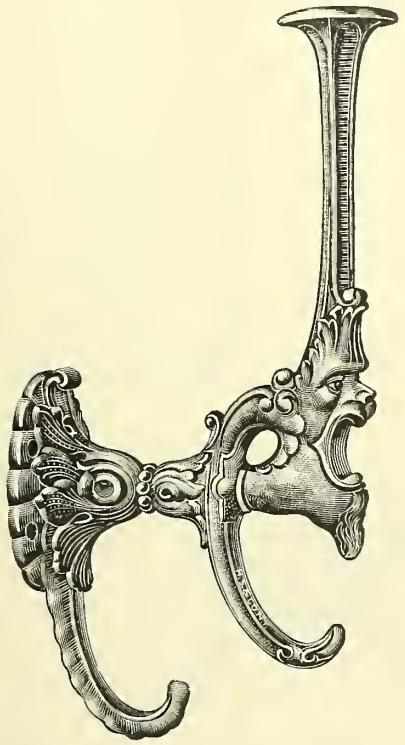
No. OB5818

Height 5¼ inches, projects 3 inches.
Packed with screws.

Solid brass tubing, old brass finish, dozen..... $24.00

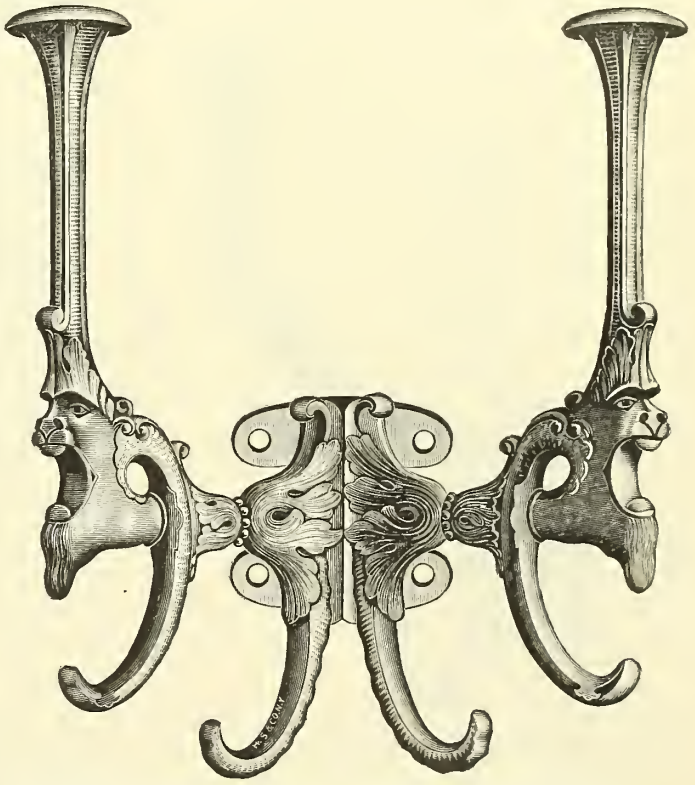
Coat and Hat Hooks

One Half Size Cuts

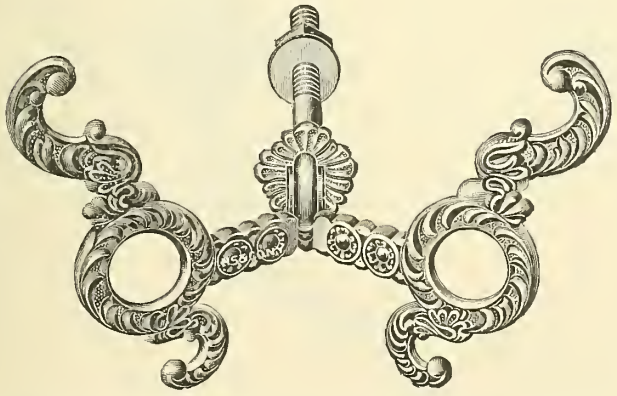


No. 981-024 Height 8 inches, projects 4 inches. Cast iron, oxidized copper finish, dozen..... $3.30

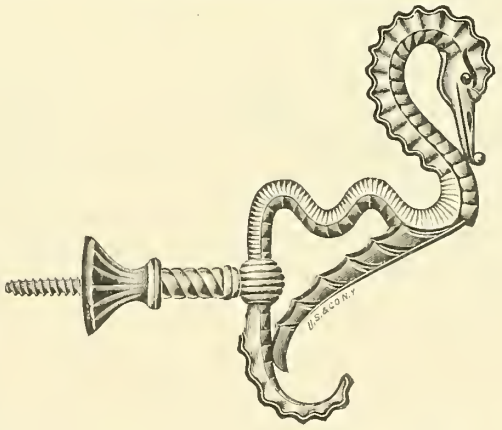
No. 981-087 Height 8 inches, projects 4 inches. Cast iron, dead black finish, dozen..... 6.70



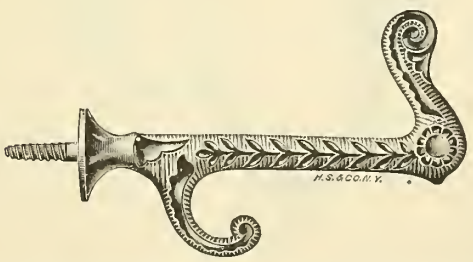
No. 982-024 Packed with screws. Height 8 inches, projects 3½ inches. Cast iron, oxidized copper finish, dozen..... $6.25



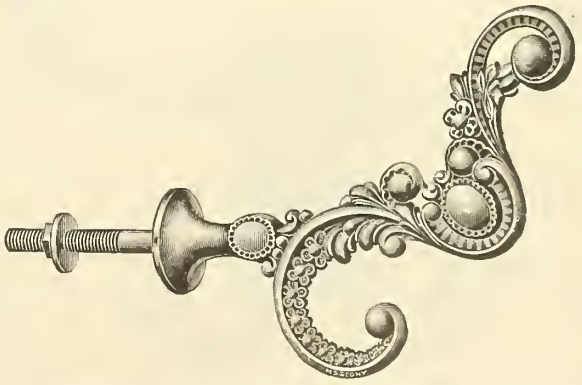
No. 1270 B. & N. Height 5 inches, projects 3½ inches. Cast iron, brass-plated, with bolt and nut. Can be taken apart for convenience in packing, dozen..... $2.00



No. 64 W. S. Height 4½ inches, projects 4½ inches. Cast brass, polished, dozen..... $2.75



No. 34 W. S. Projects 4 inches. Cast brass, polished, dozen.... $2.50

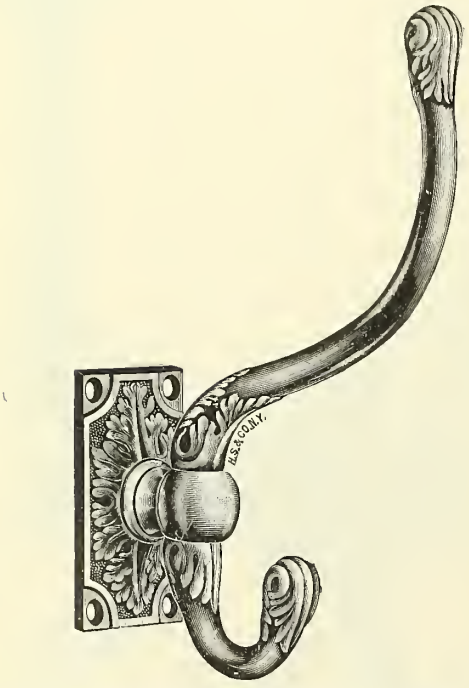


No. 117 Height 3¾ inches, projects 4½ inches. Cut shows bolt and nut. Iron, brass-plated. Also in stock with wood screw. Specify which is desired, dozen..... $1.20

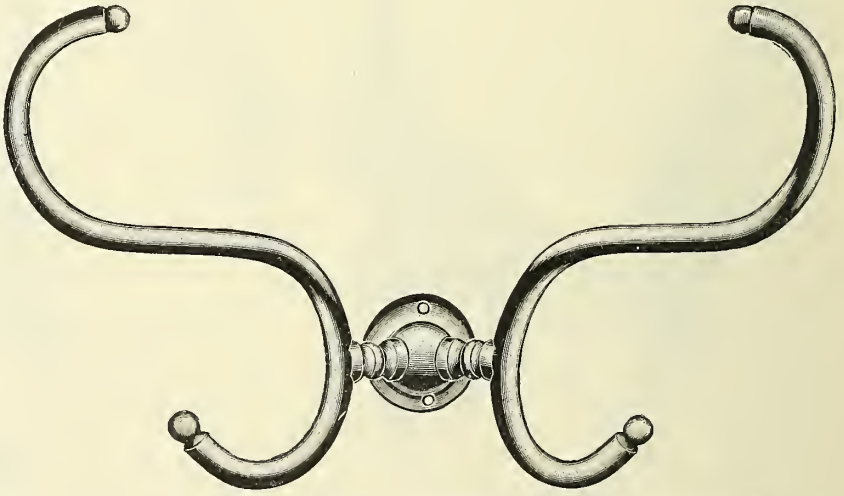
No. 1170 Same style as above, with but two hooks, dozen... 3.00

Coat and Hat Hooks

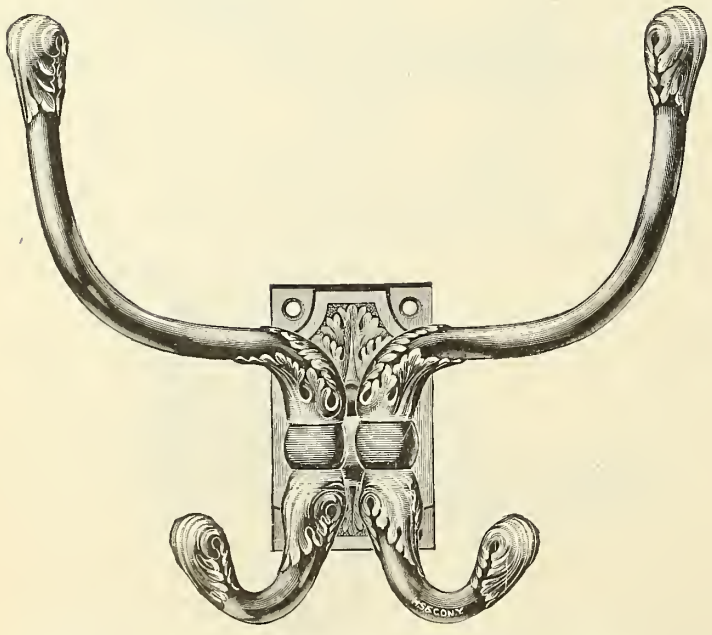
One-Half Size Cuts



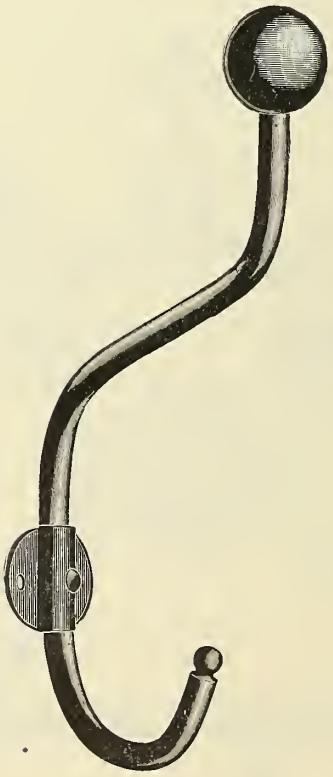
No. 6131 Height 7½ inches, projects 4 inches. Packed with screws. Cast brass, antique brass finish, dozen..... $28.00



No. 5185 Height 5 inches, projection 4½ inches. Iron, brass-plated, dozen..... $9.00



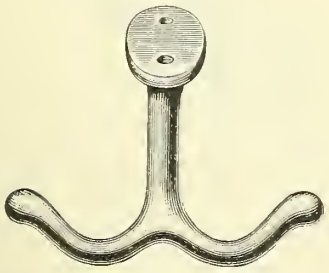
No. 6533 Height 6½ inches, projection 4¾ inches, spread 7 inches. Packed with screws. Cast brass, antique brass finish, dozen..... $56.00



No. 5455 Height 7 inches, projection 4 inches. Bauer-Barff finish, dozen..... $2.80

Ceiling Hooks

One Half Size Cuts

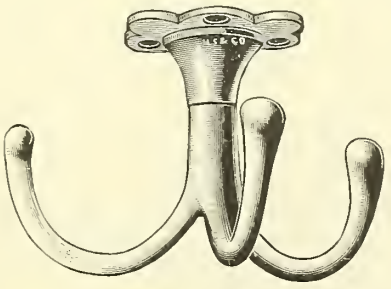


Length 2⅜ inches, spread 3¼ inches.

No. 128 Iron, copper bronzed, gross.. $5.00

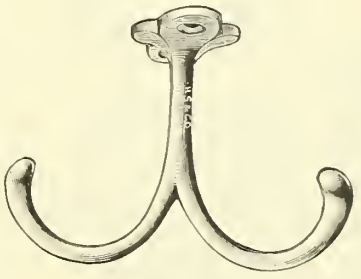
No. 1325 Packed with screws. Cast bronze, polished, dozen..... 2.50

No. OB1325 Packed with screws. Cast brass, old brass finish, dozen 2.50



Length 2½ inches, spread 3¼ inches.

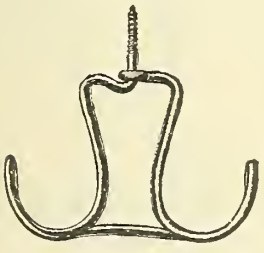
No. 261 Revolving type, cast brass, polished dozen..... $6.00



Length 2⅜ inches, spread 3¼ inches.

No. 255 Cast brass, polished, dozen. $2.40

No. YT36 Iron, bronze-plated, gross. 8.00



Length 1⅞ inches, spread 2½ inches.

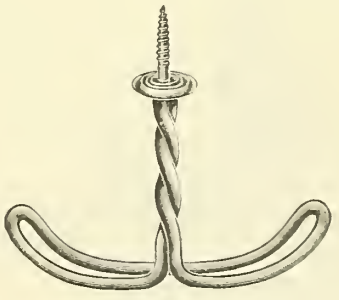
No. 582 Iron wire, brass-plated, gross $6.00



Length 2⅜ inches, spread 3 inches.

No. 1325½ Cast bronze, polished, dozen..... $2.40

No. OB1325½ Cast brass, old brass finish, dozen..... 2.40



Length 1⅞ inches, spread 3½ inches.

No. 088 Iron wire, coppered, gross... $3.40

No. 688 Iron wire, amber finish, gross 4.10

Wardrobe Hooks

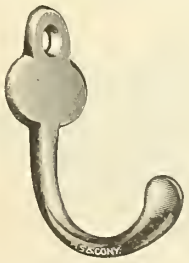
One Half Size Cuts



Projects 1¾ inches.

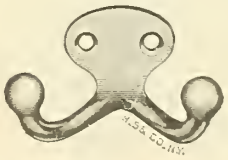
Packed with screws.

No. 1888¼ Bronze, nickel-plated, gross..... $18.00



Projects 1⅞ inches.

No. 249 Iron, brass-plated, gross... $3.00



Projects 1⅜ inches.

Packed with screws.

No. 5472 Bronze, nickel-plated, gross $22.70

Wardrobe Hooks

One Half Size Cuts

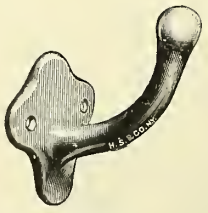


No. 5125

Projection 2 inches.
Cast brass, polished.
Gross $17.50



Projection 1¾ inches.
Packed with screws.
No. 01092 Cast bronze, polished, gross $9.60
No. OB01092 Cast brass, old brass finish, gross 9.60



Projection 1¾ inches.
Packed with screws.
No. 182 Bronze, cast bronze, polished, gross $19.20
No. 182 Nickel, cast bronze, nickel-plated, gross 19.20



No. 5618

Projection 1¾ inches.
Iron, brass-plated.
Gross $6.00



No. 5789

Projection 1⅝ inches.
Brass, polished.
Gross $9.00



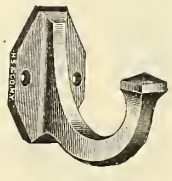
No. 1886

Projection 1½ inches.
Packed with screws.
Cast bronze, polished.
Gross $12.00



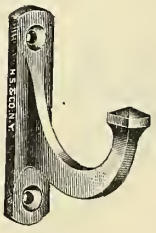
No. 5591

Projection 1¼ inches.
Brass, polished.
Gross $16.00



No. OB 924

Projection 2 inches.
Cast iron, old brass finish.
Gross $7.50

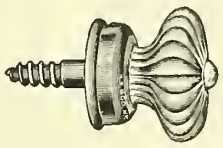


No. OB 57

Projection 1¾ inches.
Packed with screws.
Cast brass, old brass finish.
Dozen $3.50

Pressed Glass Furniture Knobs

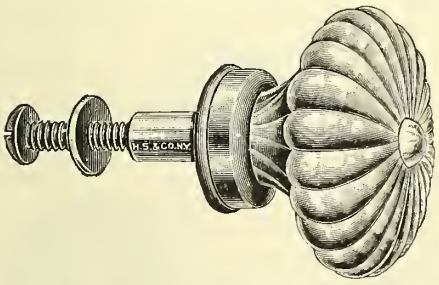
With Brass Mountings



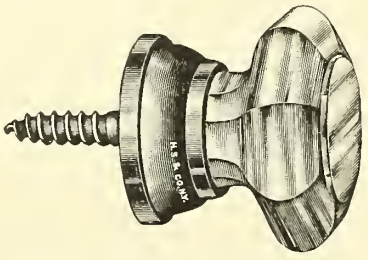
No. 299 With wood screw, knob is $\frac{11}{16}$ inch diameter, dozen $2.20

Following are exactly same design knob as above only larger and fitted with machine screw for attachment from within.

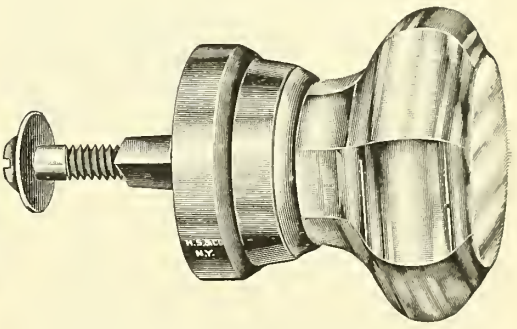
No. 300 Diameter knob $1\frac{1}{16}$ inches, dozen $3.40
No. 301 Diameter knob $1\frac{1}{4}$ inches, dozen 4.00



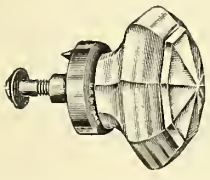
No. 302 Diameter knob $1\frac{1}{2}$ inches, dozen..... $4.50
No. 304 Diameter knob $1\frac{3}{4}$ inches, dozen 6.00



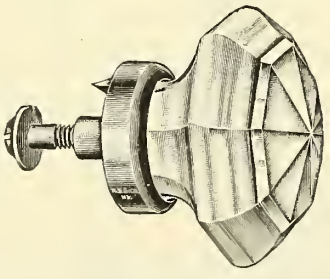
No. 4S Octagon, flat top. Knob is $1\frac{1}{4}$ inches diameter. Wood screw, dozen..... $7.50



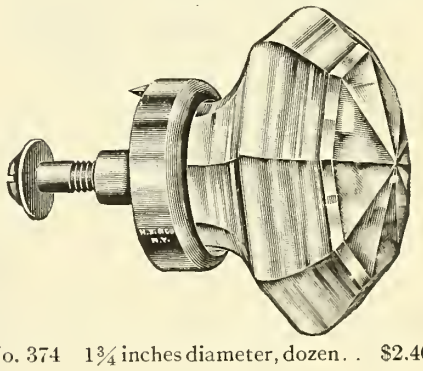
No. 4D Octagon, flat top. Knob is $1\frac{3}{4}$ inches diameter. Machine screw, dozen..... $7.50



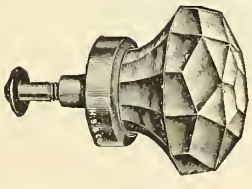
No. 373½ $\frac{7}{8}$ inch diameter, dozen.. $2.30



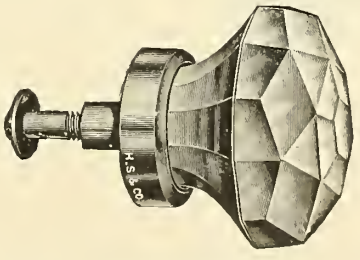
No. 373 $1\frac{3}{8}$ inches diameter, dozen.. $2.30



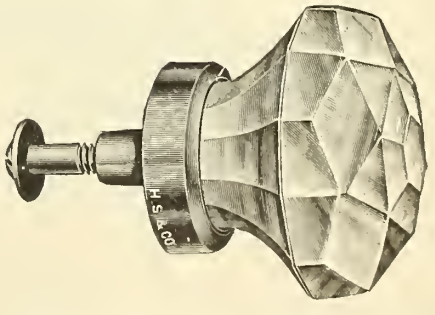
No. 374 $1\frac{3}{4}$ inches diameter, dozen.. $2.40



No. 332 $\frac{7}{8}$ inch diameter, dozen... $2.40



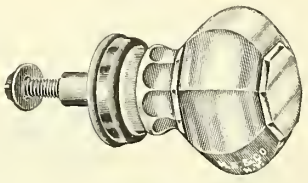
No. 333 $1\frac{1}{4}$ inches diameter, dozen.. $2.60



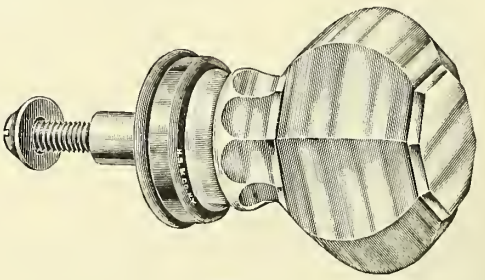
No. 334 $1\frac{5}{8}$ inches diameter, dozen.. $2.90

Pressed Glass Furniture Knobs

With Brass Trimmings

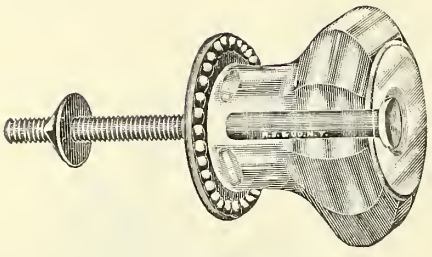


No. 50

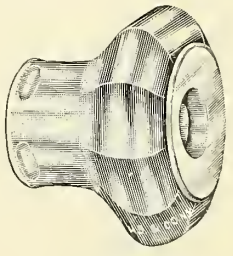


No. 52

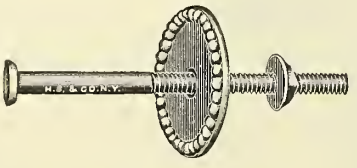
Number	Diameter Knob Inches	Dozen
50	1	$3.60
51	1 1/4	4.20
52	1 3/8	5.00
53	1 5/8	5.60
55	2	7.40



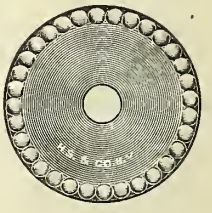
Knob Assembled



Knob



Bolt, Nut and Plate

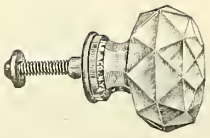


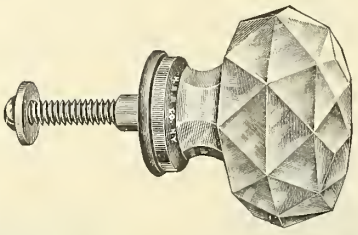
Plate

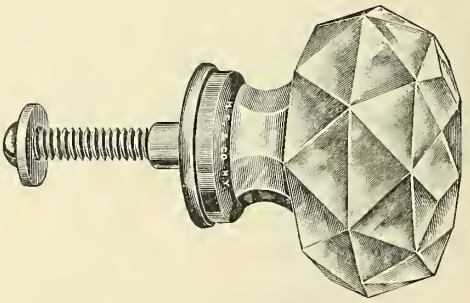
Number	Diameter Inches	Knob Complete Dozen	Glass Only Dozen	Bolt and Nut Dozen	Plate Only Dozen
140	1 1/8	$7.00	$4.50	$2.00	$ .90
141	1 1/2	8.00	5.40	2.00	1.10
142	2 1/8	9.00	6.40	2.00	1.20

Cut Glass Knobs

With Brass Trimmings





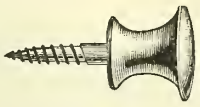


These Knobs are made of the finest quality of imported crystal glass.

Number	Diameter Inches	Dozen
599	3/4	$7.00
600	1	8.00
601	1 1/4	9.00
602	1 3/8	9.50
603	1 1/2	10.50
604	1 3/4	11.50

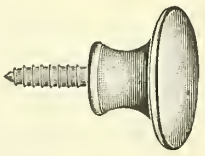
Furniture Knobs

Full Size Cuts



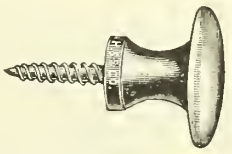
No. 60

		Cast Brass with Wood Screws	
		Polished Gross	Old Brass Gross
No. 60	Diameter ½ inch	$5.60	$7.30
No. 61	Diameter ⅝ inch	6.30	8.00
		With Machine Screws	
No. 110	Diameter $\frac{9}{16}$ inch	6.00	7.70
No. 112	Diameter ¾ inch	7.40	9.10



No. 5666

Size, inch	½	⅝	¾	⅞
No. 5666 Polished, gross	$4.50	5.75	7.00	10.00



No. 1161 Wrought Brass

Polished

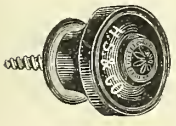
Diameter $\frac{5}{16}$ inch, gross	$3.50
Diameter $\frac{7}{16}$ inch, gross	4.25
Diameter $\frac{9}{16}$ inch, gross	5.00
Diameter ⅝ inch, gross	5.75
Diameter ¾ inch, gross	7.00
Diameter ⅞ inch, gross	10.00

Old Brass

Diameter $\frac{9}{16}$ inch, gross	6.00
Diameter ¾ inch, gross	8.40
Diameter ⅞ inch, gross	12.00

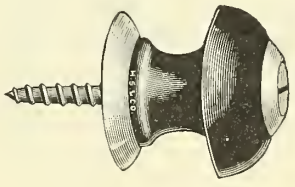
Nickel-plated

Diameter ⅞ inch, gross	12.50



$\frac{9}{16}$ inch diameter

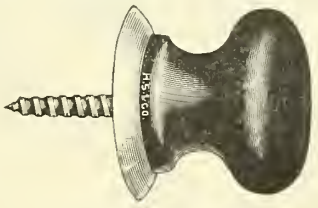
No. 12 Composition, black, with bases, gross	$2.00
No. 12 Composition, black, without bases, gross	1.90
No. 15 Composition, brown, with bases, gross	2.00
No. 15 Composition, brown, without bases, gross	1.90



No. 6
Style of No. 7

Black Enamel, Brass Base

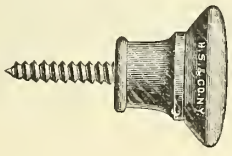
No. 6	Diameter 1 inch, gross	$2.70
No. 7	Diameter ¾ inch, gross	2.60



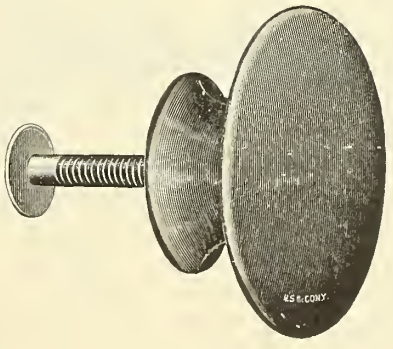
No. 334 Style of No. 332

Black Enamel, 1 inch Diameter

No. 332	Without base, gross	$3.00
No. 334	With brass base, gross	4.00

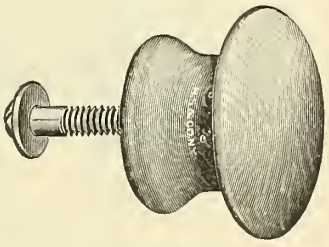


		Per 1000	Per 100
No. 20	Polished oak	$10.00	$1.25
No. 30	Polished walnut	10.00	1.25
No. 40	Polished mahogany	10.00	1.25



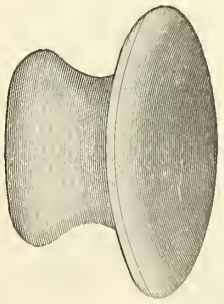
Finished Oak

Diameter 1¼ inches, per gross	$7.50
Diameter 1½ inches, per gross	8.00
Diameter 1¾ inches, per gross	9.00
Diameter 2 inches, per gross	10.00



Solid Mahogany, Unfinished

Diameter 1¼ inches, per gross	$10.00
Diameter 1½ inches, per gross	10.00
Diameter 2 inches, per gross	15.00

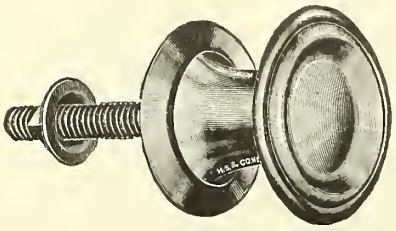


Finished Imitation Mahogany

Diameter 1¼ inches, per gross	$7.50
Diameter 1½ inches, per gross	8.00
Diameter 1¾ inches, per gross	9.00
Diameter 2 inches, per gross	10.00

Furniture Knobs

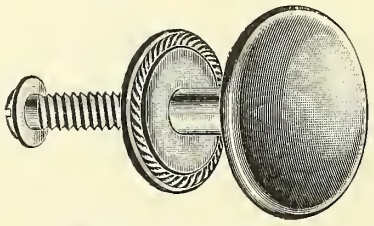
Full Size Cuts



No. 1538 Wrought brass, polished

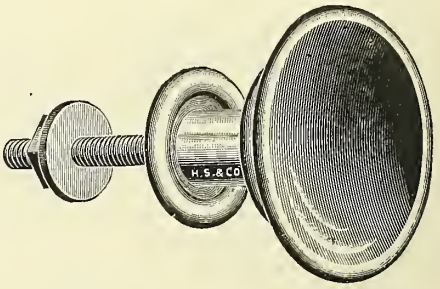
Diameter 1 inch, gross..... $5.60

Diameter 1¼ inches, gross..... 6.30



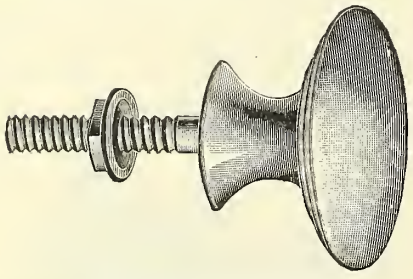
Wrought brass, polished

Number	Diameter Inches	Gross
5460	⅞	$9.60
5459	1⅛	12.00



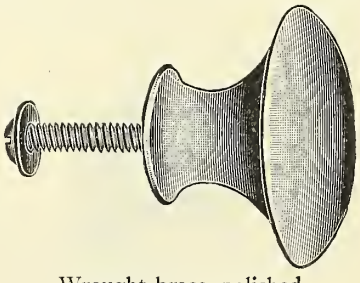
No. 165 Wrought brass, polished

Diameter 1⅜ inches, gross $6.00



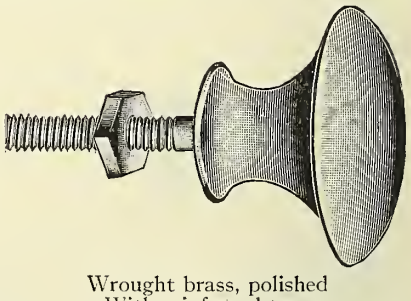
Wrought brass, polished

Number	Diameter Inches	Gross
5606M	1⅛	$6.40
5605M	1⅜	7.20



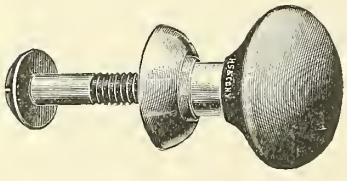
Wrought brass, polished
With reinforced tops

Number	Diameter Inches	Gross
6099	1⅛	$7.65
6098	1⅜	8.45



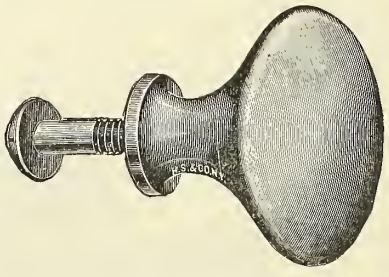
Wrought brass, polished
With reinforced tops

Number	Diameter Inches	Gross
6061	1⅛	$7.40
6060	1⅜	8.20



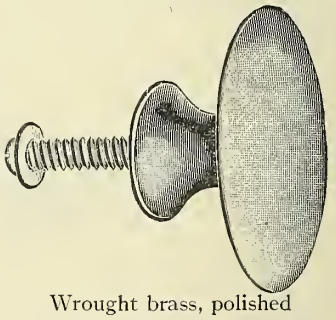
No. 198 Wrought brass, polished, ⅞ inch diameter, gross..... $8.00

No. 198N Wrought brass, nickel-plated, ⅞ inch diameter, gross... 10.00



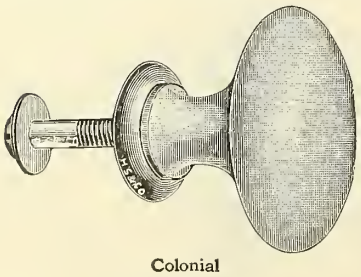
Wrought brass, polished

Number	Diameter Inches	Gross
199	1⅛	$11.20
200	1⅜	12.80



Wrought brass, polished

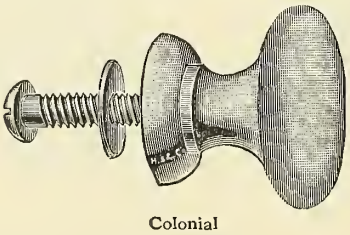
Number	Diameter Inches	Gross
5667	1⅞	$18.00
5668	1½	16.20
5669	1¼	14.40



Colonial

Cast brass

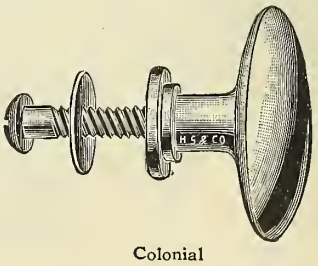
Number	Diameter Inches	Per Gross Polished	Per Gross Old Brass
148	⅞	$11.20	$14 40
149	1¼	19.20	22.40
151	1⅛	14.40	19 20



Colonial

Cast Brass

Number	Diameter Inches	Per Gross Polished
137	⅞	$14.40
43	1⅛	24.00
138	1¼	25.00
44	1½	51.20

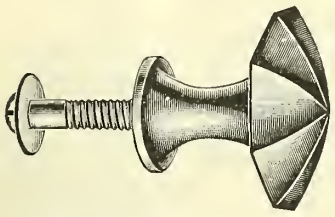


Colonial

Cast Brass

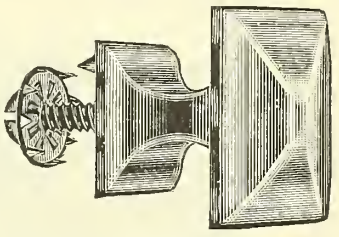
Number	Diameter Inches	Length Inches	Per Gross Polished	Per Gross Old Brass
181	⅝	⅞	$16.20	
23	¾	1⅛	14.40	
24	1	1⅜	20.80	24.00
16	1¼	1¾	32.00	

Furniture Knobs

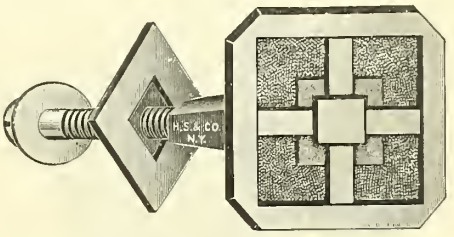


Cast brass, old brass finish.

Number	Diameter Inches	Gross
179	1 1/8	$24.00
180	1 3/8	28.80

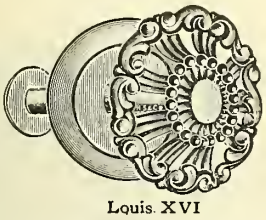


No. 210 Cast brass, old brass finish. Mission. 1 1/8 inches diameter, dozen $3.40



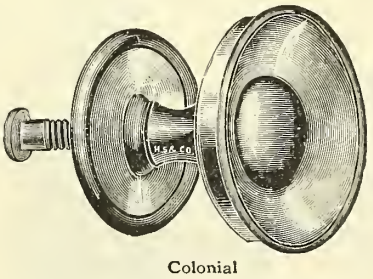
Cast brass, antique brass finish. Mission.

Number	Diameter Inches	Dozen
488	1 3/8	$3.60



Louis XVI

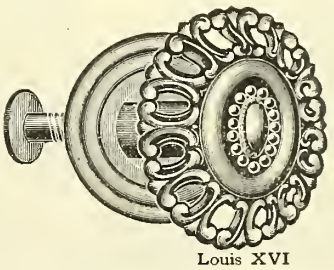
No. 143 Cast brass, stamped brass rosette, gilt finish. 1 inch diameter, gross $7.20



Colonial

Wrought brass, old brass finish.

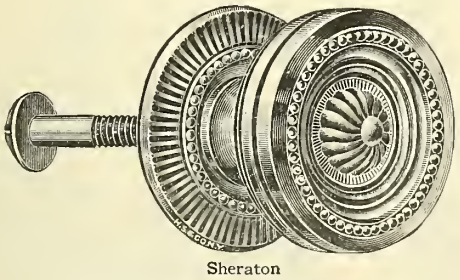
Number	Diameter Inches	Dozen
97	1 1/4	$2.70
98	2	3.10



Louis XVI

Cast brass, stamped brass rosette.

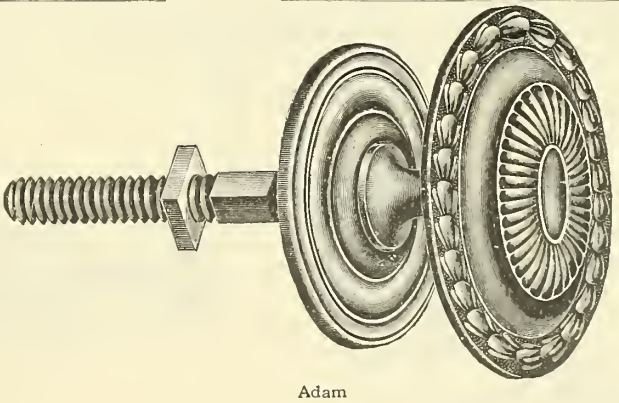
Number	Diameter Inches	Gross
160	1 3/16	$8.40
161	1 1/2	9.60



Sheraton

Cast brass, stamped brass rosette. Old brass finish.

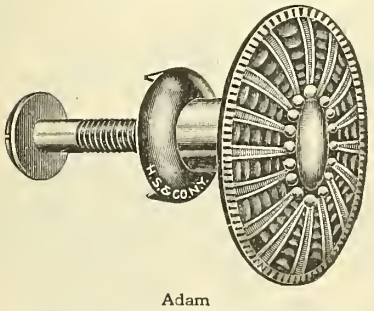
Number	Diameter Inches	Dozen
285	1 1/4	$4.40
287	1	3.40
289	3/4	2.60
291	5/8	2.10



Adam

Wrought brass, old English finish.

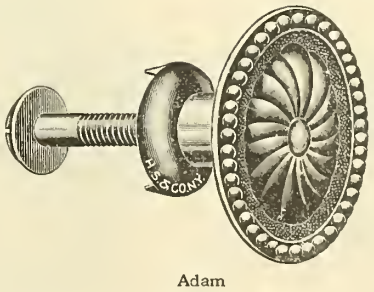
Number	Diameter Inches	Dozen
1631	1 1/4	$3.25
1631	2	4.00



Adam

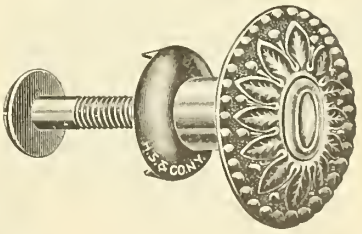
Cast brass, old English finish.

Number	Size Inches	Dozen
459	15/16 x 1 7/16	$2.80
458	3/4 x 1 1/8	2.50
458 1/2	5/8 x 1 5/16	2.20



Adam

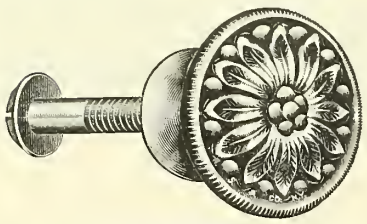
No. 389 15/16 x 1 3/8 inches. Cast brass, old English finish, dozen $2.30



No. 478 7/8 x 1 1/8 inches. Cast brass, old English finish. Louis XVI, dozen $3.00

Furniture Knobs

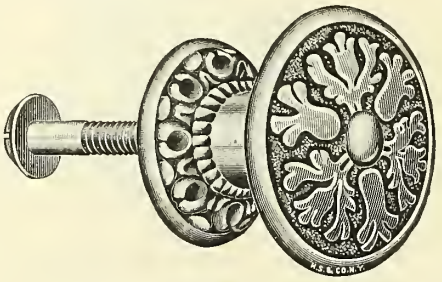
Full Size Cuts



Louis XVI

Cast brass, ormolu gold finish.

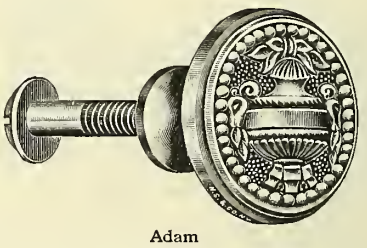
Number	Diameter Inches	Dozen
344½	¾	$2.30
344	1	2.40
345½	1⅛	2.90
345	1¼	3.00



Adam

Cast brass, old English finish.

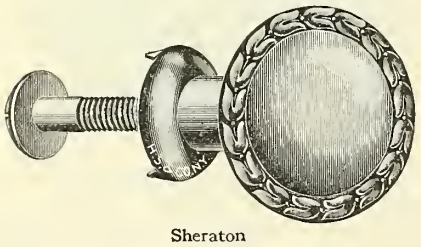
Number	Diameter Inches	Dozen
351½	1	$2.70
351	1⅜	3.00



Adam

Cast brass, old English finish.

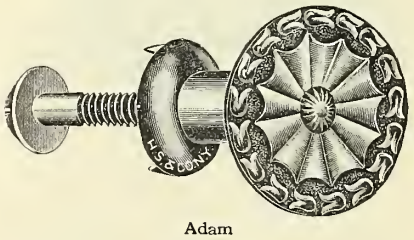
Number	Diameter Inches	Dozen
81	1⅛	$1.20
82	1½	1.40



Sheraton

Cast brass, old English finish.

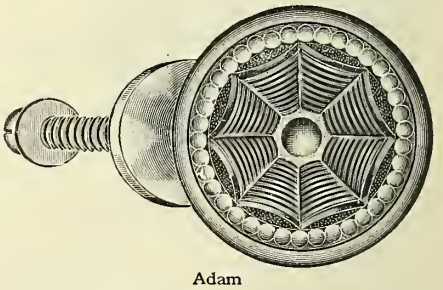
Number	Diameter Inches	Dozen
480	1⅛	$3.00
479	15/16	2.70



Adam

Cast brass, old English finish.

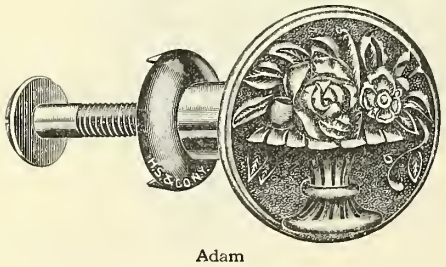
Number	Diameter Inches	Dozen
434	1⅛	$2.90
433	⅞	2.60



Adam

Cast brass, old brass finish.

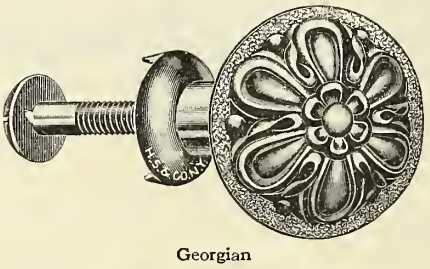
Number	Diameter Inches	Dozen
6313	1⅜	$3.00
6312	¾	1.70



Adam

Cast brass, old English finish.

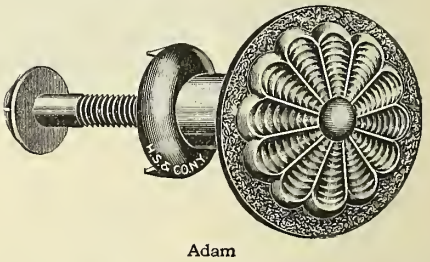
Number	Diameter Inches	Dozen
461	1¼	$2.80
460	1	2.50



Georgian

Cast brass, old English finish.

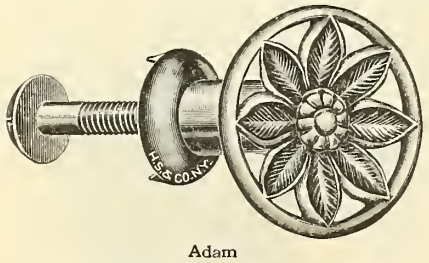
Number	Diameter Inches	Dozen
473	1 3/16	$2.80
472	⅞	2.50



Adam

Cast brass, old English finish.

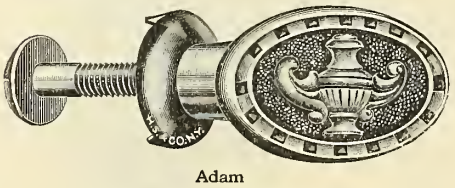
Number	Diameter Inches	Dozen
463	1 3/16	$2.00
462	⅞	1.65



Adam

Cast brass, old English finish.

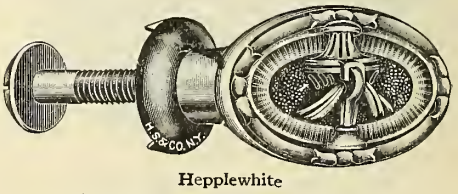
Number	Diameter Inches	Dozen
476	1¼	$1.20
475	1	1.40



Adam

Cast brass, old English finish.

Number	Size Inches	Dozen
471	13/16 x 1⅜	$2.70
470	⅝ x 15/16	2.30



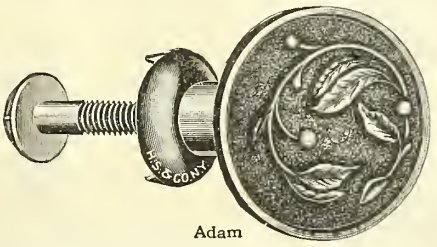
Hepplewhite

Cast brass, old English finish.

Number	Size Inches	Dozen
467	⅞ x 1⅜	$2.70
466	⅝ x 15/16	2.30

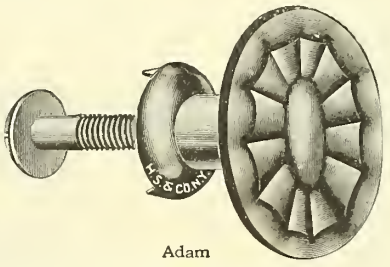
Furniture Knobs

Full Size Cuts



Adam

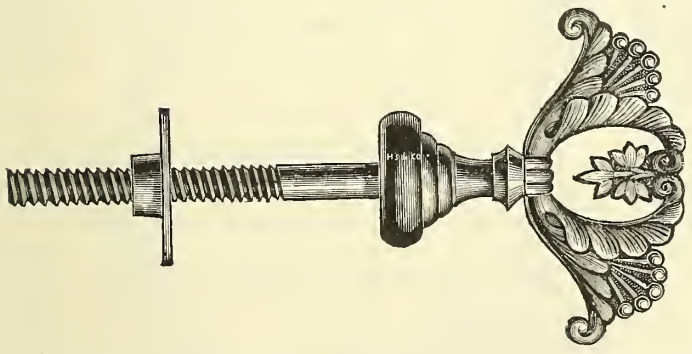
No. 457 Cast brass, old English finish, dozen..... $2.30



Adam

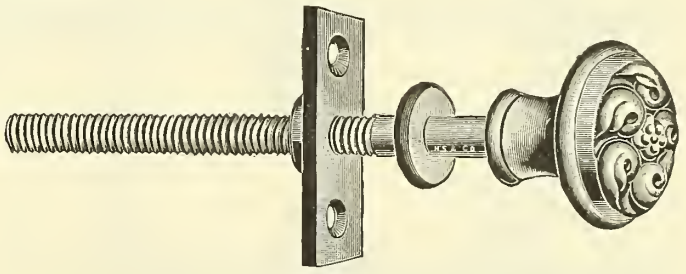
No. 450 Cast brass, old English finish, dozen..... $1.80

Toilet Screws



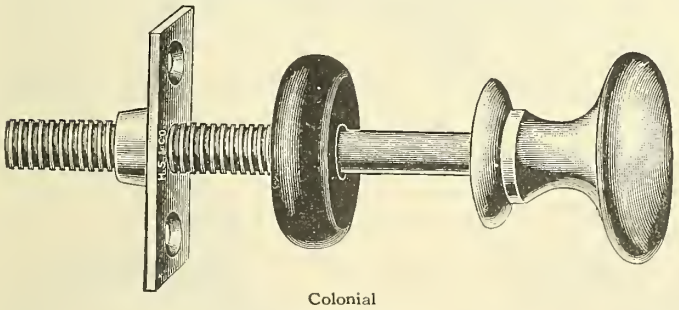
Louis XVI

No. 9 Cast brass, polished, dozen..... $2.60



Louis XV

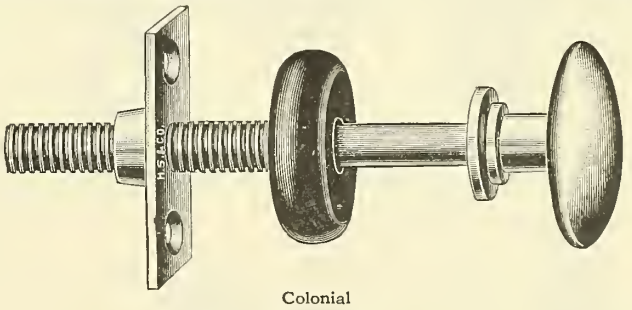
No. 31 Cast brass, polished, dozen..... $7.50



Colonial

Cast Brass

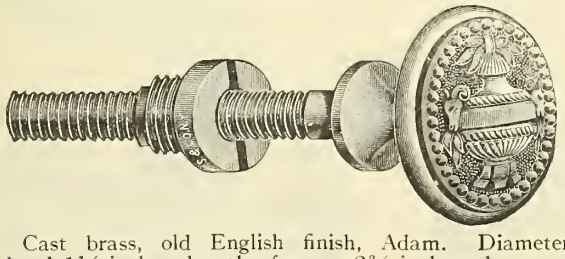
Number	Finish	Dozen
55	Polished	$3.30
138	Polished	3.60
138 OB	Old Brass	4.00



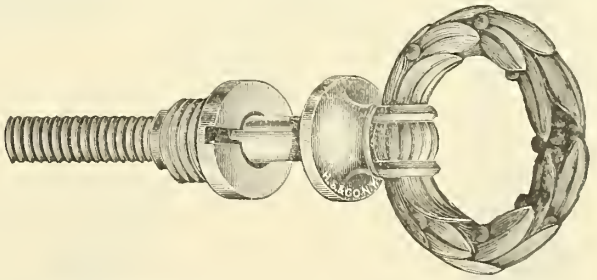
Colonial

Cast Brass

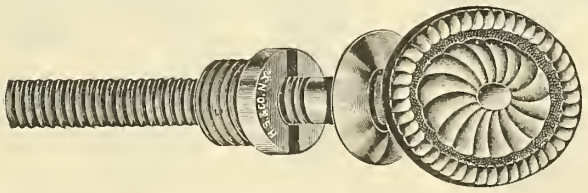
Number	Finish	Dozen
32	Polished	$4.50
32 OB	Old Brass	5.00
36	Polished	3.00
36 OB	Old Brass	3.30



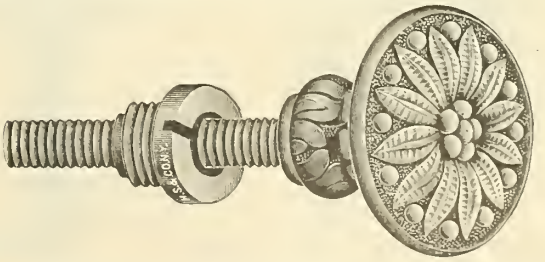
No. 81 Cast brass, old English finish, Adam. Diameter of head 1⅛ inches, length of screw 2¾ inches, dozen... $4.00



No. 48 Cast brass, old gold finish, Louis XVI. Diameter of ring 1¼ inches, length of screw 2¾ inches, dozen..... $2.30

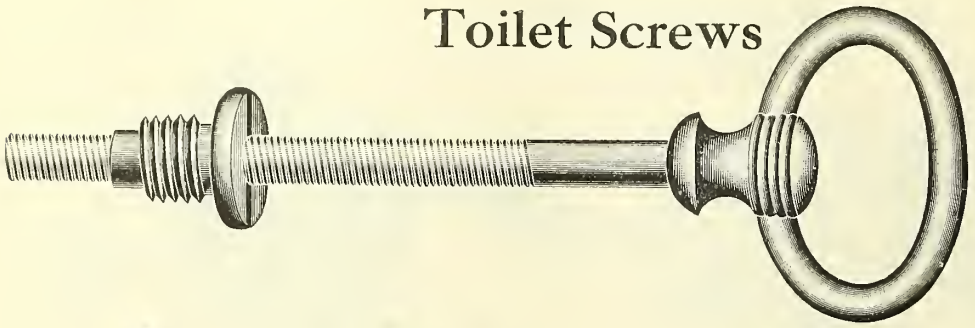


No. 389 Cast brass, old English finish, Adam. Size of head 1⅜ inches, length of screw 3 inches, dozen..... $3.60

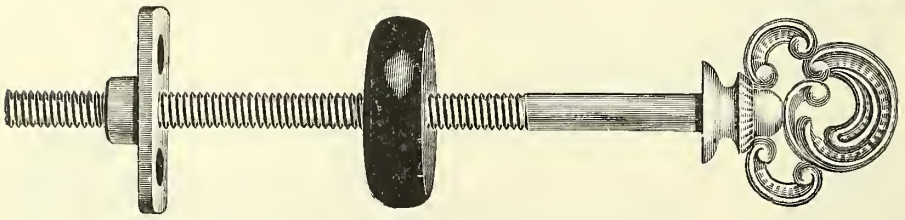


No. 74 Cast brass, old gold finish, Louis XVI. Dozen.. $2.60

Toilet Screws



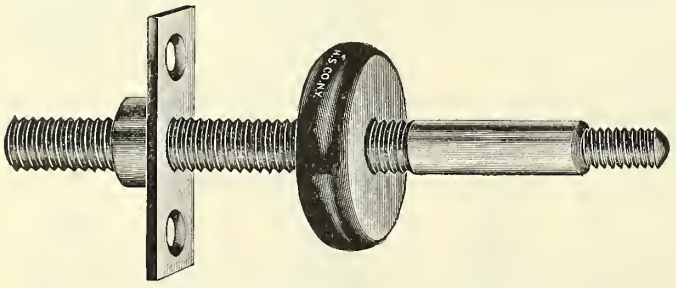
No. 193 Cast brass, polished; ebonized washer, dozen..... $1.80



No. 4861 Cast brass, ebonized washer, dozen $2.30

Washers for Toilet Screws

Brass, ⅛ inch thick, 1 inch diameter, dozen..... $ .70
Brass, ¼ inch thick, 1 inch diameter, dozen..... 1.00
Ebonized, as shown with rod and plate opposite, ¼ inch thick, 1 inch diameter, dozen..... .15

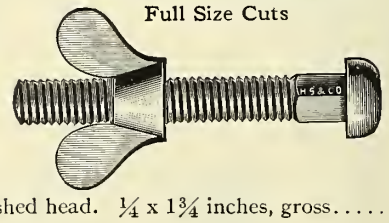


Rod and Plate for Toilet Screw

Can be fitted to Glass Knobs, Series 50, 300 and 600. Dozen... $2.50

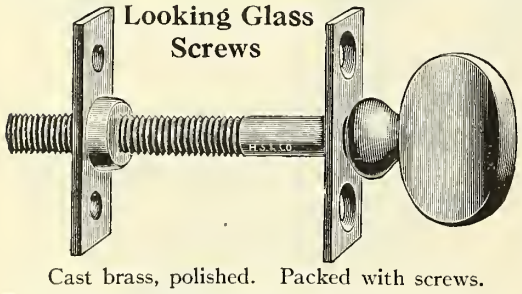
Brass Thumb Screws

Full Size Cuts



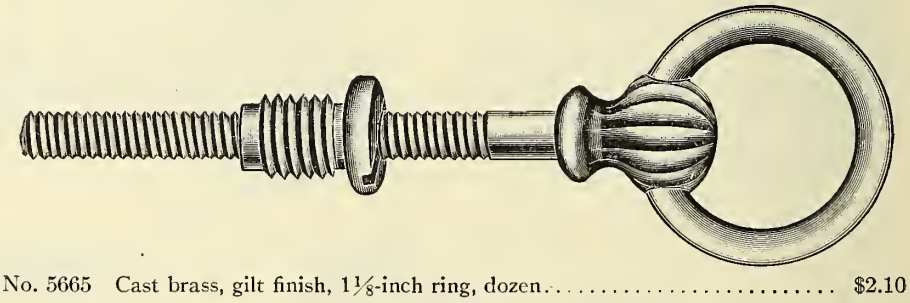
Brass, with polished head. ¼ x 1¾ inches, gross..... $12.00

Looking Glass Screws



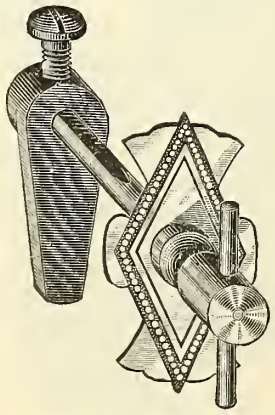
Cast brass, polished. Packed with screws.

Number	Size, Inches	Dozen
1045	2	$1.70
1045	2½	1.85
1045	3	2.20
1050	3	2.80

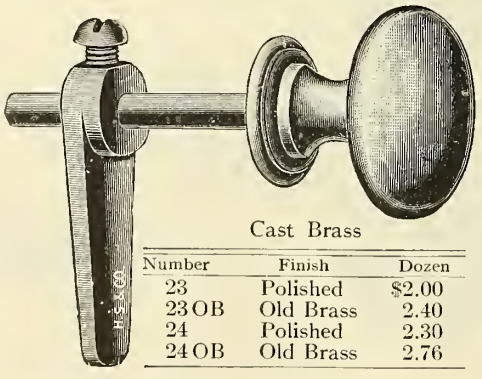


No. 5665 Cast brass, gilt finish, 1⅛-inch ring, dozen..... $2.10

Commode Buttons

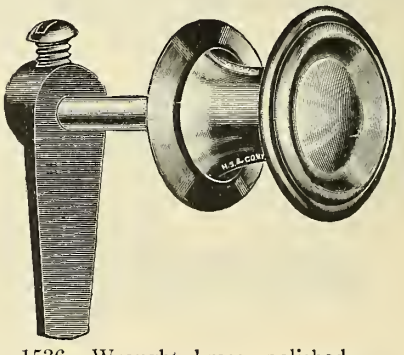


No. 922 Solid brass, polished, dozen.. $1.00



Cast Brass

Number	Finish	Dozen
23	Polished	$2.00
23 OB	Old Brass	2.40
24	Polished	2.30
24 OB	Old Brass	2.76



No. 1536 Wrought brass, polished, gross..... $6.00

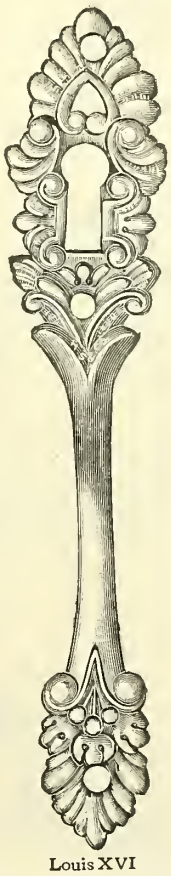
Furniture Pulls

Full Size Cuts



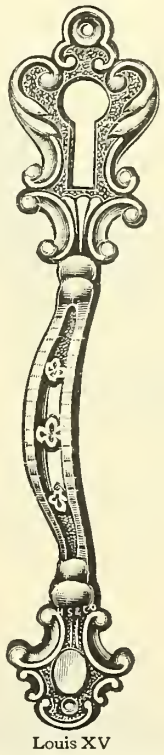
Colonial

No. 1945 Cast brass polished, dozen..... $1.20



Louis XVI

No. 4767 Cast brass, gilt finish. Packed with screws. Dozen..... $1.20



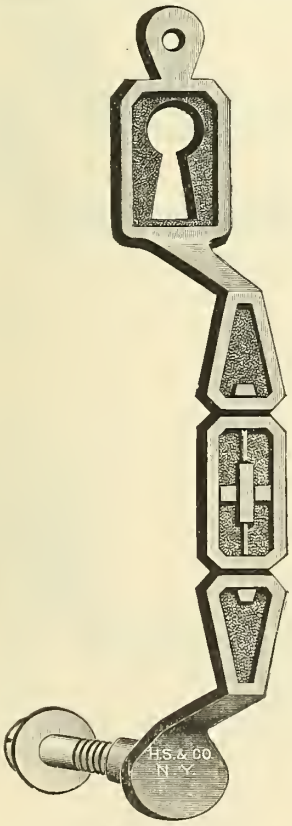
Louis XV

No. 951 Cast brass, gilt finish, dozen..... $1.00

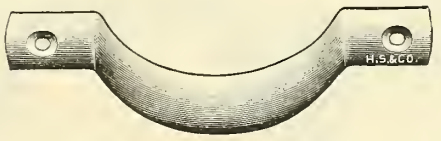


Louis XVI

No. 1017 Cast brass, polished, dozen..... $1.40



No. 2731 Mission. Cast brass, antique finish, single boring, dozen... $3.00



No. 100 Wrought brass, polished, gross..... $4.80
No. 1924¼ Wrought steel, brass-plated, gross..... 1.80
No. 2045 Cast iron, japanned, gross..... 2.00



No. 101 Wrought brass, polished, gross..... $4.80



No. 5356 Cast brass, polished, gross..... $8.00



Louis XVI

No. 4824 Cast brass, polished. Packed with screws. Dozen..... $1.50

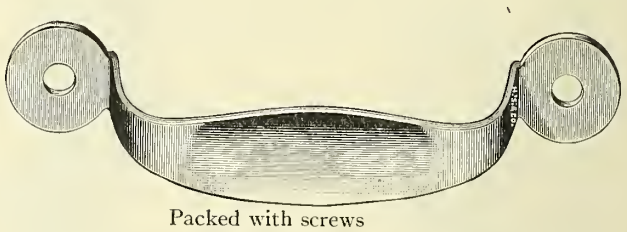
Furniture Pulls

Full Size Cuts



Cast Brass, Old Brass Finish

No. 2338 Spacing 3 inches, dozen $3.80
No. 2337 Spacing 3½ inches, dozen 4.20
No. 2336 Spacing 4 inches, dozen 4.65



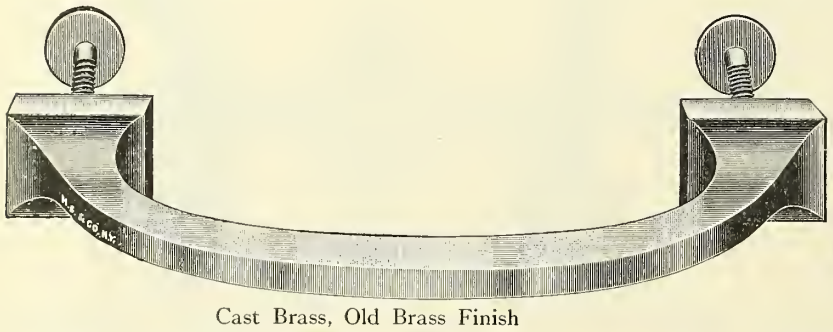
Packed with screws

3 inches overall

No. 444 Wrought bronze, polished, gross $9.00
No. 446 Wrought brass, polished, gross 8.40

2½ inches overall

No. 443 Wrought bronze, polished, gross 8.30



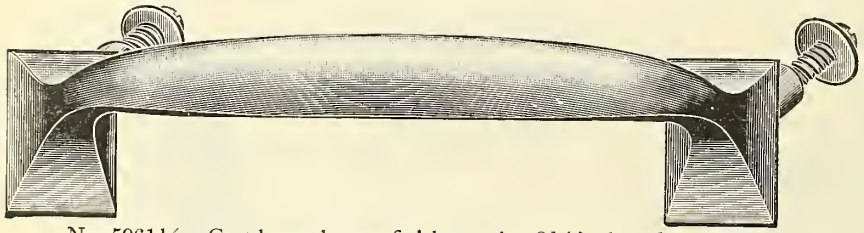
Cast Brass, Old Brass Finish

No. 2581 Spacing 3 inches, dozen $3.60
No. 2582 Spacing 4 inches, dozen 4.20

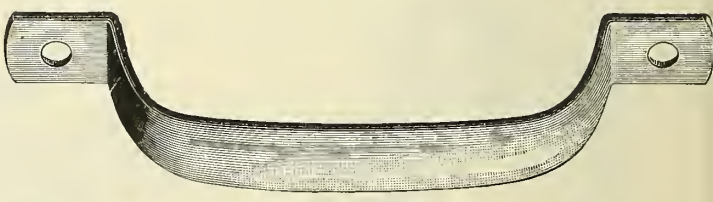


No. 4196

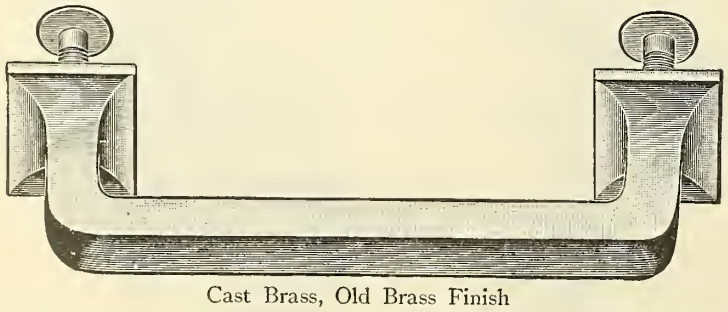
No. 4196 Cast brass, polished, spacing 3½ inches, dozen $3.00



No. 5961½ Cast brass, bronze finish, spacing 3½ inches, dozen $5.00
No. 5961OB Cast brass, old brass finish, spacing 3½ inches, dozen 5.25
No. 5962½ Cast brass, bronze finish, spacing 2¼ inches, dozen 3.55
No. 5962OB Cast brass, old brass finish, spacing 2¼ inches, dozen 3.75
No. T407 Iron, Tuscan bronze finish, spacing 4 inches, dozen 2.80

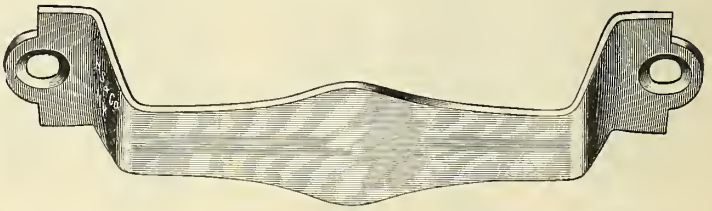


No. DA2400 Wrought steel, antique copper finish, gross $4.80
No. 2700 Wrought brass, old brass finish, gross 7.30



Cast Brass, Old Brass Finish

No. OB1431 Spacing 3 inches, dozen $3.80
No. OB1432 Spacing 3½ inches, dozen 4.10
No. OB1433 Spacing 4 inches, dozen 4.30



No. 6081 Wrought bronze, polished. Packed with screws, gross $14.00

Furniture Pulls

Colonial

Full Size Cuts



No. 5636

No. 5636 Brass plated, polished, spacing 3 inches, dozen ..... $ .55



Cast Brass

No. 936 Polished, spacing 3 inches, dozen $3.30
No. 936OB Old brass finish, spacing 3 inches, dozen 3.65
No. 936X768 Polished, spacing 3½ inches, dozen 4.50
No. 936X768OB Old brass finish, spacing 3½ inches, dozen ... 5.00



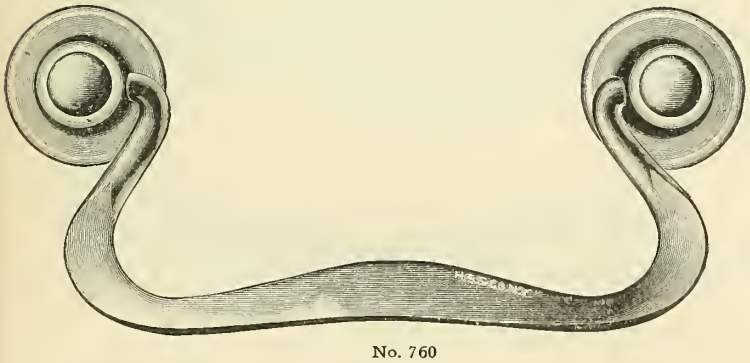
No. 5767

No. 5767 Wrought brass, swell bail, polished, spacing 3 inches, dozen $2.35



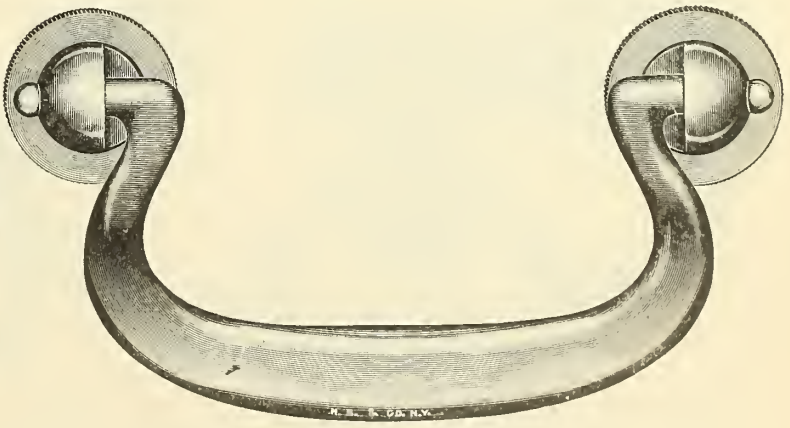
Cast Brass

No. 1004 Polished, spacing 2½ inches, dozen $2.40
No. 1004OB Old brass finish, spacing 2½ inches, dozen 2.70
No. 1005 Polished, spacing 3 inches, dozen 2.60
No. 1005OB Old brass finish, spacing 3 inches, dozen 2.90



No. 760

No. 760 Brass-plated, swell bail, polished, spacing 3 inches, dozen ..... $ .60



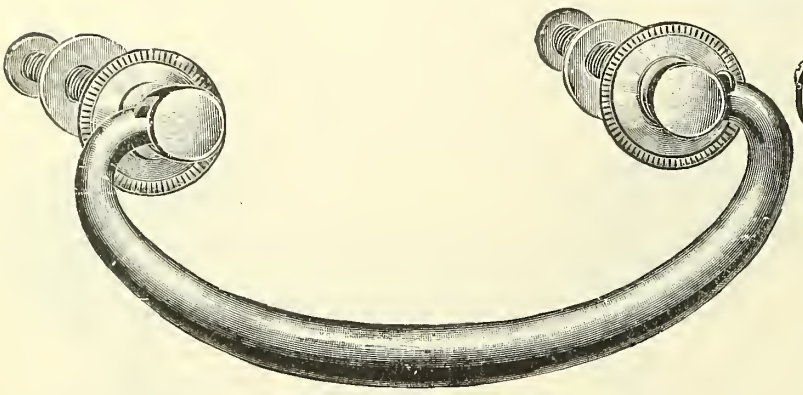
Cast Brass, Old Brass Finish

No. 1938OB Spacing 3 inches, dozen $4.80
No. 1939OB Spacing 3½ inches, dozen 6.00

Furniture Pulls

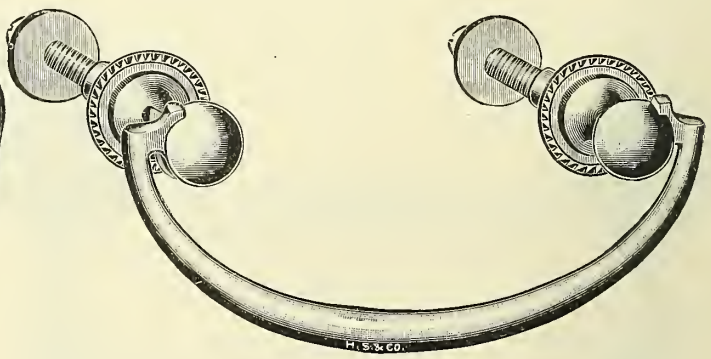
Colonial

Full Size Cuts



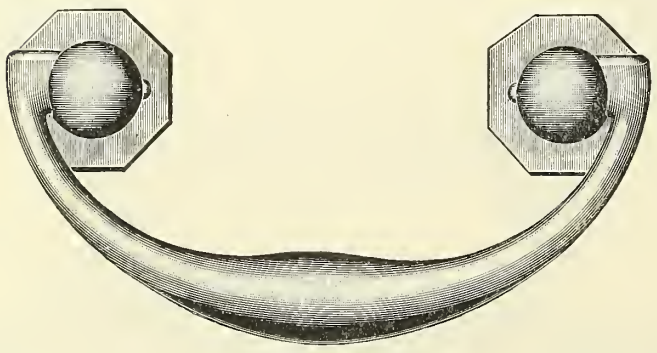
Wrought Brass, Polished

Number	Size Boring Inches	Dozen
5194	2½	$2.20
5154	3	3.00



Cast Brass

Number	Finish	Size Boring Inches	Dozen
935–755	Polished	2¼	$3.00
935–755 OB	Old Brass	2¼	3.30
935–756	Polished	2¾	3.30
935–756 OB	Old Brass	2¾	3.65



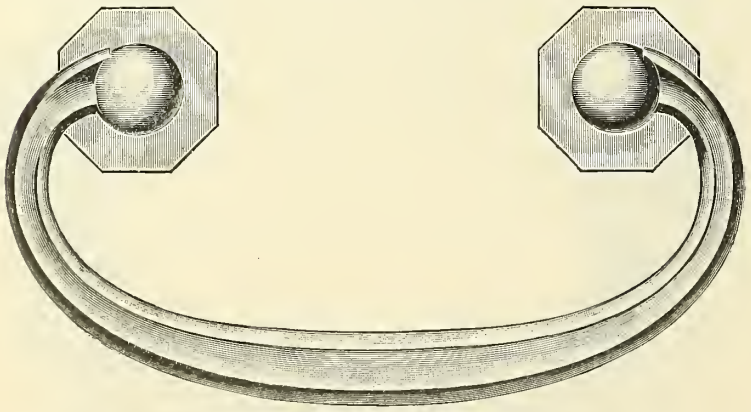
Cast Brass, Polished

Number	SizeBoring Inches	Dozen
1107–1165	2½	$3.25
1107–1166	3	4.25



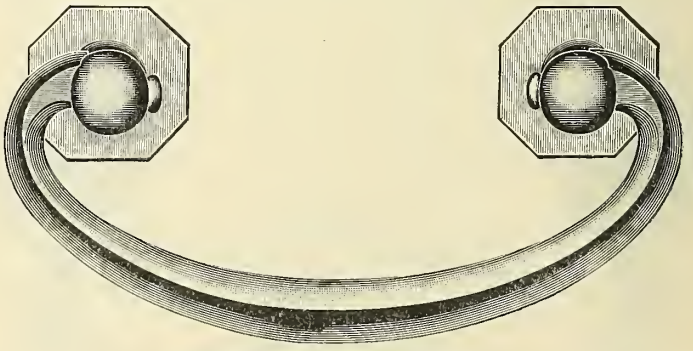
Wrought Brass, Polished

Number	Size Boring Inches	Dozen
5559	3	$1.90
5560	2	1.60



Cast Brass, Old Brass Finish

Number	Size Boring Inches	Dozen
1107 OB	2½	$7.40
1108 OB	3	7.40



Cast Brass, Old Brass Finish

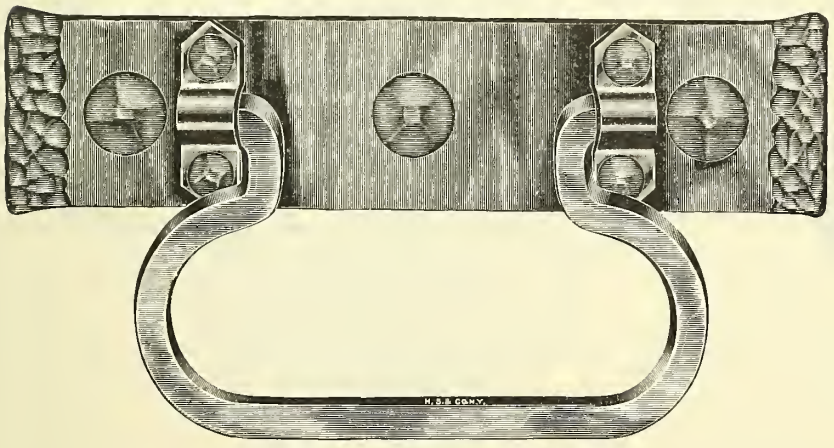
Number	Size Boring Inches	Dozen
1189 OB	2½	$3.90
1190 OB	3	4.00

SEE DISCOUNT SHEET

Furniture Pulls

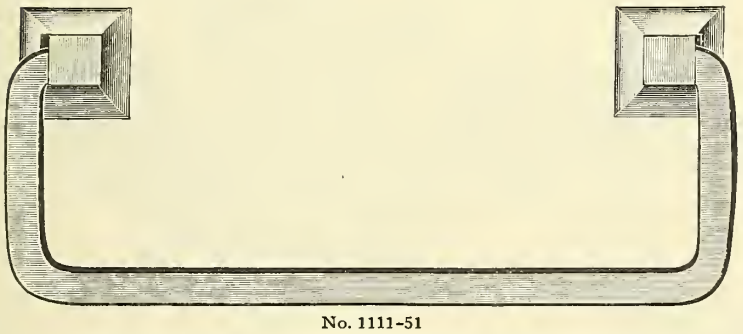
Mission

Full Size Cuts



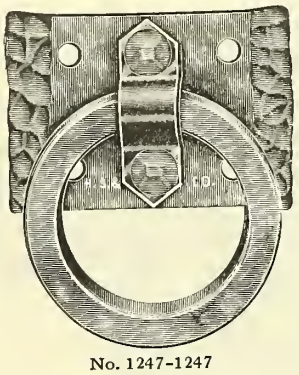
No. 1243-1243

No. 1243–1243 Plated bail and back plate, antique brass finish, 3-inch spacing, dozen $4.60



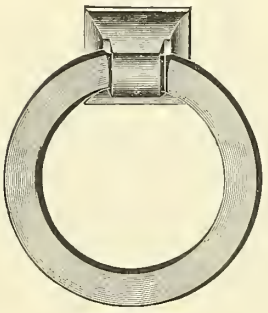
No. 1111-51

No. 1111-51 Extra heavy brass, antique brass finish, 3 inch spacing, dozen $5.00



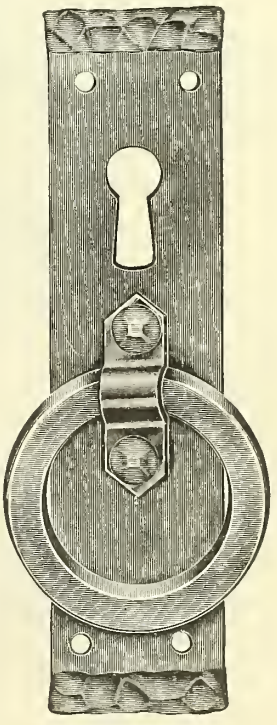
No. 1247-1247

No. 1247–1247 Plated ring and back plate, antique brass finish, dozen .. $2.60



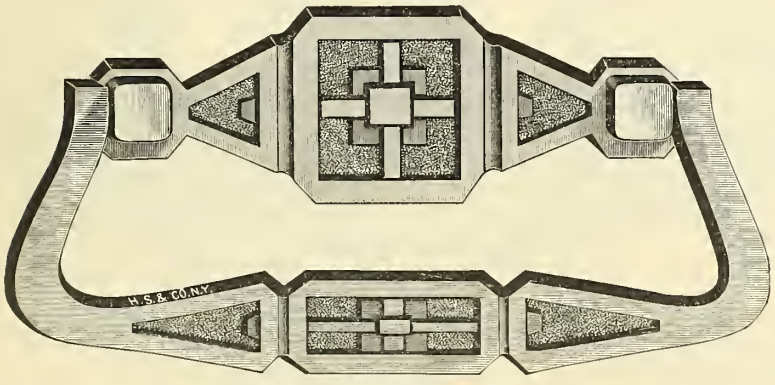
No. 1120-51

No. 1120–51 Brass ring, antique brass finish, dozen $2.60



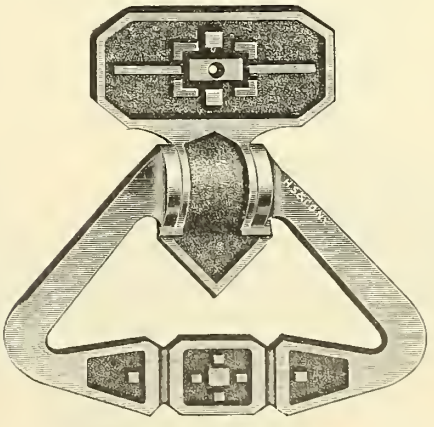
No. 1248-1247

No. 1248–1247 Plated ring and back plate, antique brass finish, dozen .. $3.20



Cast Brass, Antique Brass Finish

No. 2733 Spacing 2½ inches, dozen $2.00
No. 2780 Spacing 3 inches, dozen 2.50

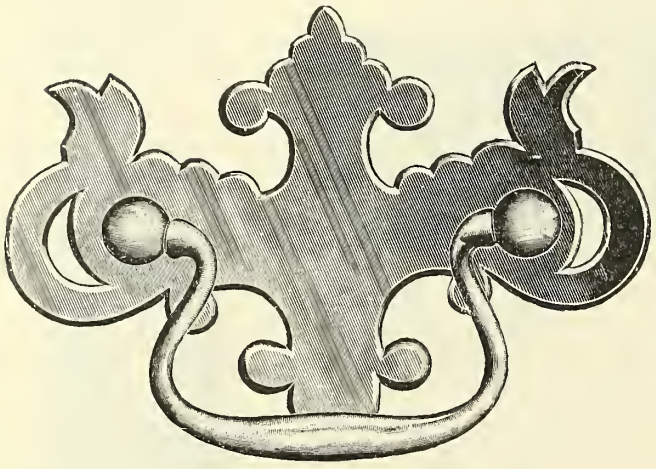


No. 2732 Cast brass, antique brass finish, single spacing, dozen $1.50

Furniture Pulls

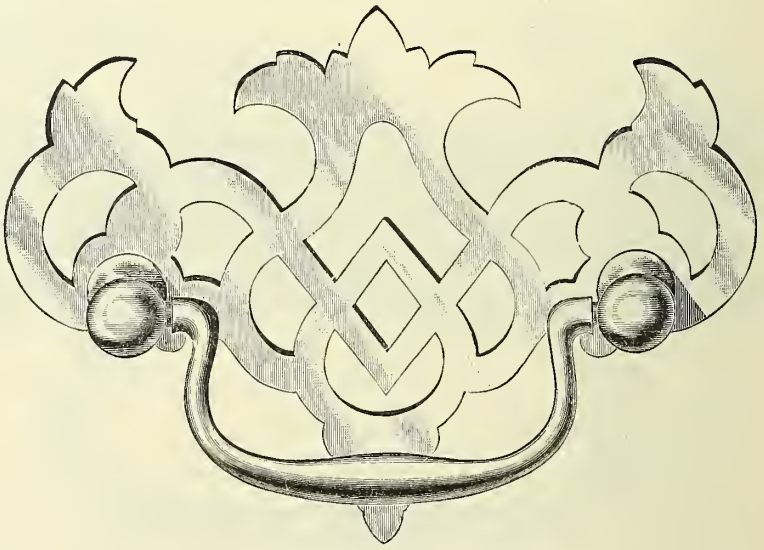
Colonial

Full Size Cuts



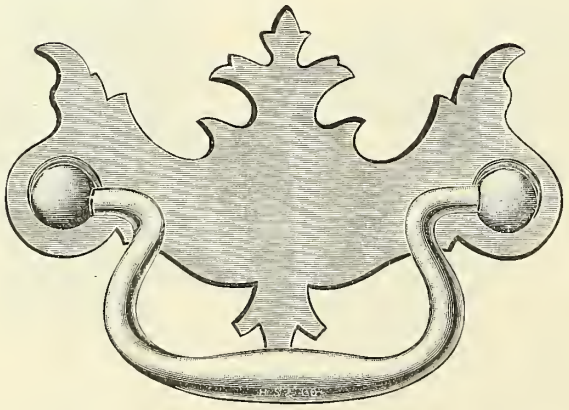
Cast Brass, Polished

No. 5396 Spacing 2 inches, dozen $3.00
No. 5694 Spacing 3 inches, dozen 4.50



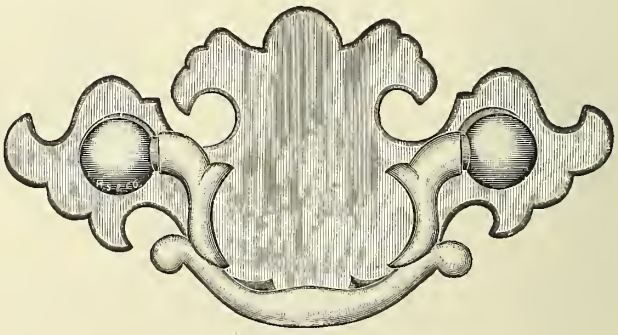
Cast Brass—Spacing 2½ inches

No. 4162 Polished, dozen $3.00
No. 4162 OB Old brass finish, dozen 3.30



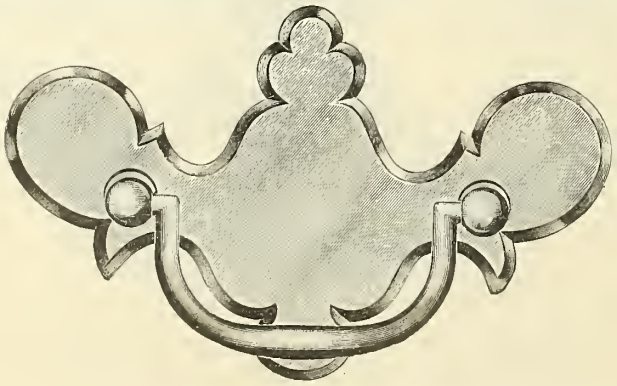
Cast Brass Bail

Number	Material	Finish	Spacing Inches	Dozen
4443	Brass	Polished	2	$2.50
4444	Brass	Polished	3	3.25
4158	Heavy brass	Polished	2	3.35
4158 O.B.	Heavy brass	Old brass	2	4.05
4160	Heavy brass	Polished	3	4.40
4160 O.B.	Heavy brass	Old brass	3	5.25

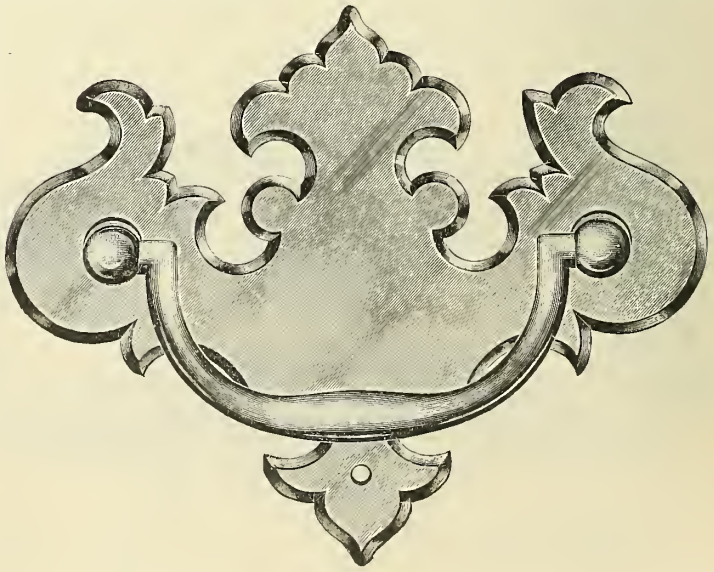


Cast Brass, Polished

No. 4782 Spacing 2 inches, dozen $4.00
No. 4783 Spacing 2¾ inches, dozen 5.00



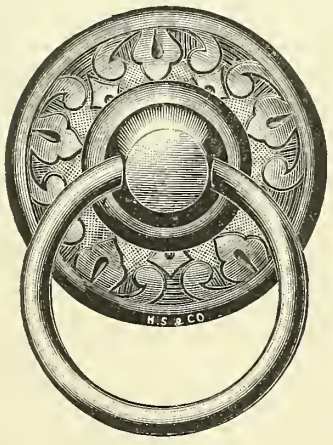
No. 5872 Cast brass, polished, spacing 1¾ inches, dozen $5.75



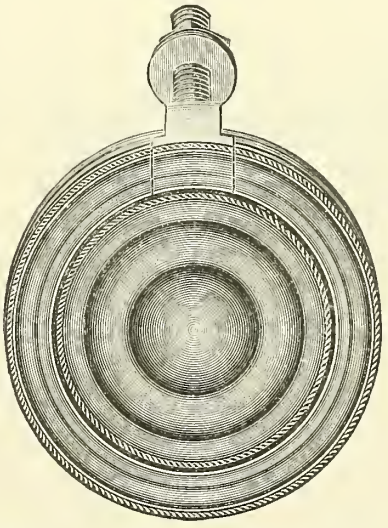
No. 5873 Cast brass, polished, spacing 2½ inches, dozen $6.25

Furniture Pulls

Full Size Cuts



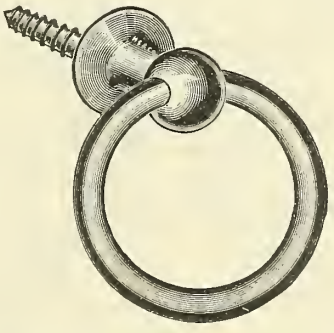
No. 1184 Wrought brass back, brass-plated ring, polished, dozen. $ .72



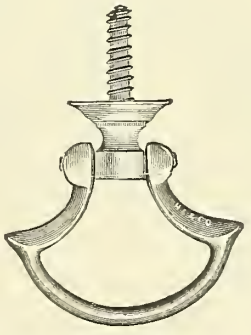
No. 1123 Old English. Cast brass back and ring, old brass finish, 2 inches over all, dozen..... $11.50



No. 10 Colonial. Cast brass, polished, ½-inch ring, gross..... $4.80

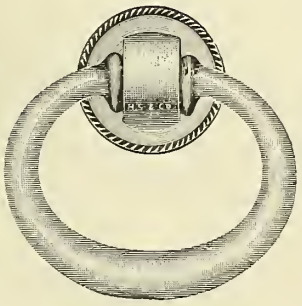


No. 1292 Colonial. Cast brass back, with ⅞-inch brass-plated ring, dozen..... $ .80

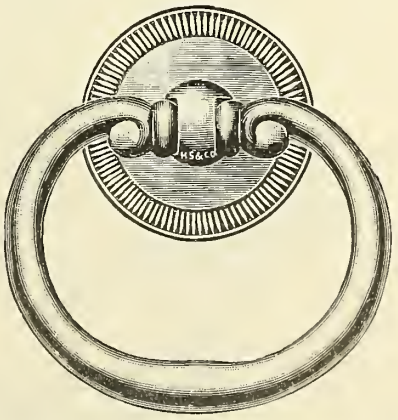


Colonial. Cast Brass, Polished

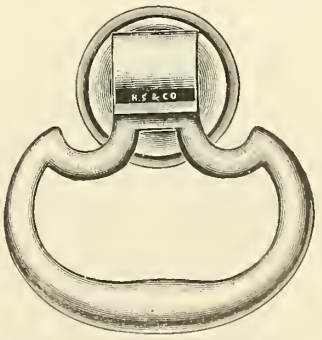
No. 4832 Size bail 1¼ inches, dozen. $2.40
No. 4890 Size bail $\frac{11}{16}$-inch, dozen.... 2.10
No. 4891 Size bail $\frac{15}{16}$-inch, dozen.... 2.30



No. 989 Colonial. Cast brass, polished, dozen..... $2.00



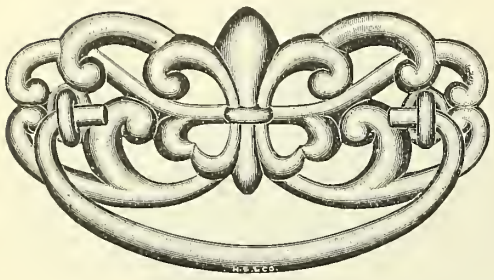
No. 5118 Colonial. Cast brass, polished, dozen..... $3.00



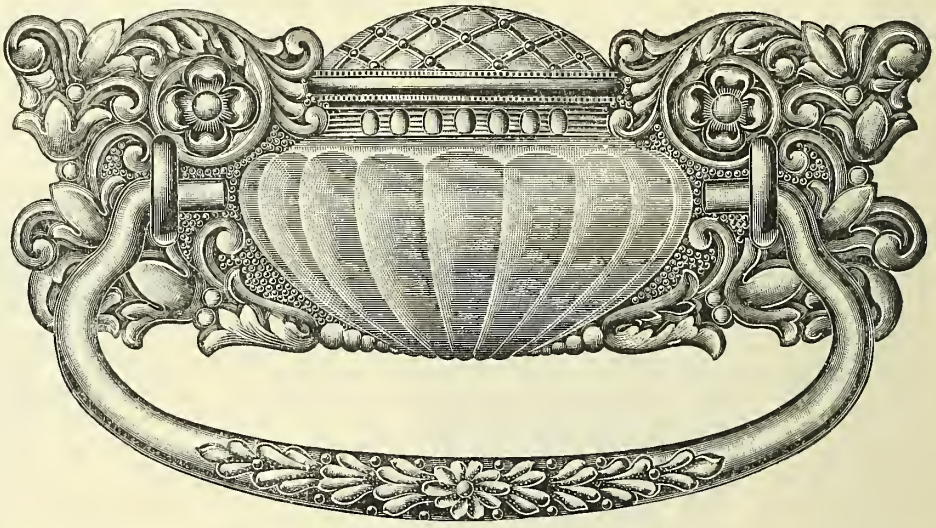
No. 1111 OB Colonial. Cast brass, old brass finish, dozen..... $2.60

Furniture Pulls

Full Size Cuts

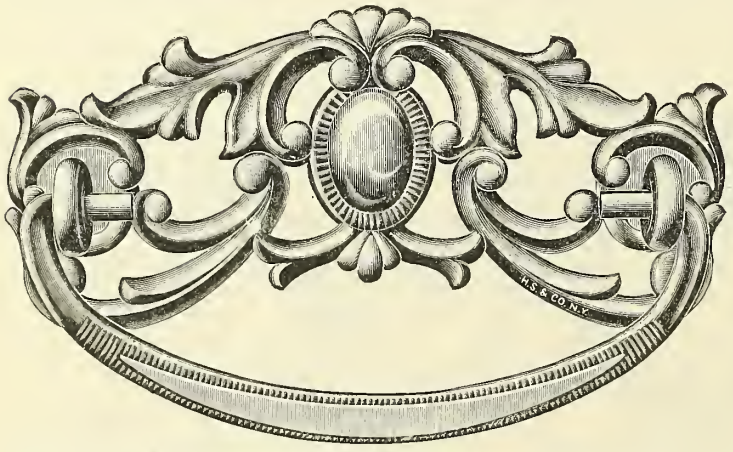


No. 1535 Wrought brass, polished, boring 1¾ inches, dozen ..... $ .72



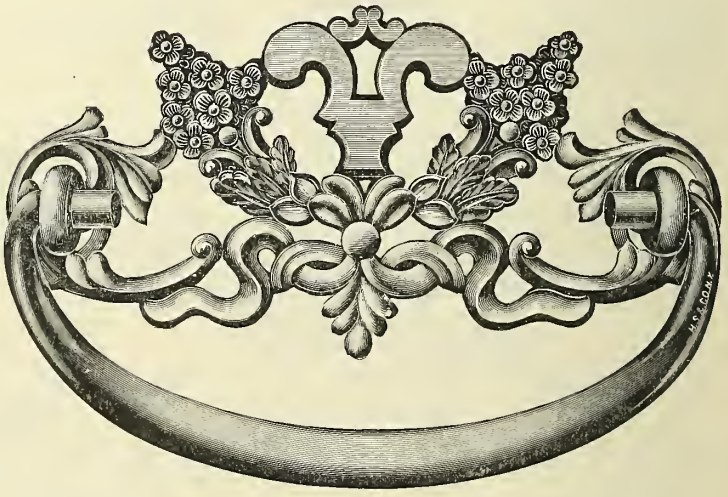
No. 864 Wrought brass, boring 3 inches

Polished, dozen ..... $ .72
Oxidized, dozen ..... .90

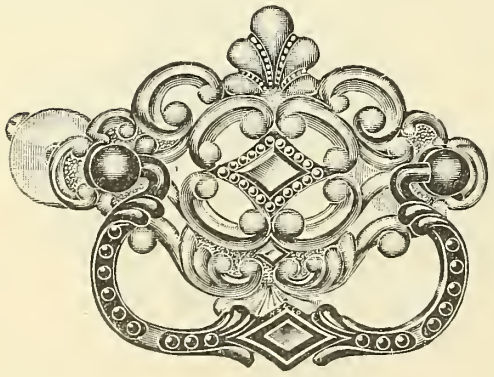


No. 775 Wrought brass, with plated wire bail, boring 3 inches.

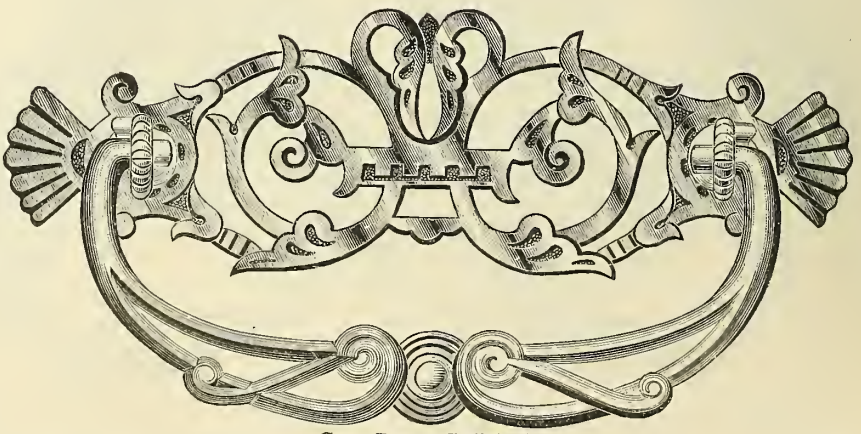
Polished, dozen ..... $ .90
Oxidized, dozen 1.08



No. 1952 Cast brass, polished, plated wire bail, boring 3 inches, dozen $1.20



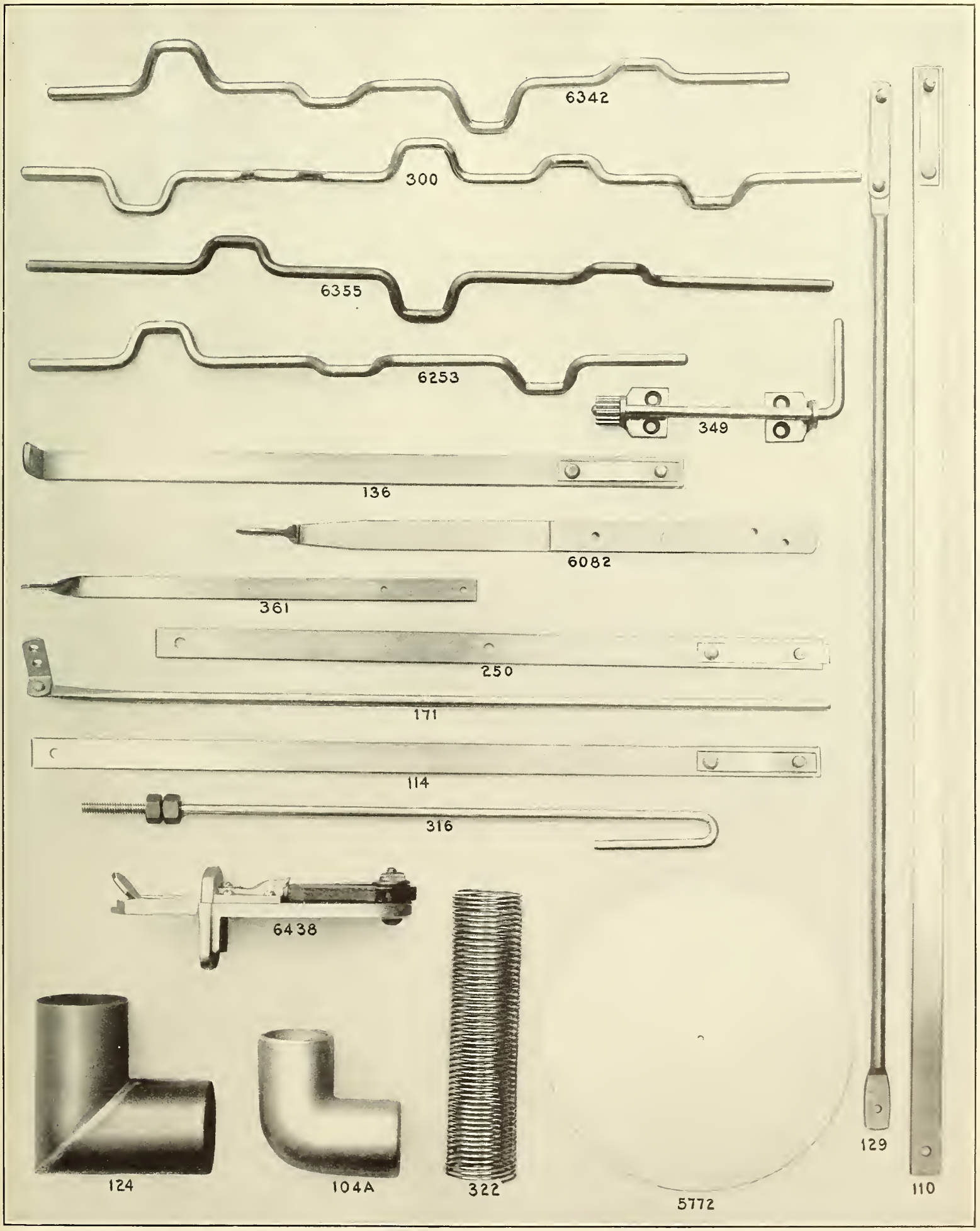
No. 5180 Cast brass, polished, boring 1¾ inches, dozen $1.80



Cast Brass, Polished

No. 4417 Size boring 2½ inches, dozen $2.40
No. 4418 Size boring 3 inches, dozen 2.40

SEE DISCOUNT SHEET



See following page.

Also pages facing 313, 344 and 857

SINCE 1848 HAMMACHER SCHLEMMER & CO. NEW YORK

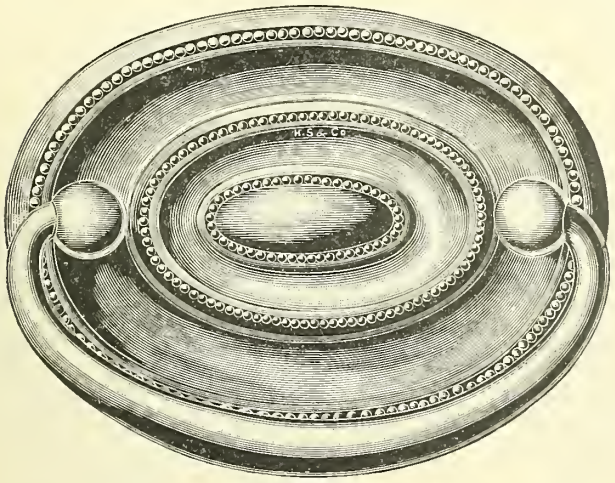
Let us quote you on Supplies and Special Parts

See preceding page.

Also pages facing 313, 344 and 857

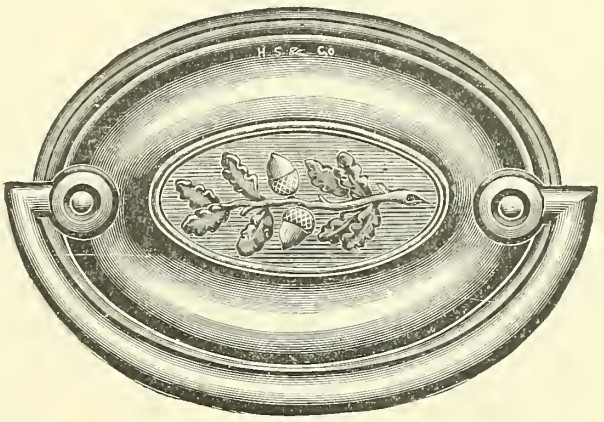
Furniture Pulls

Full Size Cuts



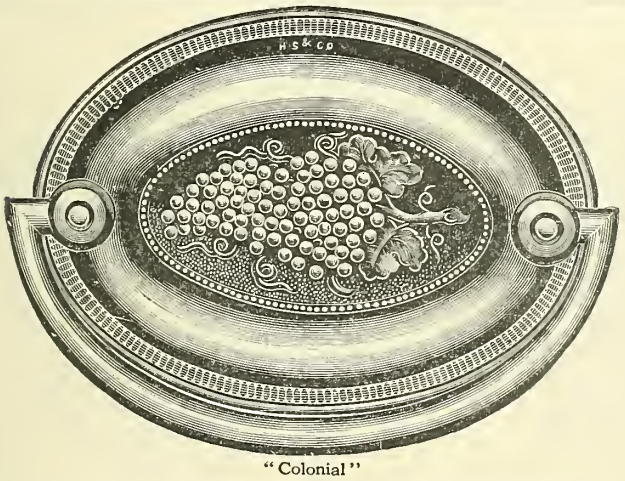
"Sheraton"

Number	Material	Finish	Size Boring, Inches	Dozen
385	Wrought brass	Polished	2	$2.30
385N	Wrought brass	Natural	2	2.60
386	Wrought brass	Polished	2¼	2.60
386N	Wrought brass	Natural	2¼	2.90



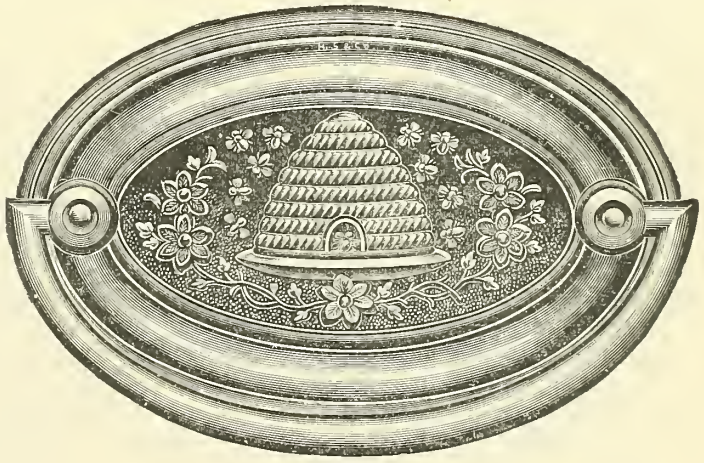
"Colonial"

No. 1422 Wrought brass plate, cast brass bail, old brass finish, 2¼-inch boring, dozen $3.90



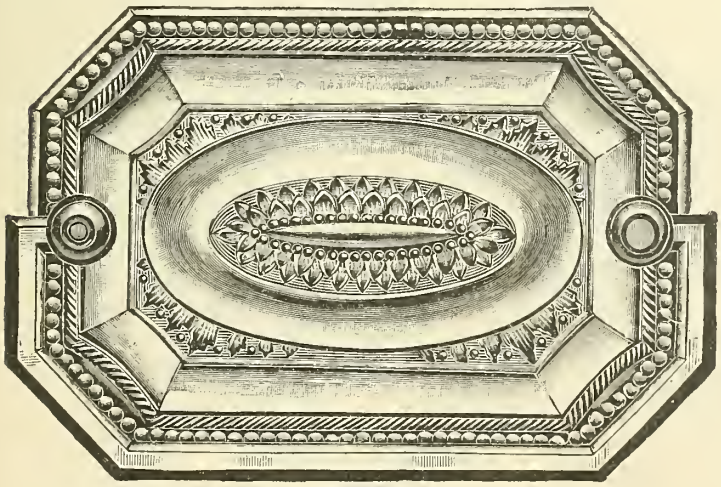
"Colonial"

No. 1419 Wrought brass plate, cast brass bail, old brass finish, 2¼-inch boring, dozen $3.90



"Colonial"

No. 1423 Wrought brass plate, cast brass bail, old brass finish, 2¾-inch boring, dozen $4.30



"Sheraton"

No. 1418 Wrought brass plate, cast brass bail, old brass finish, 2¾-inch boring, dozen $4.00



"Colonial"

No. 1436 Wrought brass plate, cast brass bail, old brass finish, 2-inch boring, dozen $4.30

Furniture Pulls

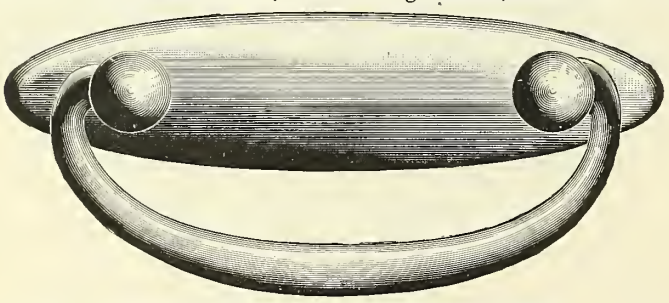
Full Size Cuts



"Colonial"

Cast brass back plate and ring. Polished.

No. 04114 Size head 1¼ inches, diameter ring, ⅝ inch, dozen $2.40
No. 4114 Size head 1¼ inches, diameter ring 1 inch, dozen..... 2.40
No. 4115 Size head 1¾ inches, diameter ring 1¼ inches, dozen.. 4.20
No. 4116 Size head 2¼ inches, diameter ring 1½ inches, dozen.. 6.80
No. 4117 Size head 2½ inches, diameter ring 1¾ inches, dozen.. 9.00
No. 4118 Size head 3 inches, diameter ring 2 inches, dozen.....11.00



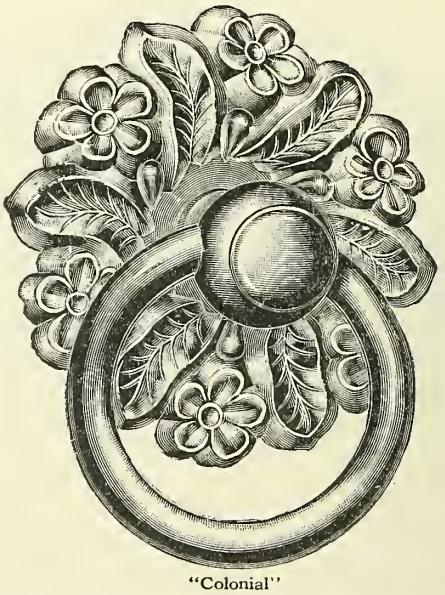
Cast brass back plate, bail and studs, old brass finish.

No. 5410 Size boring 2¼ inches, dozen..... $4.20
No. 5411 Size boring 3 inches, dozen..... 5.20



"Sheraton"

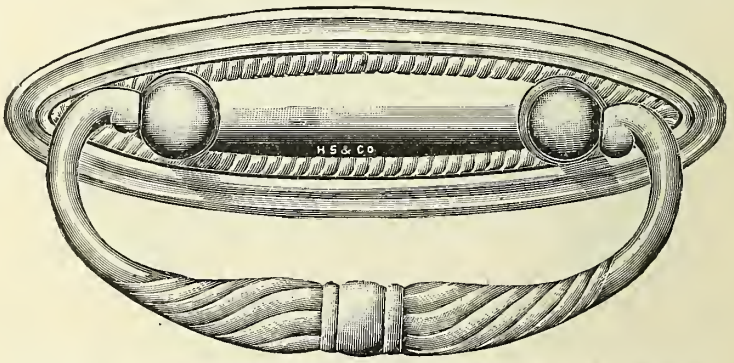
No. 941 Cast brass, old English finish, single boring, dozen... $3.80



"Colonial"

Wrought brass back, solid brass ring, old brass finish.

No. 1459 Size base 1½ inches, diameter ring 1⅛ inches, dozen...$2.40
No. 1460 Size base 2¼ inches, diameter ring 1⅜ inches, dozen... 4.50
No. 1461 Size base 3 inches, diameter ring 1¾ inches, dozen..... 5.00



Wrought brass back plate, cast brass bail and studs, old brass finish.

No. 1405 Size boring 2 inches, dozen..... $3.90
No. 1406 Size boring 3 inches, dozen..... 4.60



"Sheraton"

No. 207A Cast brass, old English finish, size boring, 2 inches dozen..... $4.20

Furniture Pulls

English Period

Full Size Cuts



"Adam"

Cast Brass, Old English Finish
No. 2684 Diameter 2 inches, dozen....$3.80
No. 2683 Diameter 1¾ inches, dozen.. 3.30



"Adam"

Cast Brass, Old English Finish
No. 788 Diameter 2 inches, dozen....$3.30
No. 788½ Diameter 1⅝ inches, dozen.. 3.00



"Adam"

Cast Brass, Old English Finish
No. 2671 Diameter 1¾ inches, dozen..$3.80
No. 2672 Diameter 2¼ inches, dozen.. 4.20



"Adam"

Cast Brass, Old English Finish
No. 2699 Diameter 1½ inches, dozen..$2.20
No. 2700 Diameter 1¾ inches, dozen.. 2.50



"Adam"

Cast Brass, Old English Finish
No. 2669 Diameter 1⅞ inches, dozen..$4.20
No. 2670 Diameter 2⅛ inches, dozen.. 4.50



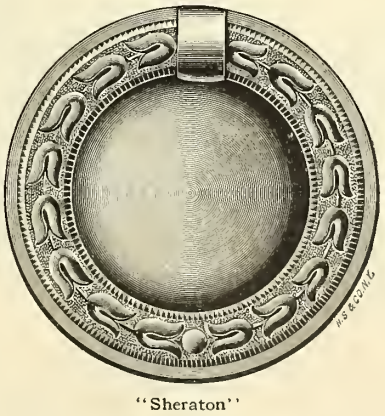
"Louis XVI"

Cast Brass, Old English Finish
No. 2685 Diameter 1⅞ inches, dozen..$4.20
No. 2686 Diameter 2¼ inches, dozen.. 4.70



"Adam"

Cast Brass, Old English Finish
No. 2653 Diameter 1⅜ inches, dozen..$3.00
No. 2654 Diameter 2 inches, dozen.... 3.30



"Sheraton"

Cast Brass, Old English Finish
No. 2641 Diameter 1½ inches, dozen..$4.20
No. 2642 Diameter 2 inches, dozen.... 5.00



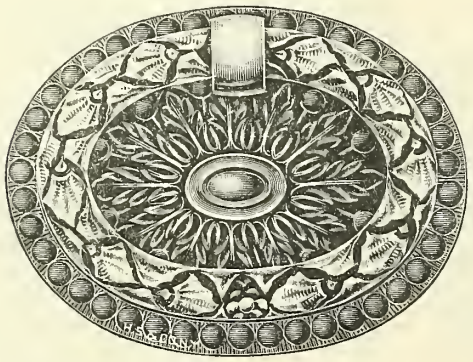
"Adam"

Cast Brass, Old English Finish
No. 2639 Diameter 1⅝ inches, dozen..$3.30
No. 2640 Diameter 2¼ inches, dozen.. 3.60

Furniture Pulls

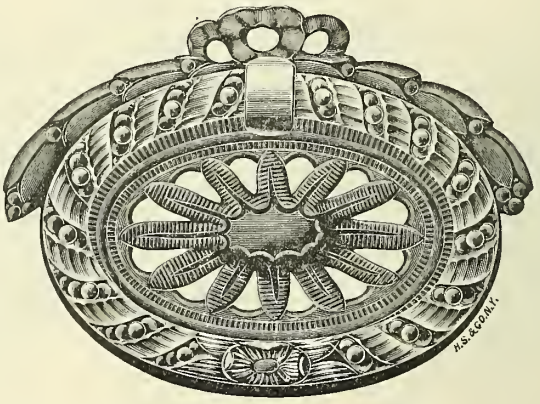
English Period

Full Size Cuts



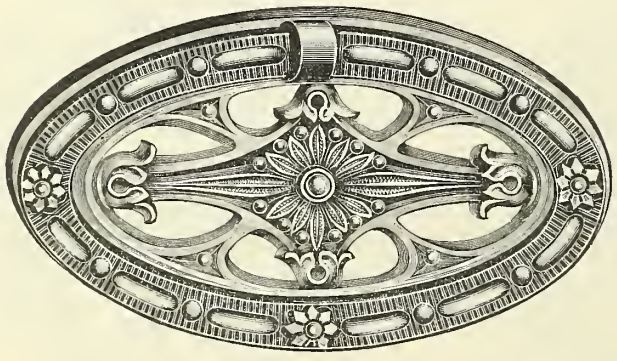
"Adam"

No. 2659 Cast brass, old English finish, 1¾ x 2⅜ inches, dozen.. $2.70
No. 2659½ Cast brass, old English finish, 1⅞ x 1 7/16 inches, dozen 2.30



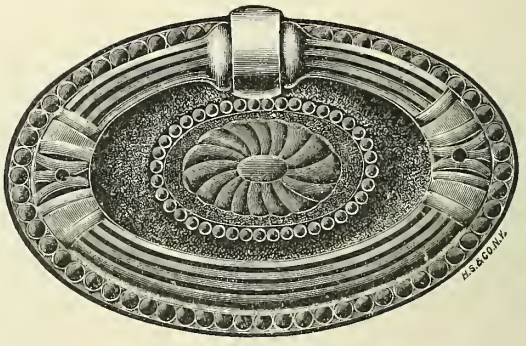
"Sheraton"

Cast brass, old English finish.
No. 2658 2¾ x 2 inches, dozen..... $4.50
No. 2658½ 2¼ x 1⅝ inches, dozen..... 4.20



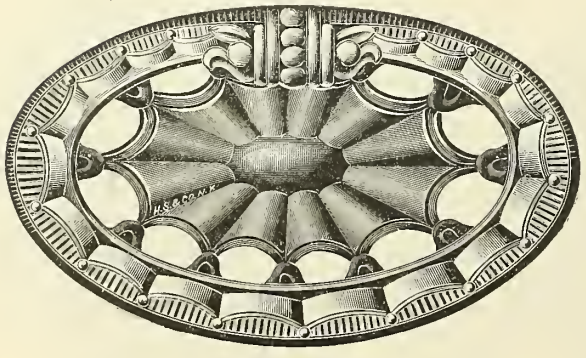
"Henry II"

No. 5857 Cast brass, old English finish, 1¾ x 3 inches, dozen... $4.00



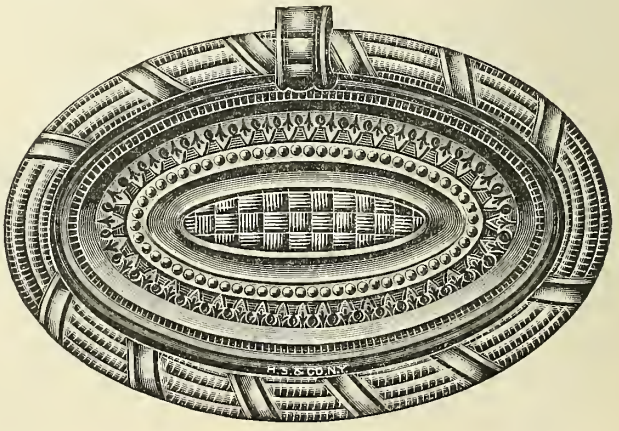
"Adam"

Cast brass, old English finish.
No. 2571 Size 1½ x 2⅛ inches, dozen $2.70
No. 2572 Size 1¾ x 2⅝ inches, dozen..... 3.00



"Adam"

Cast brass, old English finish.
No. 2631 Size 1⅞ x 3 inches, dozen..... $3.70
No. 2631½ Size 1½ x 2¼ inches, dozen..... 3.40

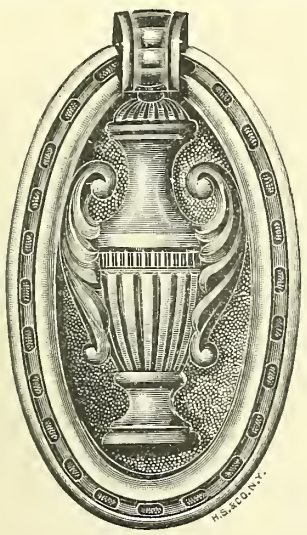


"Adam"

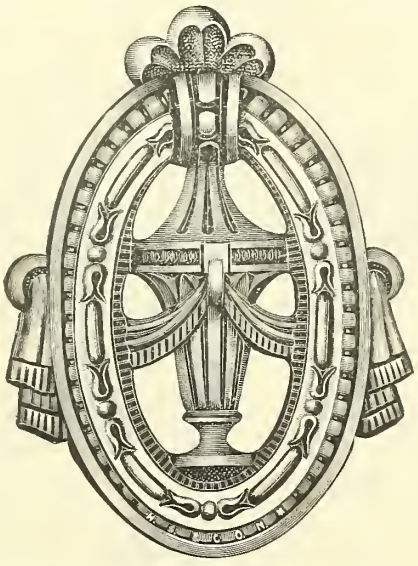
Cast brass, old English finish.
No. 2697 Size 1⅞ x 2⅝ inches, dozen..... $2.70
No. 2697½ Size 1⅝ x 2 inches, dozen..... 2.40
No. 2698 Size 2 x 3 inches, dozen..... 3.40

Furniture Pulls

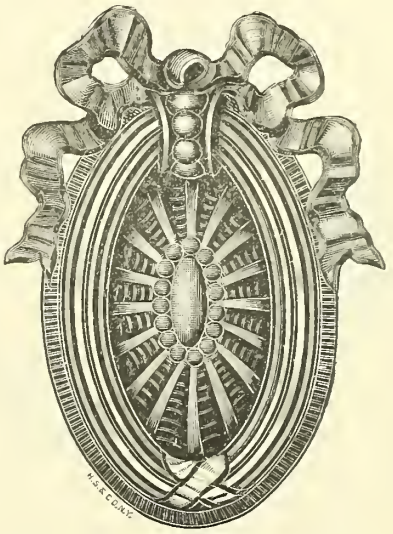
English Period. Full Size Cuts



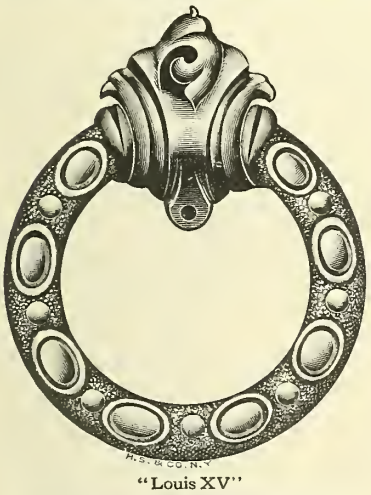
"Adam"
Cast brass, old English finish.
No. 2679 Size 1⅜ x 2 inches, dozen....$3.30
No. 2680 Size 1⅝ x 2½ inches, dozen.. 3.80



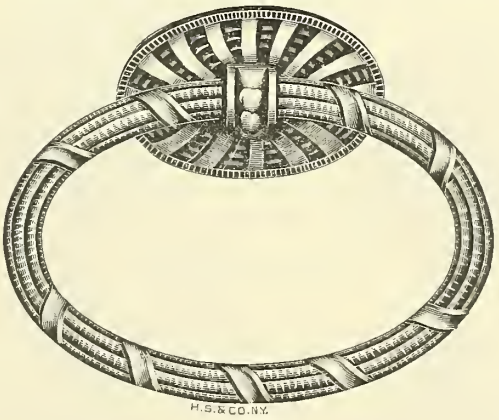
"Hepplewhite"
Cast brass, old English finish.
No. 2675 Size 1½ x 2⅛ inches, dozen..$3.30
No. 2676 Size 2 x 2¾ inches, dozen.... 3.80



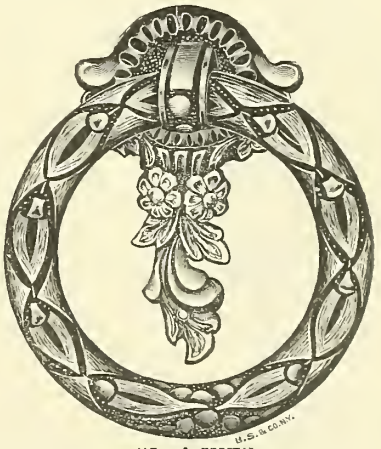
"Louis XV"
Cast brass, old English finish.
No. 2687 Size 1¼ x 2 inches, dozen....$3.80
No. 2688 Size 1½ x 2¼ inches, dozen.. 4.20



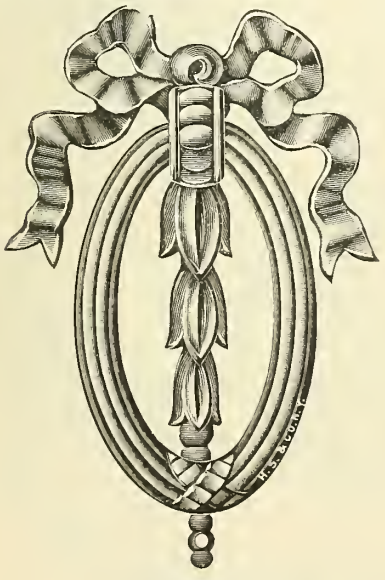
"Louis XV"
No. 2492 Cast brass, old English finish, 1⅞ inches diameter, dozen.. $2.50



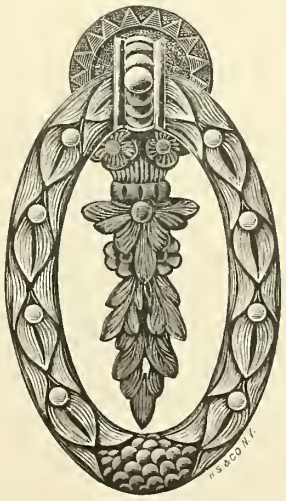
"Adam"
Cast brass, old English finish.
No. 2707 Size 1⅞ x 2⅛ inches, dozen..$2.00
No. 2708 Size 2⅛ x 2½ inches, dozen.. 2.20



"Louis XVI"
Cast brass, old English finish.
No. 2713 Diameter 1⅜ inches, dozen..$2.50
No. 2714 Diameter 1⅞ inches, dozen.. 2.80



"Adam"
Cast brass, old English finish.
No. 2721 Size ring 1⅝ x 1 inches, dozen..... $1.80
No. 2722 Size ring 2 x 1¼ inches, dozen..... 2.20



"Louis XVI"
Cast brass, old English finish.
No. 2711 Size ring $1\frac{3}{16}$ x 1¾ inches, dozen..... $2.20
No. 2712 Size ring 1⅜ x 2⅛ inches, dozen..... 2.50

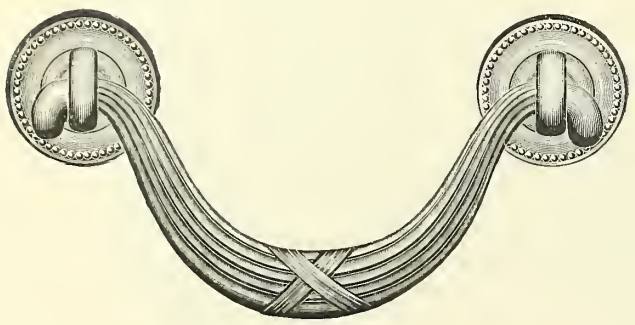


"Jacobean"
No. 2482 Cast brass, old English finish, dozen..... $2.70

Furniture Pulls

English Period

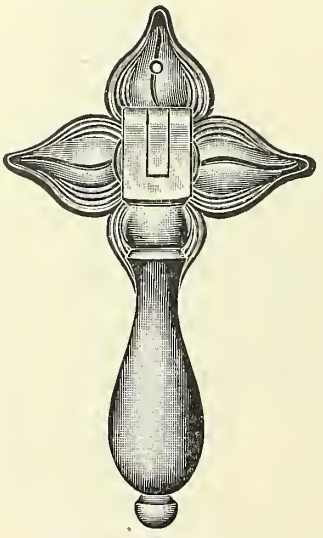
Full Size Cuts



"Sheraton"

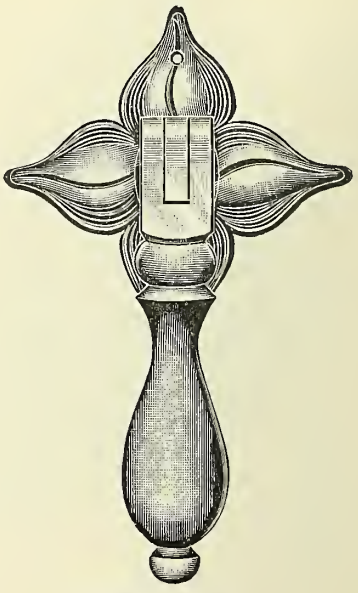
Cast brass, old English finish.

No. 6166 Size boring 2½ inches, dozen $10.50
No. 6192 Size boring 3 inches, dozen 11.50
No. 6167 Size boring 3½ inches, dozen 12.50



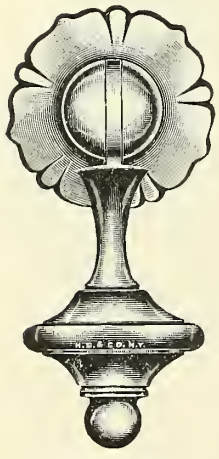
"William and Mary"

No. 6238 Cast brass, old brass finish, dozen $5.00



"William and Mary"

No. 6239 Cast brass, old brass finish, dozen $5.50



"William and Mary"

No. 2475 Cast brass, old brass finish, dozen $3.00



No. 2476 Cast brass, old brass finish, dozen $3.80



No. 2477 Cast brass, old brass finish, dozen $4.20

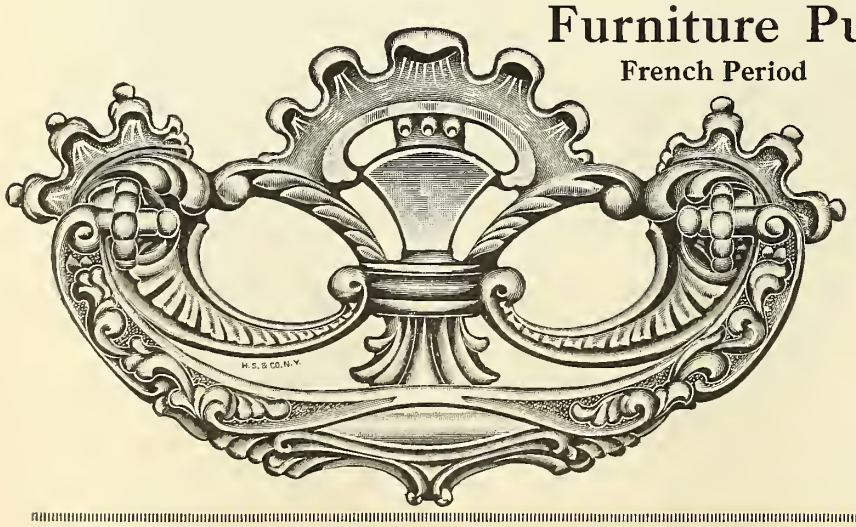


"Jacobean"

No. 2496 Cast brass, old English finish, dozen .. $1.70

Furniture Pulls

French Period

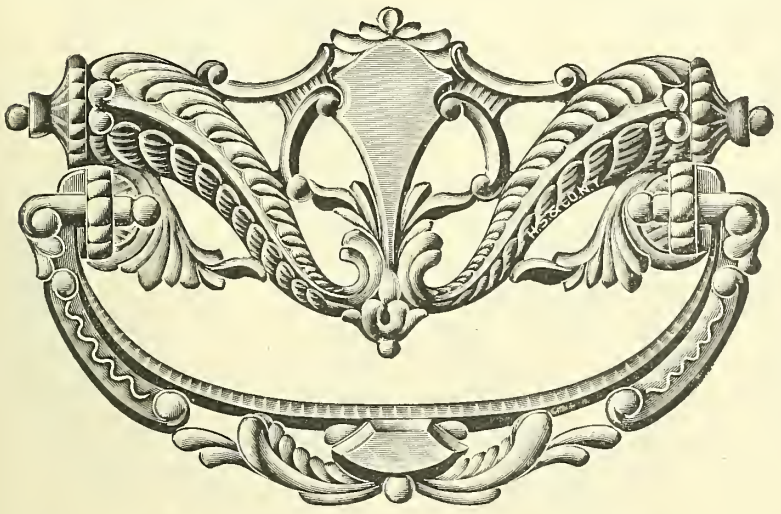


No. 2246 Cast brass, polished, 3-inch boring, dozen $4.00

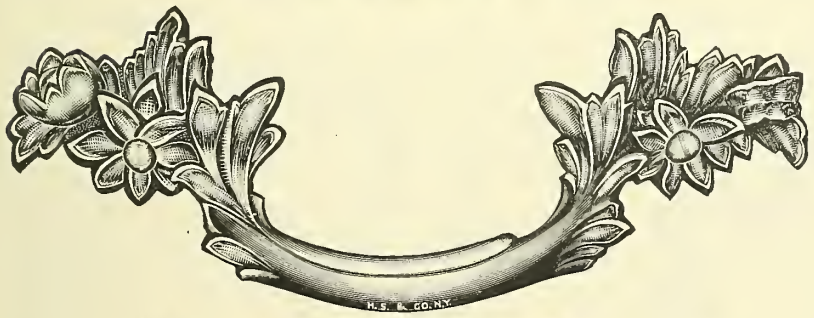
Furniture Pulls

French Period

Full Size Cuts



No. 2097 Cast brass, polished, 3-inch boring, dozen $3.00



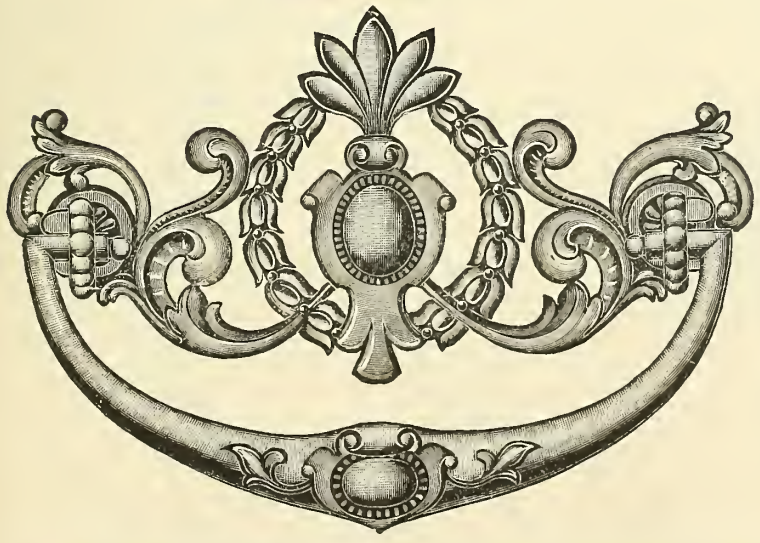
Cast brass, old gold finish.

No. 2155½ Size boring 2½ inches, dozen $2.20

No. 2155 Size boring 3 inches, dozen 2.40



No. 5309 Packed with screws. Cast brass, polished, dozen $1.80

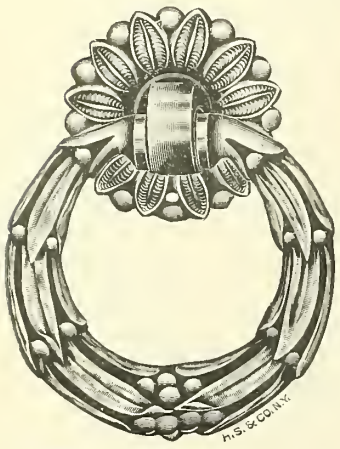


No. 901 Cast brass, polished, 3-inch boring, dozen $2.00

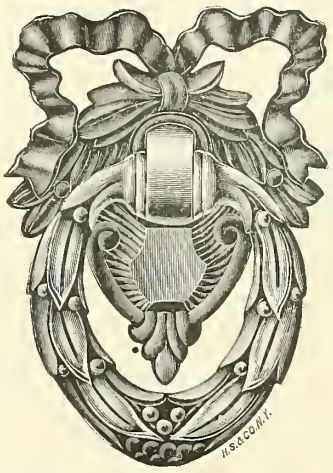
Furniture Pulls

Louis XVI Period

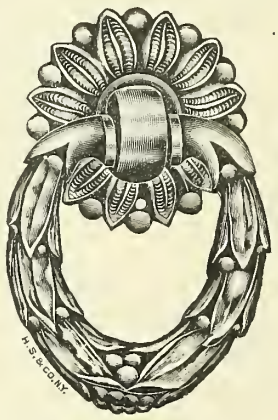
Full Size Cuts



No. 2664 2 inches diameter, dozen..... $3.00
No. 2664½ 1⅝ inches diameter, dozen.... 2.50



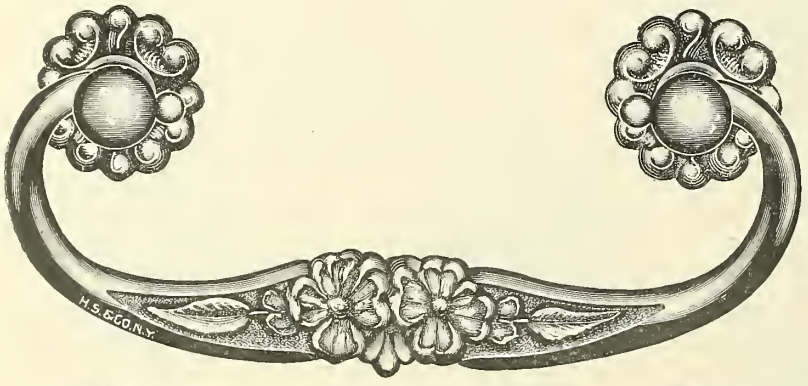
No. 2455 Cast brass, ormolu gold finish, dozen..... $3.50



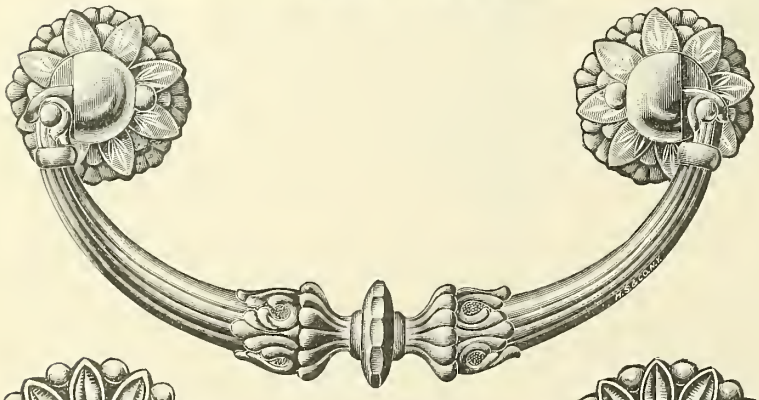
No. 2455–2664 Cast brass, ormolu gold finish, dozen..... $4.35



Nos. 2456–2133 Cast brass, ormolu gold finish, dozen..... $2.70

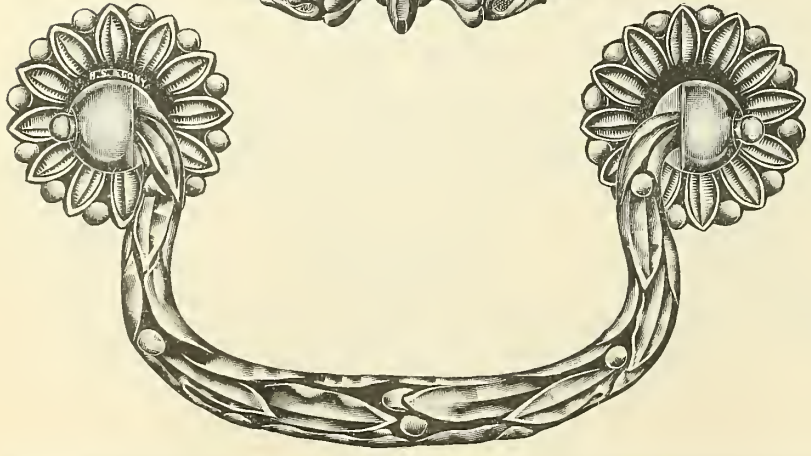


No. 2305 Cast brass, polished, 3-inch boring, dozen..... $3.20



Cast brass, ormolu gold finish.

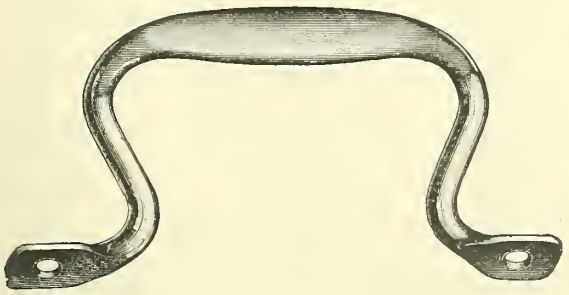
No. 2367 Size boring 3 inches, dozen..... $5.00
No. 2367½ Size boring 2½ inches, dozen..... 4.20



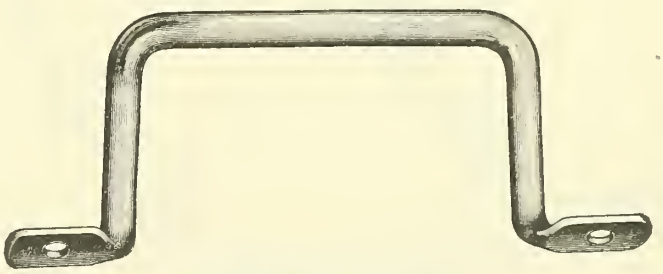
No. 2587 Cast brass, ormolu gold finish, 3-inch boring, dozen..... $3.00
No. 2587 Cast brass, old English finish, 3-inch boring, dozen..... 3.00

Tray Handles

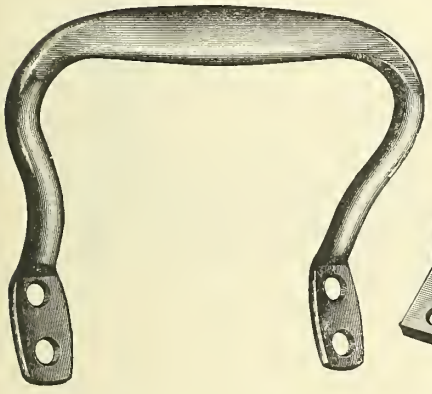
Full Size Cuts



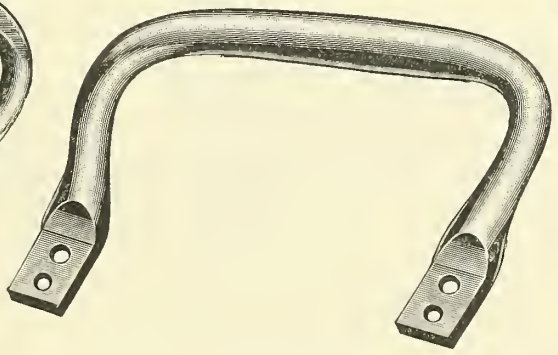
No. 39 Wrought brass, old brass finish, gross..... $11.00



No. 19 Wrought brass, old brass finish, gross..... $12.00

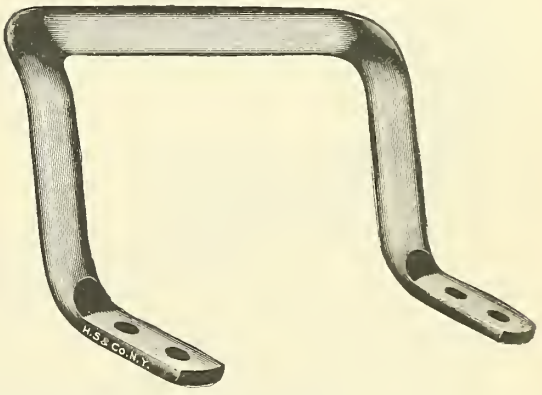


No. 44 Wrought brass, old gold finish, gross..... $12.00

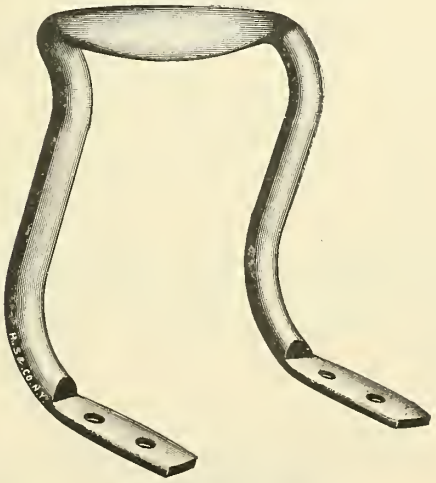


Wrought Brass

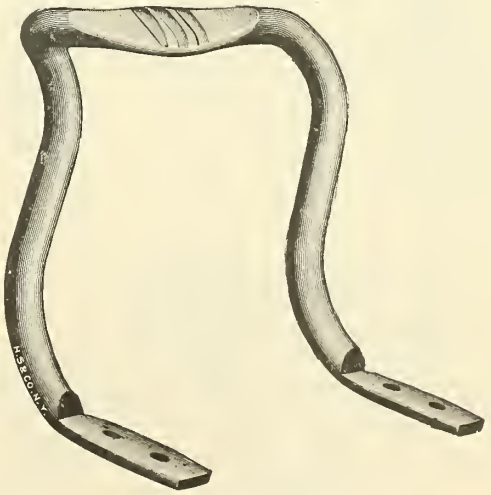
No. 1305 Polished finish, gross..... $24.00
No. 1305 OB Old brass finish, gross..... 24.00



No. 20 Wrought brass, old brass finish, gross..... $32.00



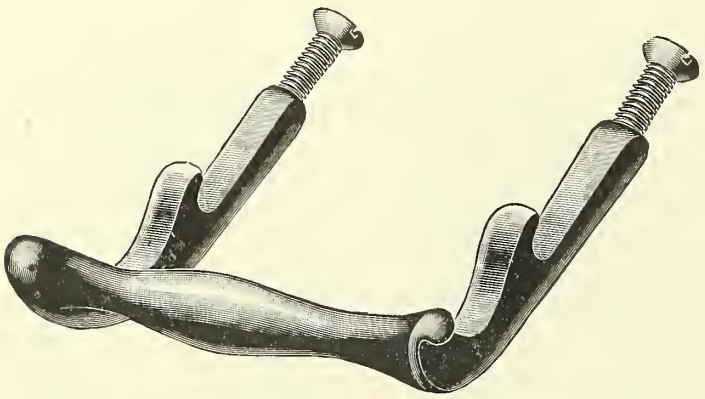
No. 41 Wrought brass, old brass finish, gross..... $16.00



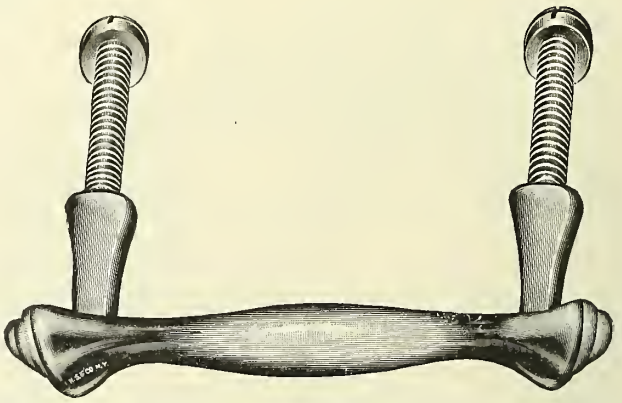
No. 28 Wrought brass, oxidized silver finish, gross..... $18.00

Tray Handles

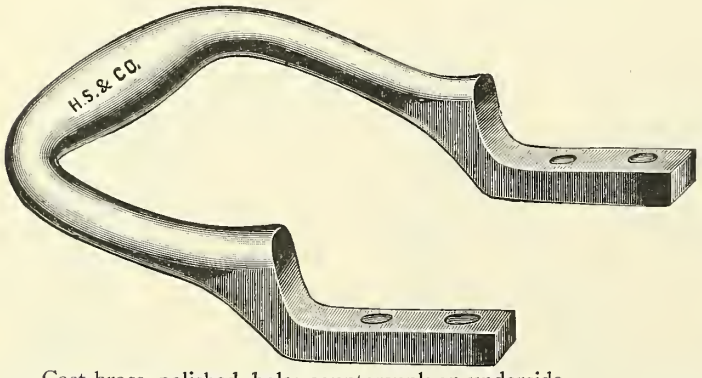
Full Size Cuts



No. 759 Cast brass, polished, machine screw, 2½-inch boring, dozen $4.00

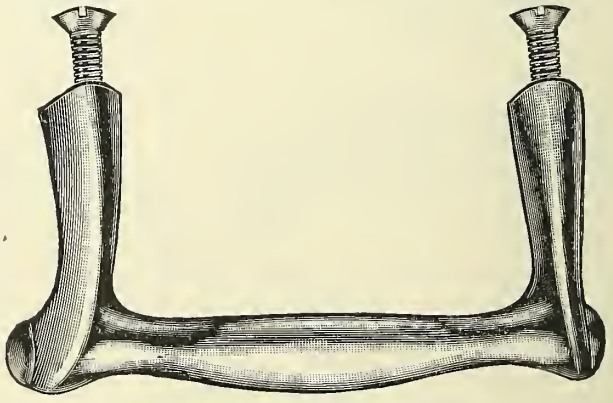


No. 758 Cast brass, polished, with slotted head nut, 2½-inch boring, dozen $4.00



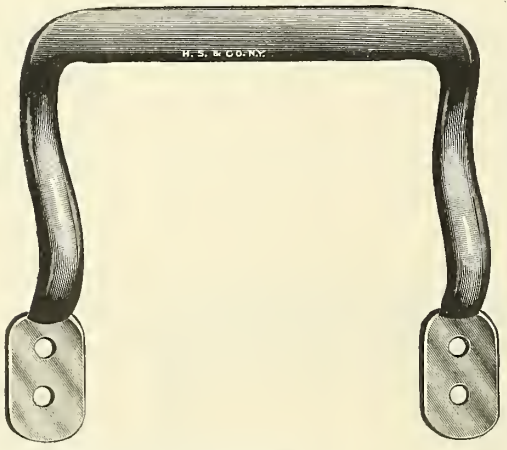
Cast brass, polished, holes countersunk on underside.

No. 724 3¼-inch boring, dozen $3.00
No. 724¾ 1⅝-inch boring, dozen 2.40

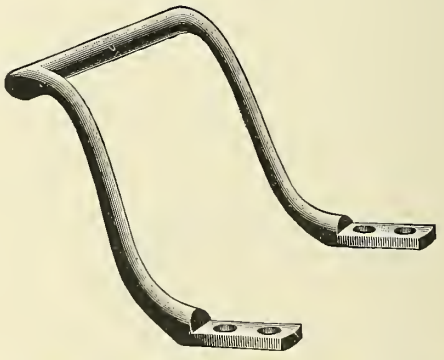


Cast brass, with machine screw, 3-inch boring.

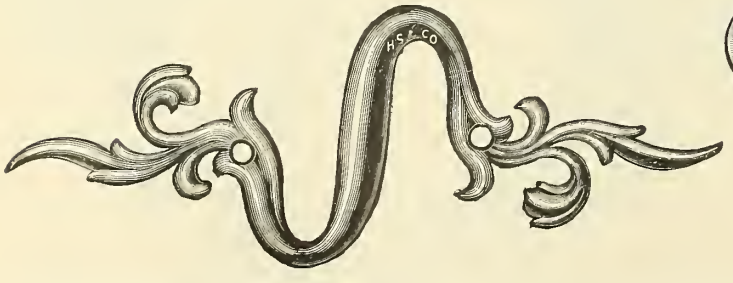
No. 3 Polished, dozen $4.00
No. 3OB Old brass finish dozen 4.00



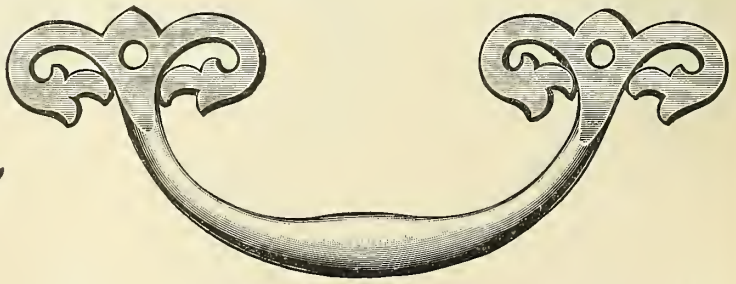
No. 8 Wrought brass, polished, gross $9.00
No. 8OB Wrought brass, old brass finish, gross 10.00



No. 987 Cast brass, polished, holes countersunk on underside, dozen $3.00



No. 740 Cast brass, polished, dozen $1.30

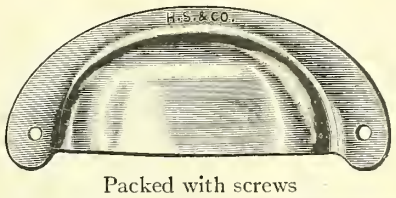


No. 5484 Cast brass, polished, dozen $1.20
No. 5484OB Cast brass, old brass finish, dozen 1.40

SEE DISCOUNT SHEET

Drawer Pulls

Half Size Cuts



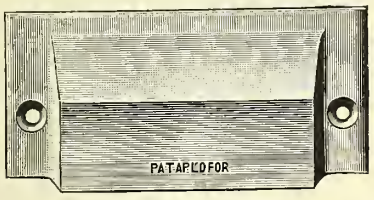
Packed with screws

Number	Material	Finish	Gross
	1⅝ x 3⅞ Inches		
2103½	Wrought bronze	Polished	$15.00
DA 2103½	Wrought brass	Old brass	13.20
O 2103½	Wrought steel	Amber, bronzed	6.10
EO 2103½	Wrought steel	Nickel-plated	7.00
NO 2103½	Wrought steel	Bronze-plated	6.10
RO 2103½	Wrought steel	Antique copper	6.80
	1½ x 3½ Inches		
2106½	Wrought bronze	Polished	12.60
O 2106½	Wrought steel	Amber, bronzed	5.60
NO 2106½	Wrought steel	Bronze-plated	5.60
	1¼ x 3 Inches		
2107½	Wrought bronze	Polished	10.00
DA 2107½	Wrought brass	Old brass	9.00
O 2107½	Wrought steel	Amber, bronzed	4.90
NO 2107½	Wrought steel	Bronze-plated	4.90



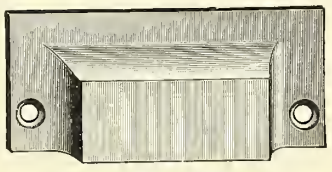
Packed with screws

Number	Material	Finish	Dozen
	1¼ x 4 Inches		
5854–9	Cast brass	Polished	$2.20
5854–19	Cast brass	Nickel-plated	2.44
5854–10	Cast bronze	Polished	2.66
			Gross
10836– 9	Wrought brass	Polished	11.20
10836–23	Wrought brass	Old brass	13.45
10836–10	Wrought bronze	Polished	11.70
10836–16	Wrought bronze	Antique copper	14.05
10835–4/0	Wrought steel	Bronze-plated	7.00
	1⅛ x 3⅝ Inches		
10834–9	Wrought brass	Polished	9.80
10834–23	Wrought brass	Old brass	11.75
10834–10	Wrought bronze	Polished	10.10
10834–16	Wrought bronze	Antique copper	12.15
10833–4/0	Wrought steel	Bronze-plated	6.00



Packed with screws

Number	Gross
1¾ x 3⅞ Inches	
10895–4/0 Wrought steel, bronze-plated	$18.10
10896 Wrought bronze, polished	24.00



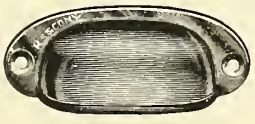
Packed with screws

Number		Dozen
Cast Bronze, Polished		
1241½	1⅜ x 3⅛	$3.96
1242½	1⅜ x 3⅝	4.68
Cast Bronze, Statuary Bronze Finish		
		Dozen
LB1241½	1⅜ x 3⅛	$4.20
LB1242½	1⅜ x 3⅝	4.90
Cast Iron, Bronze-plated		Gross
01242½	1⅜ x 3⅝	21.60



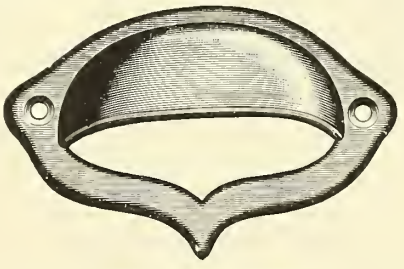
Packed with screws

Number		Gross
Cast Bronze, Polished		
1358	⅞ x 3¼	$20.00
1359	⅞ x 3¾	24.00
1360	1 x 4¼	28.00



Cast Iron, Japanned

No. 102 1¼ x 2½ inches, gross $2.10



Cast Iron, Japanned

No. 10 2½ x 3⅞ inches, gross..... $4.60



Cast Iron, Amber Bronzed

Packed with screws

No. 3358 Size ⅞ x 3¼ inches, gross..... $4.50
No. 3359 Size ⅞ x 3¾ inches, gross..... 4.86
No. 3360 Size 1 x 4¼ inches, gross..... 5.76



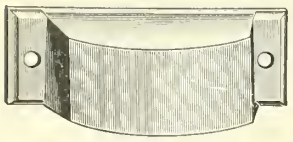
Cast Iron, Amber Bronzed

Packed with screws

No. 01225 Size 1¼ x 3¼ inches, gross..... $6.30
No. 01226 Size 1⅜ x 3¾ inches, gross..... 7.20

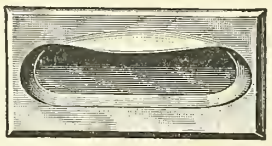
Drawer Pulls

Half Size Cuts



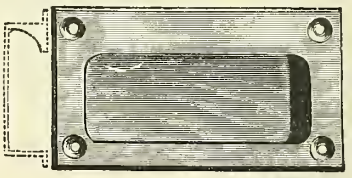
Cast Bronze, Polished
Packed with screws

No. 1352 Size 1 x 2⅞ inches, gross... $43.20
No. 1353 Size 1 x 3⅜ inches, gross... 47.52



Packed with screws

No. 10410 Cast bronze, polished, 1½ x 2¾ inches, flush pull, mortise ½-inch, dozen..... $3.00

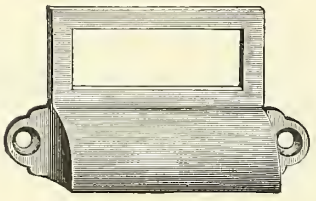


Packed with screws

No. 150 Cast bronze, polished, 1¾ x 3⅛ inches, flush pull, mortise ½ inch, dozen..... $4.20

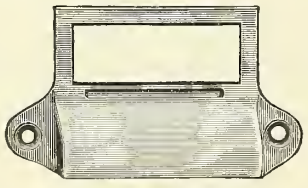
Druggist Drawer Pulls

Half Size Cuts



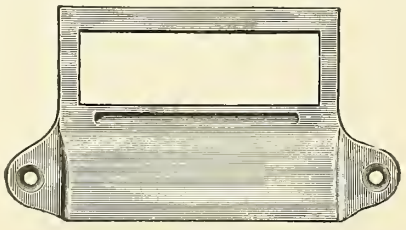
Packed with screws

Number	Size Inches	For Label Inches	Gross
	Cast Iron, Bronze-plated		
NO1631	1¾ x 3¼	⅝ x 1¾	$21.60
NO1632	2¼ x 4⅛	¾ x 2½	25.20
	Cast Bronze, Polished		Dozen
128P	1¾ x 3	⅞ x 1⅞	2.75
129P	2¼ x 4¼	1 x 2⅝	3.40



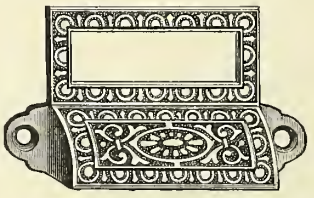
Packed with screws
Size 1¾ x 3⅛ inches. For label ¾ x 3⅛ inches.

Number	Material	Finish	Gross
10911–4/0	Wrought steel	Bronze-plated	$15.00
10912	Wrought bronze	Polished	20.30
10912–23	Wrought brass	Old brass	25.40



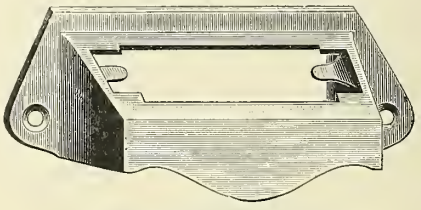
Packed with screws
Size 2¼ x 4⅛ inches. For label 1 x 2¾ inches.

Number	Material	Finish	Gross
10913–4/0	Wrought steel	Bronze-plated	$16.00
10914	Wrought bronze	Polished	24.00
10914–23	Wrought brass	Old brass	30.00



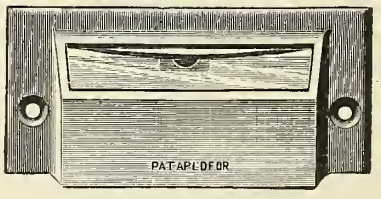
Cast Iron, Amber Bronzed
Packed with screws

Number	Size Inches	For Label Inches	Gross
3331	1¾ x 3¼	½ x 1¾	$7.20
3332	2¼ x 4⅛	⅝ x 2⅜	9.00



Cast Iron, Bronze-plated
Packed with screws

No. Y1386 Size 1⅝ x 4¼ inches, for label ⅞ x 2⅝ inches, gross..... $24.70



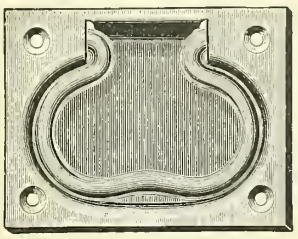
Packed with screws

With patented spring holder for glass and label, which allows them to be inserted and securely held without removing the pull from the drawer. Size 1⅝ x 3⅞ inches. For label ¾ x 2⅝ inches.

Number	Material	Finish	Gross
10901–4/0	Wrought steel	Bronze-plated	$21.34
10902	Wrought bronze	Polished	24.00

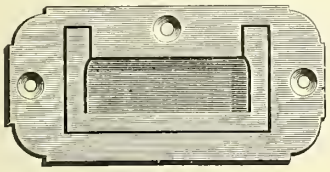
Flush Chest Handles

Half Size Cuts

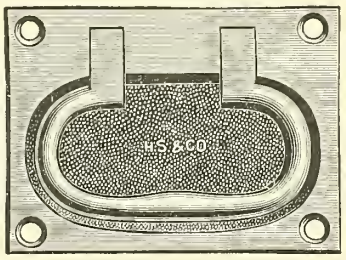


Wrought Steel, Japanned

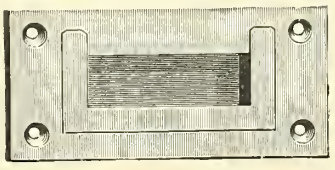
No. 2231 Size $2\frac{5}{16}$x3 inches, dozen pair $2.35
No. 2232 Size $2\frac{5}{8}$ x $3\frac{1}{2}$ inches, dozen pair 3.00
No. 2233 Size $3\frac{1}{2}$x$4\frac{3}{8}$ inches, dozen pair 5.30
No. 2234 Size $4\frac{1}{4}$x$5\frac{1}{4}$ inches, dozen pair 6.55



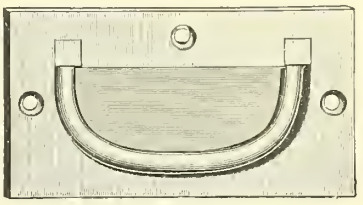
No. 44 Packed with screws. Cast brass, polished, size $1\frac{5}{8}$x$3\frac{1}{4}$ inches, dozen pair $15.00



No. 1 Packed with screws. Cast brass, polished, size 2x$3\frac{1}{2}$ inches, dozen pair $24.60



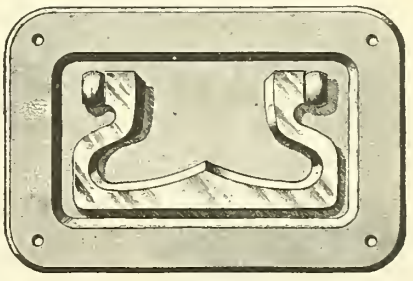
No. P1467 Packed with screws. Cast bronze, polished, size $1\frac{5}{8}$x$3\frac{1}{4}$ inches, dozen pair $13.50



Cast Brass, Polished

Packed with screws

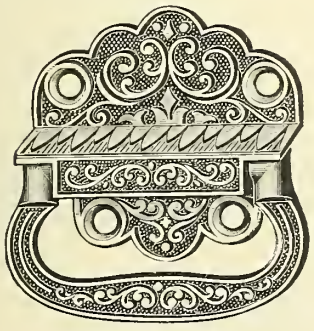
No. 724 Size 2x$3\frac{1}{2}$ inches, dozen pair $9.60
No. 727 Size $2\frac{1}{4}$x4 inches, dozen pair 12.00



No. 167 Packed with screws. Cast brass, polished, size $2\frac{5}{8}$x4 inches, dozen pieces $9.00

Chest Handles

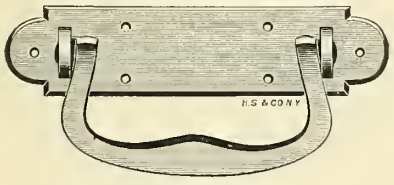
Half Size Cuts



Cast Iron, Amber Bronzed

Packed with screws

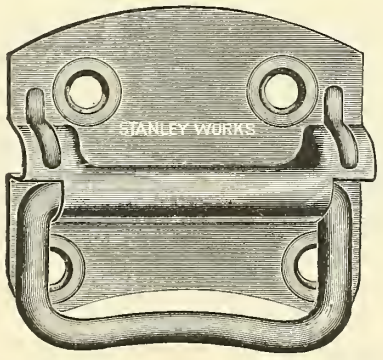
No. 3071 Width $3\frac{1}{4}$ inches, dozen pair .$2.43
No. 3072 Width $3\frac{1}{2}$ inches, dozen pair. 3.15
No. 3073 Width 4 inches, dozen pair... 4.07



Half Size Cuts

Wrought and Cast Brass, Polished

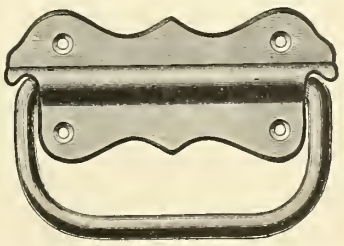
No. 154 Width 4 inches, gross pieces. $6.00
No. 155 Width $4\frac{7}{8}$ inches, gross pieces 6.75
No. 174 Width $3\frac{3}{4}$ inches, gross pieces 3.75



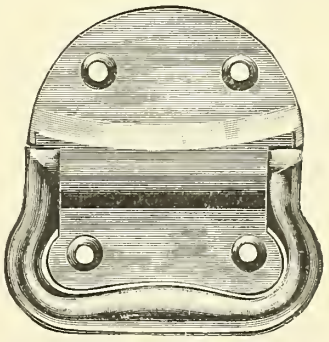
Heavy Wrought Steel, Japanned

Packed with screws

No. 1205J Width $3\frac{1}{2}$ inches, dozen pair $3.60
No. 1205J Width 4 inches, dozen pair 5.00
No. 1205J Width $4\frac{3}{4}$ inches, dozen pair 7.00



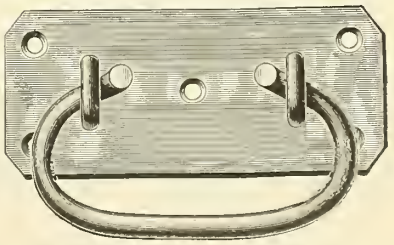
No. Y.T. 2041 Packed with screws. Wrought steel, bronze-plated, $3\frac{1}{2}$ inches wide, dozen pair $2.00



Cast Brass, Polished

Packed with screws

No. 11605 Width $2\frac{3}{4}$ inches, dozen pair $10.00
No. 11606 Width $3\frac{3}{8}$ inches, dozen pair 14.00
No. 11607 Width 4 inches, dozen pair 18.00



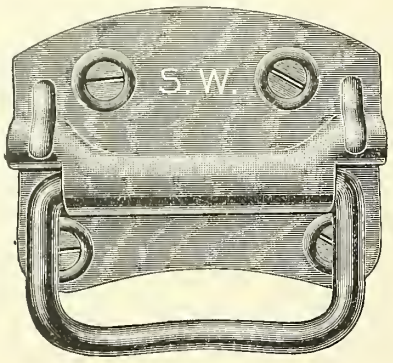
Wrought Steel, Japanned

Packed with screws

No. 72 Size $1\frac{3}{4}$x$3\frac{7}{8}$ inches, dozen pair .$1.80
No. 74 Size $1\frac{3}{4}$x$4\frac{3}{8}$ inches, dozen pair. 2.20
No. 76 Size $1\frac{3}{4}$x5 inches, dozen pair... 2.70

Chest Handles

Half Size Cuts



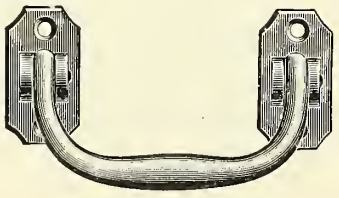
"Curved"

Packed with screws

Made with curved plate to fit oyster tubs, flower tubs, factory tubs and barrels and other curved surfaces.

Made of steel, galvanized. Width of handles 3½ inches. Size of plate 2¾ x 4 inches.

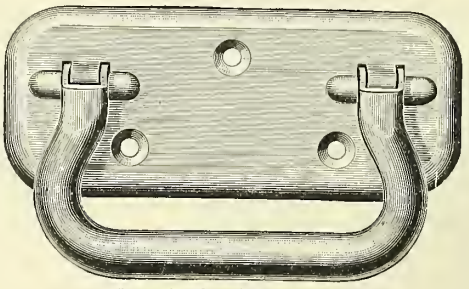
No. 1348 Dozen pair $10.00



Cast Iron, Japanned

Riveted

No. 161 Width over all 3¼ inches, dozen pair $1.30
No. 162 Width over all 4⅛ inches, dozen pair 1.60
No. 163 Width over all 4⅜ inches, dozen pair 1.80



Wrought Steel, Japanned

No. 2081 Size of plate 1⅞ x 4¼ inches, dozen pair $2.80
No. 2082 Size of plate 2 x 4¾ inches, dozen pair 3.00
No. 2083 Size of plate 2½ x 5½ inches, dozen pair 4.00

Wrought Steel, Bronze-plated

Packed with screws

No. Y T 2081 Size of plate 1⅞ x 4¼ inches, dozen pair $4.00
No. Y T 2082 Size of plate 2 x 4¾ inches, dozen pair 4.50
No. Y T 2083 Size of plate 2½ x 5½ inches, dozen pair 5.70



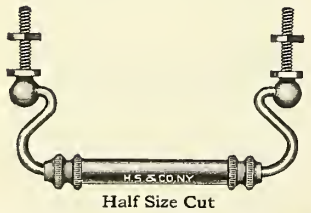
No. 1. Heavy Cast Brass, Polished, with Stop

Packed with screws

Size, inches	2½	3	3½	4
Dozen pair	$5.90	7.40	9.20	12.00

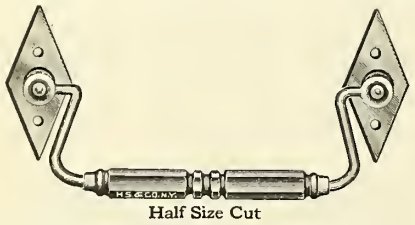
Lifting Handles

Half Size Cuts



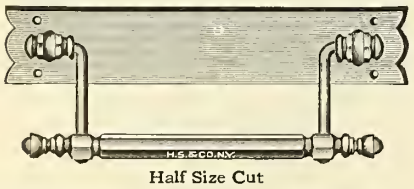
Half Size Cut

No. 106N Brass, nickel-plated, gross pieces $24.00



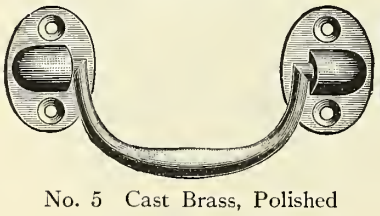
Half Size Cut

No. 108N Brass, nickel-plated, gross, pieces $24.00



Half Size Cut

No. 133N Brass, nickel-plated, gross, pieces $24.00



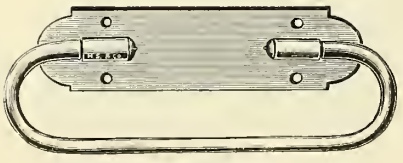
No. 5 Cast Brass, Polished

Packed with screws

Size, inches	2½	3	3½	4
Dozen pair	$5.00	5.50	7.00	8.50

No. 5N Cast Brass, Nickel-plated

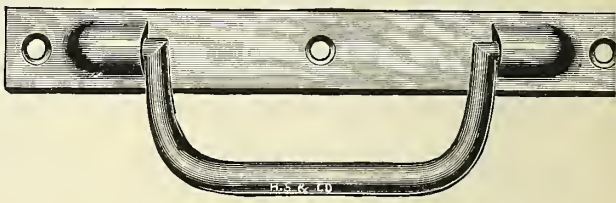
Size, inches	3	3½
Dozen pair	$6.68	8.75



Half Size Cut

Wrought Brass

No. 951 Polished, gross pieces $11.25
No. 951N Nickel-plated, gross pieces. 11.25

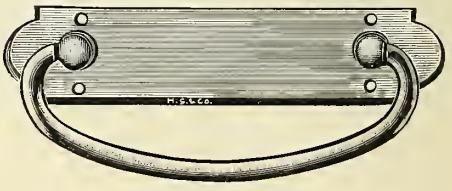


Half Size Cuts

Cast Brass, Polished

Packed with screws

No. 487 Size ¾x6¾ inches, dozen pieces $9.72
No. 487N Size ¾x6¾ inches, dozen pieces 11.16



Half Size Cuts

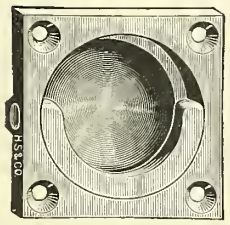
Cast Brass

Size of Plate 1 x 4½ Inches

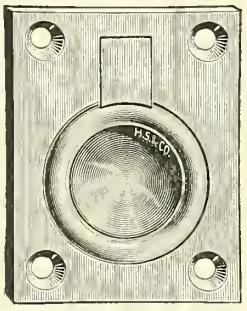
No. 2684 Polished, dozen pieces $4.70
No. 2684N Nickel-plated, dozen pieces 5.10

Flush Ring Pulls

Full Size Cuts

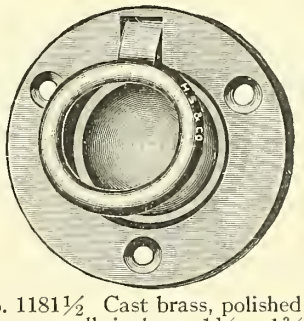


No. P.1025 Packed with screws. Cast bronze, polished, 1 inch square over all, dozen..... $3.00



No. 0530 Cast brass, polished

Width, inches....	1¼	1⅜	1½	1⅞
Length, inches...	1⅝	1⅜	1⅞	2¾
Dozen.....	$1.95	2.10	2.40	4.50

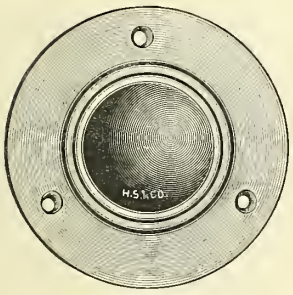


No. 1181½ Cast brass, polished

Diameter overall, inches	1¼	1⅜	1½
Dozen.....	$2.31	2.48	2.80

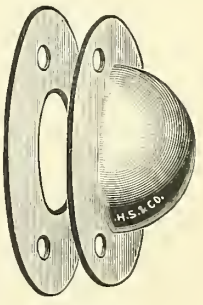
Flush Pulls

Full Size Cuts



Front

No. 131 1½ inches diameter over all, wrought brass, polished, gross..... $12.80



Back

Leather Handles



Length over all 7 inches, machine-sewed handles, nickel trimmings.

No. 21 Color black, dozen..... $6.00
No. 21 Color tan, dozen..... 6.00



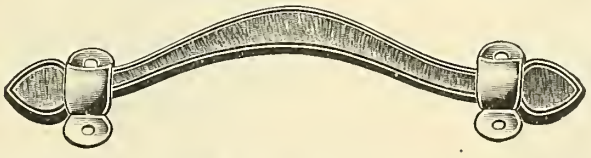
Length over all 6¾ inches, metal shell handles covered with black leather, nickel trimmings.

No. 23 Dozen..... $3.60



Length over all 7¼ inches, machine-sewed handles, solid brass trimmings.

No. 127 Color tan, dozen..... $6.00



Length over all 9 inches, flat handles, nickel trimmings; heavy.

No. 16 Color black, gross..... $22.50
No. 16 Color tan, gross..... 22.50



Length over all 7¾ inches, flat handles, nickel trimmings; light.

No. 25 Color tan, gross..... $21.30

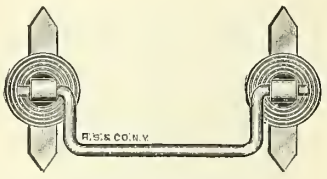
We sell loops only

Paper Box Handles

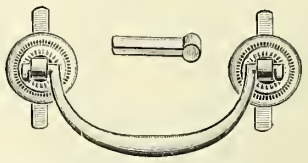
Half Size Cuts



No. 50 Brass, dipped, gross..... $4.40



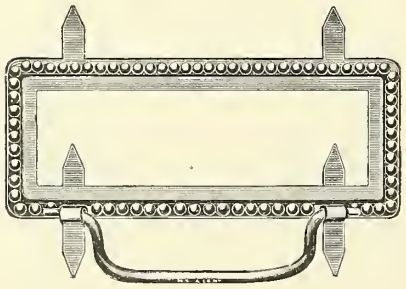
No. 42 Brass, dipped, gross..... $5.00



No. 25 Cast brass, bail 2½ inches, polished, gross..... $14.40

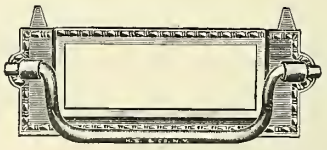
Paper Box Handles and Label Holders

Half Size Cuts



For size card 1¼ x 3¾ inches

No. 11 Wrought brass, dipped, gross..... $4.65
No. 11N Wrought brass, nickel-plated, gross..... 4.65



For size card ⅞ x 2⅛ inches

No. 6 Wrought brass, dipped, gross..... $3.60
No. 6N Wrought brass, nickel-plated, gross..... 3.60

Paper Box Rings

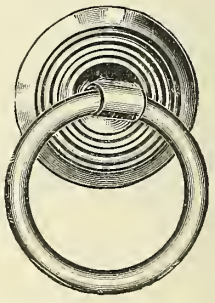
Full Size Cuts



No. 28 Brass, dipped, ½-inch ring, gross..... $1.40

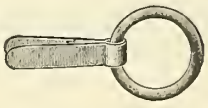


No. 29 Brass, dipped, ½-inch ring, gross..... $1.40



No. 31 Brass, dipped, ¾-inch ring, gross..... $1.60

Passe Partout Ring



No. 973 Brass, dipped, ⅜-inch ring, gross..... $ .48

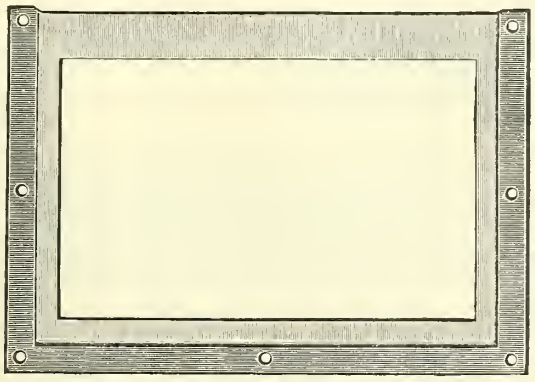


No. 1134 Brass, dipped, ½-inch ring, gross..... $4.50



No. 1046 Wrought brass, dipped, ½-inch ring, gross..... $9.60

SEE DISCOUNT SHEET



Card Frames

Over all 5½ x 3⅞ inches. For card 4¾ x 3½ inches.

No. 1923 Wrought bronze, polished, with pins, gross..... $40.00
No. 1923 O.B. Wrought brass, old brass finish, with pins, gross. 50.00
No. 01923¼ Wrought steel, brass-plated, gross..... 14.70

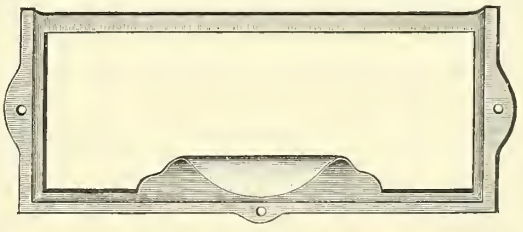
Over all 6⅛ x 3⅝ inches. For card 5⅜ x 3⅛ inches.

No. 1924 Gross..... $63.00
No. 1924 O.B. Gross..... 78.75

Over all 6¾ x 4 inches. For card 6 x 3½ inches.

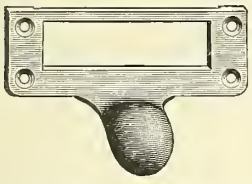
No. 1890 Gross..... $80.00
No. 1890 O.B. Gross..... 100.00

Card Frame Pulls



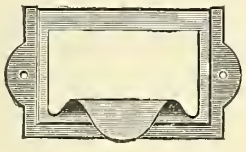
Packed with pins
4⅞ x 2⅛ inches. For card 4½ x 2 inches

No. 1894 Wrought bronze, polished, gross..... $13.50
No. 1894 O.B. Wrought brass, old brass finish, gross..... 16.90



Packed with screws
2½ x $\frac{15}{16}$ inch. For card 1 $\frac{15}{16}$ x ¾ inch

No. 11025 Cast bronze, polished, dozen..... $2.40
No. 11025 O.B. Cast brass, old brass finish, dozen..... 2.70

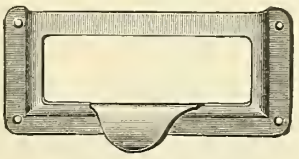


Packed with screws
2⅛ x 1¾ inches. For card 1¾ x 1 $\frac{1}{16}$ inches

No. 1787 Wrought bronze, polished, gross..... $6.20
No. 1787 O.B. Wrought brass, old brass finish, gross..... 7.75

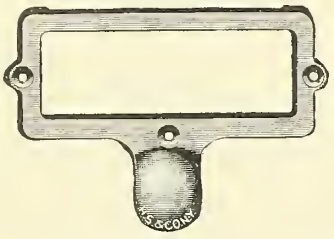
3⅞ x 1⅝ inches. For card 2⅞ x 1¼ inches

No. 1788 Wrought bronze, polished, gross..... 9.80
No. 1788 O.B. Wrought brass, old brass finish, gross..... 12.25



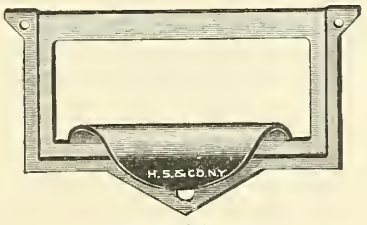
Packed with screws
3⅛ x 1½ inches. For card 2 $\frac{7}{16}$ x 1 inch

No. 5511 Wrought bronze, polished, gross..... $8.40
No. 5511 O.B. Wrought brass, old brass finish, gross..... 10.50



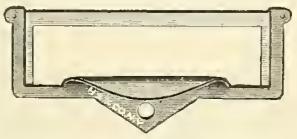
Packed with screws
3 x 1¼ inches. For card 2⅝ x 1 inch

No. 5 Cast bronze, polished, gross... $26.00
No. 5 O.B. Cast brass, old brass finish, gross..... 26.00



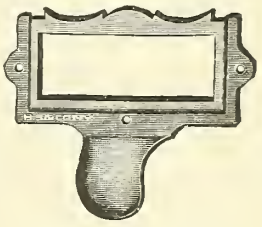
Packed with screws
3½ x 2 inches. For card 3 x 1½ inch

No. 600 Wrought bronze, polished, gross..... $10.80
No. 600 O.B. Wrought brass, old brass finish, gross..... 13.50



Packed with pins and screws
3 x 1½ inches. For card 2½ x ¾ inch

No. 5243 Wrought brass, polished, gross..... $7.75
No. 5243 O.B. Wrought brass, old brass finish, gross..... 9.35



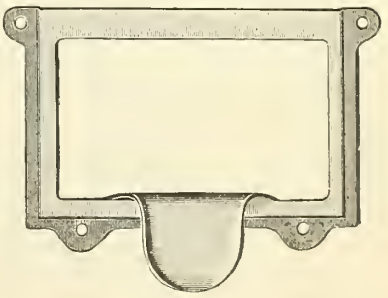
Packed with screws
2½ x 1¼ inches. For card 2 x ⅞ inch

No. 3 Wrought brass, polished, gross. $5.90
No. 3 O.B. Wrought brass, old brass finish, gross..... 7.40



Packed with screws
1 $\frac{15}{16}$ x 1 $\frac{13}{16}$ inch. For card 1 $\frac{13}{16}$ x $\frac{11}{16}$ inch

No. 1906 Wrought bronze, polished, gross..... $5.40
No. 1906 O.B. Wrought brass, old brass finish, gross..... 6.75



Packed with screws
3⅜ x 2¼ inches. For card 3 x 2 $\frac{1}{16}$ inches

No. 5501 Wrought bronze, polished, gross..... $22.60
No. 5501 O.B. Wrought brass, old brass finish, gross..... 28.25

Card Frames



No. 33 Packed with pins. Wrought brass, dipped. For card 2½ x ⅜ inch, gross $3.00

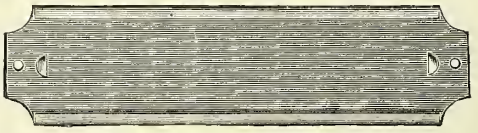


Packed with pins

$1\frac{15}{16}$ x $\frac{13}{16}$ inch. For card $1\frac{3}{16}$ x $\frac{11}{16}$ inch

No. 40 Wrought bronze, polished, dozen $4.15

No. 40 O.B. Wrought brass, old brass finish, gross 5.25



Wrought Brass, Dipped

		Gross
No. 25060	For card 1½x⅝ inch	$4.40
No. 25069	For card 2¼x⅝ inch	4.60
No. 25071	For card 3¼x⅝ inch	4.80
No. 25066	For card 4 x1⅛ inches	7.20



No. 026 Wrought brass, dipped. For card 1½x⅞ inch. Gross $3.00

No. 029 For card 3x⅞ inch. Gross .. 3.45



Packed with pins

$2\frac{3}{4}$ x $\frac{15}{16}$ inch. For card $2\frac{7}{16}$ x ¾ inch

No. 34 Wrought brass, dipped, gross $3.00

No. 35 Wrought bronze, dipped, gross 4.50



No. 31 Packed with pins. Wrought brass, dipped. For card 2¼ x ¼ inch, gross $2.80



Packed with pins

2½ x $1\frac{1}{8}$ inches. For card 2 x ⅞ inch

No. 30 Wrought bronze, polished, gross $4.00

No. 30 O.B. Wrought brass, old brass finish, gross 5.00



Packed with pins

$2\frac{1}{8}$ x $1\frac{3}{8}$ inches. For card $1\frac{3}{4}$ x $1\frac{1}{16}$ inches

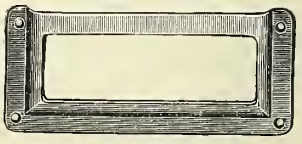
No. 1789 Wrought bronze, polished, gross $4.80

No. 1789 O.B. Wrought brass, old brass finish, gross 6.00

$3\frac{3}{8}$ x 1⅝ inches. For card 2⅞ x 1¼ inches

No. 1790 Wrought bronze, polished, gross $8.00

No. 1790 O.B. Wrought brass, old brass finish, gross 10.00

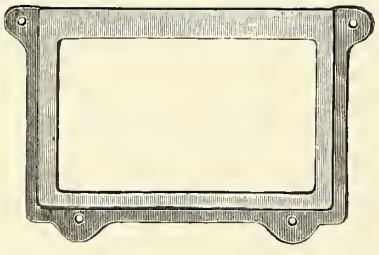


Packed with pins

$3\frac{1}{8}$ x 1½ inches. For card $2\frac{7}{2}$ x 1 inch

No. 5512 Wrought bronze, polished, gross $7.20

No. 5512 O.B. Wrought brass, old brass finish, gross 9.00



Packed with pins

$3\frac{3}{8}$ x 2¼ inches. For card 3 x $2\frac{1}{16}$ inches

No. 5502 Wrought bronze, polished, gross $16.00

No. 5502 O.B. Wrought brass, old brass finish, gross 20.00



Cast Bronze, Polished

Packed with screws

No. 1065P Size $2\frac{15}{16}$x⅞ inch, for card 2½x¾ inch, gross $12.80

No. 1066P Size 3½x1½ inches, for card $2\frac{15}{16}$x1¼ inch, gross 18.20

No. 1067P Size $3\frac{11}{16}$x2 inches, for card $3\frac{1}{8}$x1¾ inches, gross 19.90

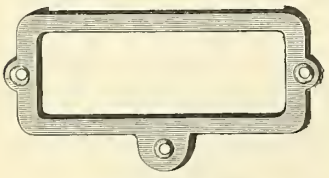


Packed with screws

$3\frac{1}{2}$ x $1\frac{13}{16}$ inches. For card $3\frac{3}{16}$ x 1½ inches

No. 25 Cast bronze, polished, gross .. $24.70

No. 25 O.B. Cast brass, old brass finish, gross 24.70



Packed with screws

3 x $1\frac{1}{4}$ inches. For card 2⅝ x 1 inch

No. 1899 Cast bronze, polished, gross $24.00

No. 1899 O.B. Cast brass, old brass finish, gross .. 30.00

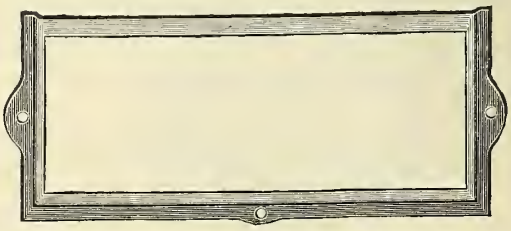


Packed with screws

5¼ x 2 inches. For card 4¾ x 1¾ inches

No. 1070P Cast bronze, polished, gross $40.00

No. 1070 O.B. Cast brass, old brass finish, gross 50.00



Over all 4⅞ x 2⅛ inches. For card 4½ x 2 inches.

Packed with pins

No. 1884 Wrought bronze, polished, gross $15.00

No. 1884 O.B. Wrought brass, old brass finish, gross 18.75

Thread Escutcheons

Full Size Cuts



No. 386

Cast Brass, Emery Finish

Size ⅜ inch, gross..$1.44
Size ½ inch, gross.. 1.54
Size ⅝ inch, gross.. 1.92
Size ¾ inch, gross.. 3.00



No. 128



No. 129



No. 139

Cast Brass, Polished

No. 128 Size $\frac{13}{16}$ inch, gross... $3.00
No. 129 Size $\frac{15}{16}$ inch, gross... 3.00
No. 139 Size ⅝ inch, gross... 3.00



Wrought Brass

No. 79 Dipped finish, gross..... $2.00
No. 79 O.B. Old brass finish, gross..... 2.10
Other finishes to order



Wrought Brass
Packed with pins

No. 1445 Dipped finish, gross..... $2.00
No. 1445 O.B. Old brass finish, gross..... 3.20
No. 1445 O.E. Old English finish, gross..... 3.50

Escutcheons

Full Size Cuts



No. 48 Style of number 1¾. Wrought Brass, Dipped

No. 48 Diameter ⅞ inch, gross ..... $ .80
No. 1¾ Diameter 1 inch, gross..... .80



No. 1537 Packed with pins. Wrought brass, polished, gross.... $1.50



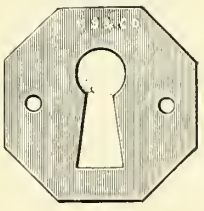
Wrought Brass
Packed with pins

No. 935 Polished, gross..... $3.30
No. 935 O.B. Old brass finish, gross.. 3.60



Wrought Brass
Packed with pins

No. 1514 Polished, gross..... $1.35
No. 1514N Nickel-plated, gross..... 1.35



Wrought Brass
Packed with pins

No. 1108 Polished, dozen..... $ .70
No. 1108 O.B. Old brass finish, dozen. .80



Packed with pins

No. 145 Cast brass, polished, dozen..... $ .90

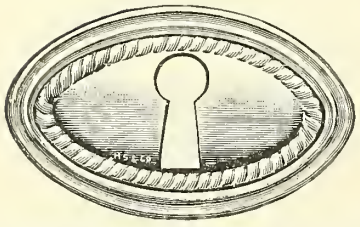


Cast Brass
Packed with pins

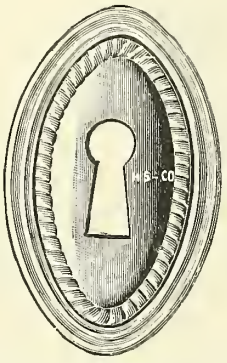
No. 144 Polished, dozen..... $ .76
No. 144 O.B. Cast brass, dozen..... .90

Escutcheons

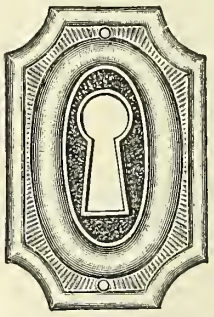
Full Size Cuts



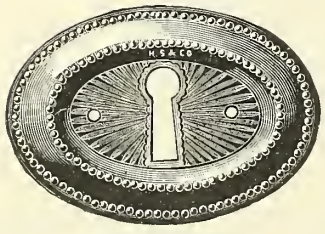
No. 1404 O.B. Packed with pins. Wrought brass, old brass finish, gross..... $5.40



No. 1407 O.B. Packed with pins. Wrought brass, old brass finish, gross..... $5.40



No. 1428 O.B. Packed with pins. Wrought brass, old brass finish, gross..... $6.00



Wrought Brass

Packed with pins

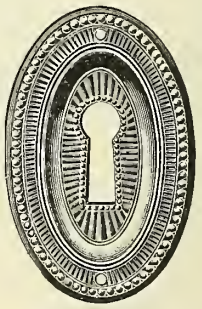
No. 402 O.B. Old brass finish, gross.. $4.00
No. 402 O.E. Old English finish, gross 4.00



Wrought Brass

Packed with pins

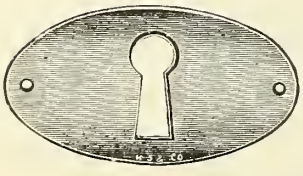
No. 382 O.B. Old brass finish, gross.. $3.00
No. 382 O.E. Old English finish, gross 3.00



Wrought Brass

Packed with pins

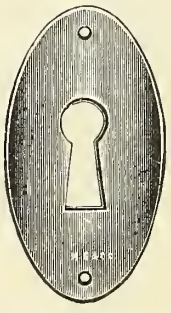
No. 383 O B. Old brass finish, gross.. $3.60
No. 383 O.E. Old English finish, gross 3.60



Wrought Brass

Packed with pins

No. 1519 Polished, gross..... $4.32
No. 1519 O.B. Old brass finish, gross. 4.32



Wrought Brass

Packed with pins

No. 1520 Polished, gross..... $4.32
No. 1520 O.B. Old brass finish, gross. 4.32



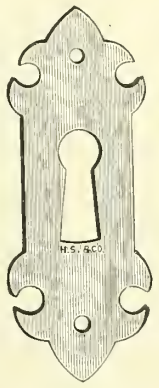
Cast Brass, Polished

Packed with screws

No. 5390 Dozen..... $ .60

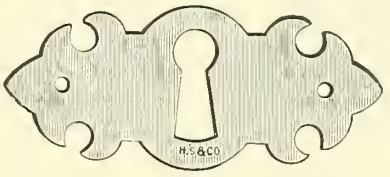
Escutcheons

Full Size Cuts



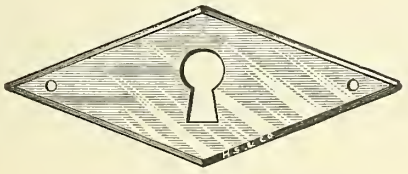
Wrought Brass

No. 119 Polished, gross..... $1.80
No. 119N Nickel-plated, gross..... 2.40



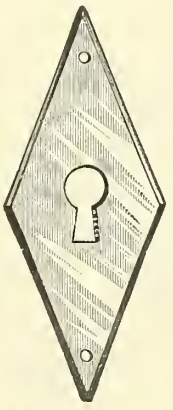
Wrought Brass, Polished

No. 118 Gross..... $1.80



Wrought Brass

No. 0 Polished, gross..... $2.10
No. 0N Nickel-plated, gross..... 2.10



Wrought Brass

No. 00 Polished, gross..... $2.10
No. 00N Nickel-plated, gross..... 2.10



Packed with pins

No. 230 Wrought brass, polished, gross..... $2.40

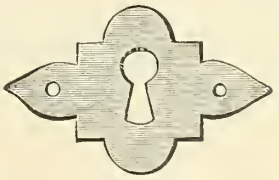


Packed with screws

No. 428 Wrought brass, polished, gross..... $5.00



No. 120½ Wrought brass, nickel-plated, gross..... $5.20



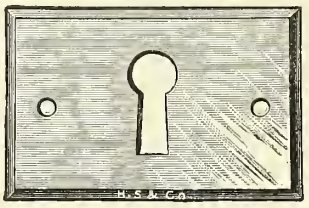
No. 749 Wrought bronze, nickel-plated, gross..... $1.95

Escutcheons

Full Size Cuts



No. 2694 Packed with screws. Wrought brass, polished, gross.. $7.00



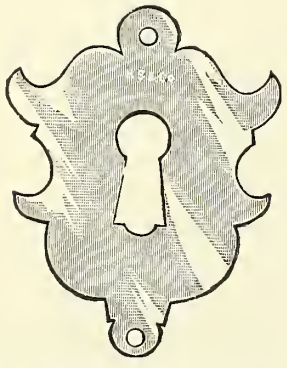
No. 0745 Packed with screws. Wrought bronze, polished, gross.. $12.60



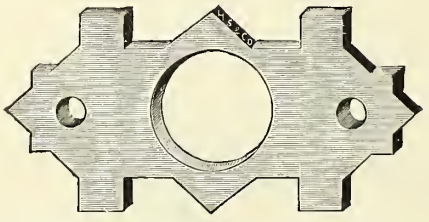
Packed with screws

No. 0744 Wrought brass, polished, gross..... $9.00

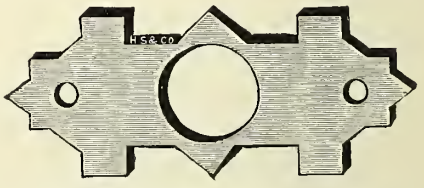
No. 0744½ Wrought bronze, polished, gross..... 9.00



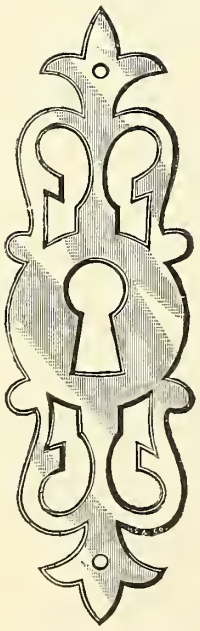
No. 4176 Packed with pins. Cast brass, polished, gross..... $8.00



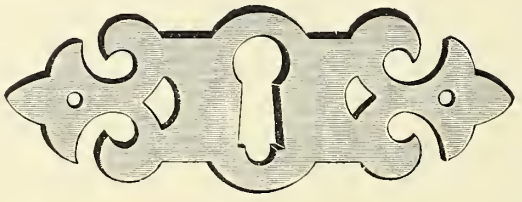
No. 1355 Packed with screws. Wrought brass, polished, gross..... $8.00



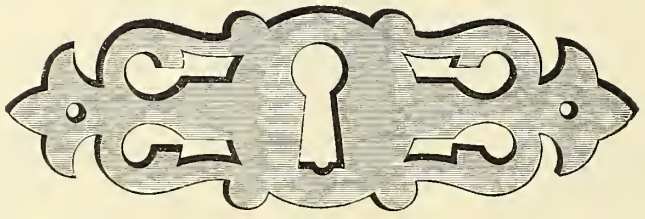
No. 1356 Packed with screws. Wrought brass, polished, gross.. $8.00



Packed with pins
Cast Brass, Polished
No. 4023½ Gross..... $11.00



No. 5391 Packed with pins. Cast brass, polished, dozen..... $ .90



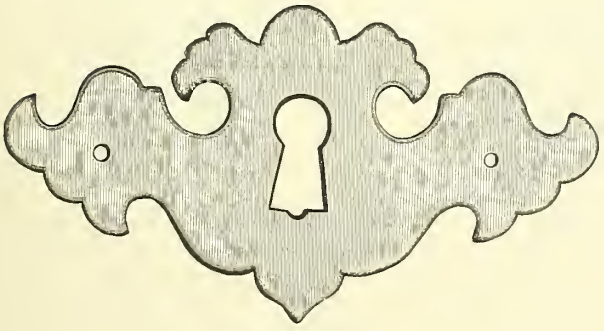
No. 4023 Packed with pins. Cast brass, polished, gross..... $11.40



Packed with pins
Cast Brass, Polished
No. 4021 Gross..... $8.00

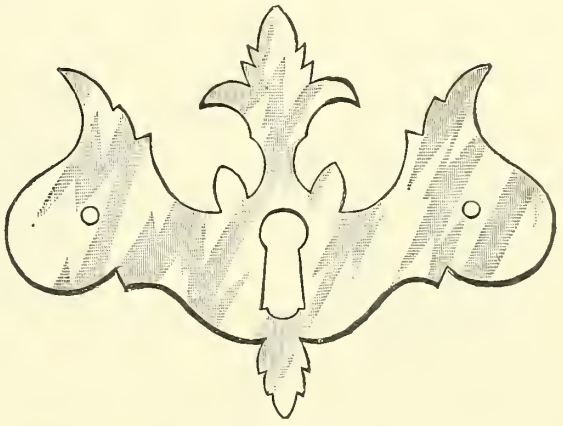
Escutcheons

Full Size Cuts



Packed with pins

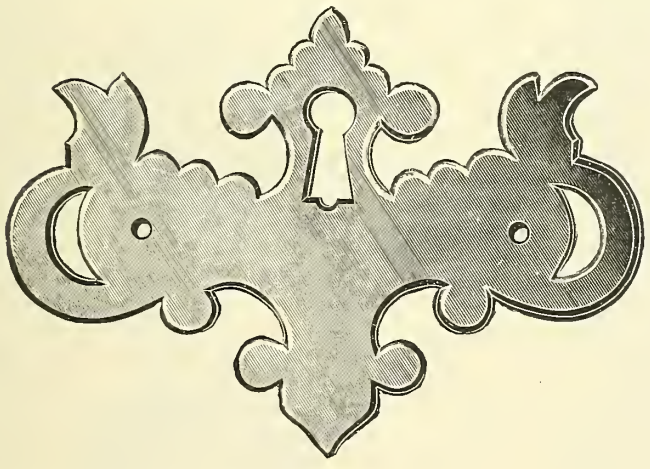
No. 4791 Cast brass, polished, dozen..... $1.80



Cast Brass

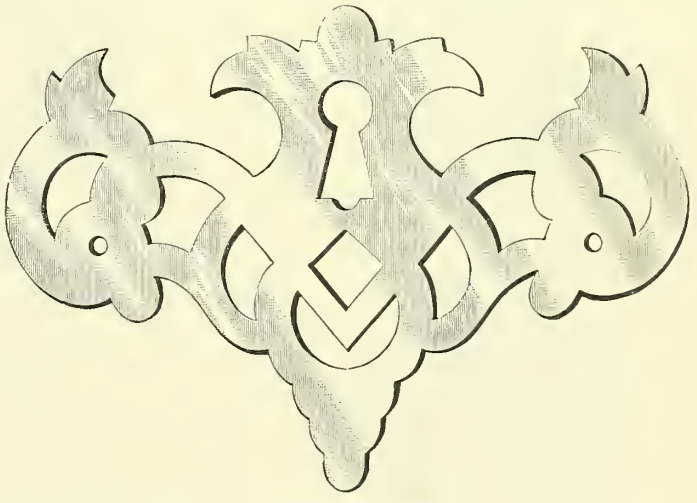
Packed with pins

No. 4172 Polished, width 3⅞ inches, dozen..... $1.70
No. 4174 Polished, width 2⅞ inches, dozen..... 1.20
No. 4174 O.B. Old brass finish, width 2⅞ inches, dozen..... 1.20



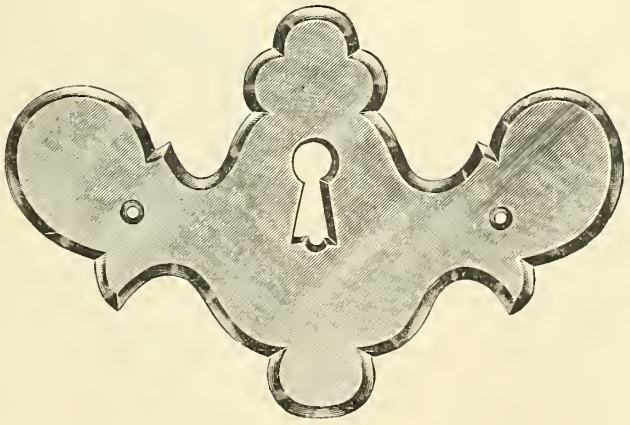
Packed with pins

No. 5395 Cast brass, polished, dozen..... $1.40



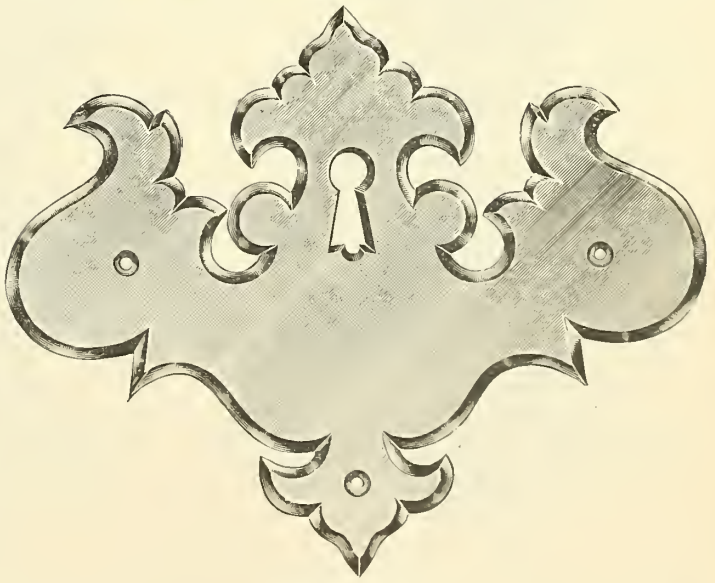
Packed with pins

No. 4170 Cast brass, polished, dozen..... $1.40



Packed with pins

No. 5881 Cast brass, polished, dozen..... $3.75

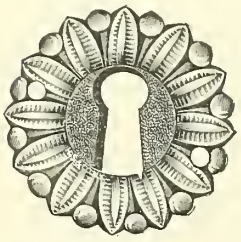


Packed with pins

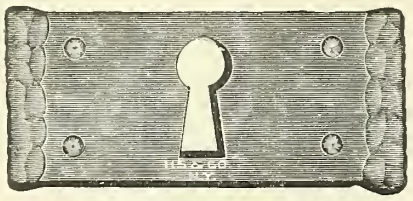
No. 5882 Cast brass, polished, dozen..... $4.25

Escutcheons

Full Size Cuts

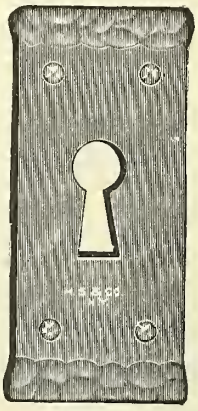


No. 1036 Packed with pins. Cast brass, old gold finish, dozen..... $ .90
No. 1036 Old English finish, dozen.. .90



Mission

No. 266 Packed with wrought nails. Wrought brass, antique finish, dozen..... $ .80

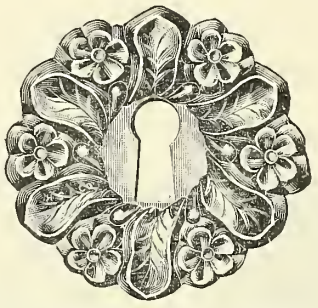


Mission

No. 267 Packed with wrought nails. Wrought brass, antique finish, dozen..... $ .80



No. 70 Packed with pins. Cast brass, polished, gross..... $4.00



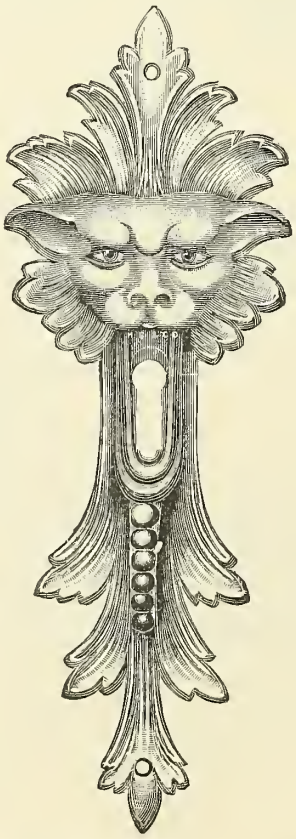
No. 907 Packed with pins. Wrought brass, old brass finish, gross..... $6.00

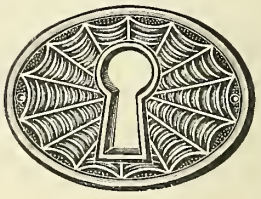


No. 6477



No. 4194 Packed with pins. Cast brass, polished, gross..... $9.00



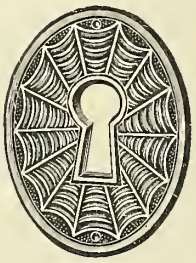


No. 6478



No. 1039 Packed with pins. Cast brass, old English finish, dozen.. $2.40
No. 1039 Old gold finish, dozen 2.40

No. 4983 Packed with pins. Cast brass, polished, dozen..... $2.10



No. 6479

Cast Brass, Old English Finish

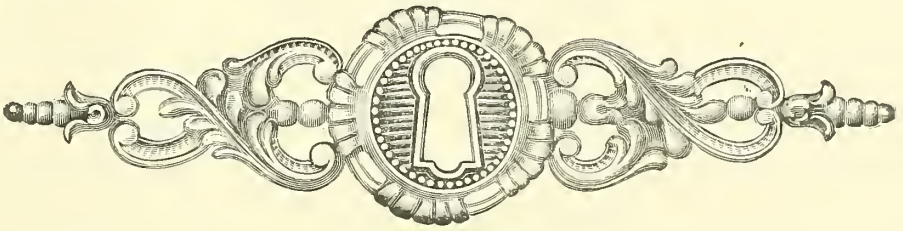
Packed with pins

No. 6477	Dozen.....	$1.35
No. 6478	Dozen.....	1.40
No. 6479	Dozen.....	1.40

SEE DISCOUNT SHEET

Escutcheons

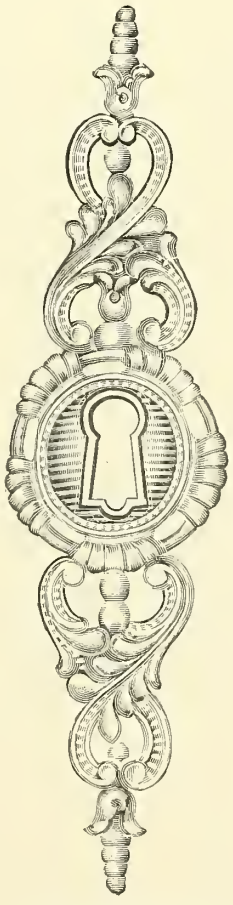
Full Size Cuts



Packed with pins
No. 4816 Cast brass, polished, dozen..... $1.80



Packed with pins
No. 5252 Wrought brass, polished, gross..... $2.80



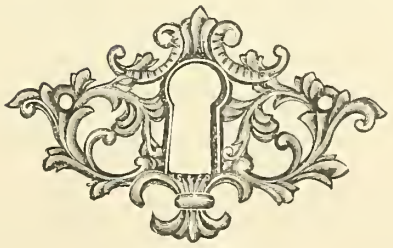
Packed with pins
No. 4817 Cast brass, polished, dozen..$1.80



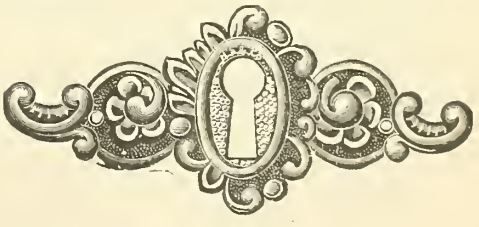
Packed with pins
No. 4652 Cast brass, polished, gross...$8.00



Packed with pins
No. 4641 Cast brass, gross.....$9.00



Packed with pins
No. 728 Cast brass, gilt, dozen..... $ .46



Packed with pins
No. 525 Heavy wrought brass, polished, gross..... $3.00

SEE DISCOUNT SHEET

Locks

Unless otherwise specified, all Locks are furnished without screws.

Alike

Making Secure Levers alike or alike with special length of tube, see schedule on next page.
Making Pin Tumbler Locks alike, or alike with special length of tube, see schedule on next page.

All Different

Making any Two Lever Lock, with more than 12 changes of keys, charge $2.00 per dozen extra.
Making any Three or Four Lever Lock, with more than 12 changes of keys, charge $1.00 cents per dozen extra.

Prices for Special Features

Making Flat Keyed Locks with special length of tube, see schedule on next page.
Making Pin Tumbler Locks with special length of tube, see schedule on next page.
Numbers 1015, 1016 and 01932, when ordered for wood thinner or thicker than that for which the regular Locks are adapted, add same extras as Flat Key Cabinet Locks, with special length of tube, see schedule on next page.
No allowance will be made on locks like Nos. 1015, 1016 and 01932 when furnished without tubes.
Metal Tags ordered in connection with locks or keys, 50 cents per dozen Tags.
An extra charge will be made for any special features required by a customer that necessitates making the Locks from the parts.

Master Keying

Making any Two Lever Lock to Master Key, charge $3.00 per dozen extra. Minimum charge $3.00.
Making any Three Lever Lock to Master Key, charge $2.00 per dozen extra. Minimum charge $2.00.
Making Secure Lever Locks to Grand Master Key, add $3.00 to the regular price for Master Keying.
Making Secure Lever Drawer and Wardrobe Locks to the same Master Key, double the regular Master Key charge on the Drawer Locks only, the minimum extra charge on such Master Key work, $6.00.

Making Pin Tumbler Locks to Master Key

1 Lock	$1.00
2 Locks	2.00
3 Locks	3.00
4 Locks	4.00
5 Locks	5.00
6 Locks	6.00
7 to 12 locks, inclusive	6.50
Over 12 locks, per dozen	6.50

25 cents net will be charged for each Master Key, either Secure Lever or Pin Tumbler.

Variations in Keys

Locks listed with Iron Keys, when furnished with Gilt Keys, charge $1.30 per dozen extra.
When Locks are furnished with Keys made from higher priced blanks than regular, charge difference in net price of blanks.
No deductions will be made when a lower-priced Key than the regular one is furnished.

Bulk Allowance

Cabinet Locks sold in bulk, deduct 1 cent per dozen net. This allowance limited to lots of 100 dozen where no limit for bulk allowance is otherwise specified.

Cabinet Locks

Schedule of extra charges for special work

Quantity Only	Alike Net	Special Lengths of Tube up to 1½-inch Wood Net	Alike and Special Lengths of Tube up to 1½-inch Wood Net	Special Lengths of Tube Over 1½-inch Wood Net	Alike and Special Lengths of Tube Over 1½-inch Wood Net
1	$ .70	$ .70	$1.00	$1.00	$1.30
2	.70	.90	1.00	1.20	1.30
3	.90	.90	1.00	1.20	1.30
4	.90	.90	1.00	1.20	1.30
5	1.20	1.20	1.40	1.60	1.80
6	1.20	1.20	1.40	1.60	1.80
7	1.50	1.50	1.80	2.00	2.30
8	1.50	1.50	1.80	2.00	2.30
9	1.50	1.50	1.80	2.00	2.30
10	2.00	2.00	2.30	2.50	2.80
11	2.00	2.00	2.30	2.50	2.80
12	2.00	2.00	2.30	2.50	2.80
Dozen	Dozen Net	Dozen Net	Dozen Net	Dozen Net	Dozen Net
1 to $2\frac{11}{12}$	2.00	2.00	2.30	2.50	2.80
3 to $3\frac{11}{12}$	1.70	1.70	2.00	2.20	2.50
4 to $4\frac{11}{12}$	1.50	1.50	1.80	1.80	2.20
5 to $5\frac{11}{12}$	1.20	1.20	1.20	1.50	1.70
6 to $11\frac{11}{12}$	1.00	1.00	1.20	1.20	1.40

12 dozen or over, no extra charge.

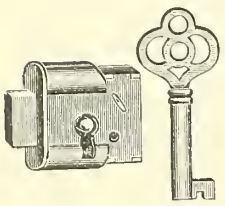
Pin Tumbler Locks

Schedule of extra charges for special work

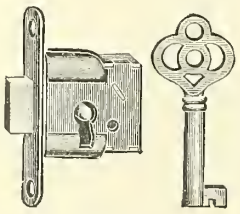
Quantity	Alike Net	Special Lengths of Tube up to 1¼-inch Wood Net	Alike and Special Lengths of Tube up to 1¼-inch Wood Net	Special Lengths of Tube Over 1¼-inch Wood Net	Alike and Special Length of Tube Over 1¼-inch Wood Net
1	$ .70	$ .70	$1.00	$1.00	$1.30
2	.70	.90	1.00	1.20	1.30
3	90	.90	1.00	1.20	1.30
4	.90	.90	1.00	1.50	1.60
5	1.20	1.20	1.40	1.50	1.60
6	1.20	1.20	1.40	1.70	1.80
7	1.50	1.50	1.80	1.70	1.80
8	1.50	1.50	1.80	2.20	2.40
9	1.50	1.50	1.80	2.20	2.40
10	2.00	2.00	2.30	2.50	2.80
11	2.00	2.00	2.30	2.50	2.80
12	2.00	2.00	2.30	2.50	2.80
Dozen	Dozen Net				
1 to $2\frac{11}{12}$	2.00	2.00	2.30	2.50	2.80
3 to $3\frac{11}{12}$	1.70	1.70	2.00	2.20	2.50
4 to $4\frac{11}{12}$	1.50	1.50	1.80	2.00	2.30
5 to $5\frac{11}{12}$	1.20	1.20	1.50	1.80	2.00
6 to $11\frac{11}{12}$	1.00	1.00	1.20	1.50	1.70

Eagle Mortise Cupboard and Drawer Locks

One-Half Size Cuts

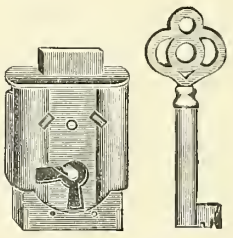


No. 2242

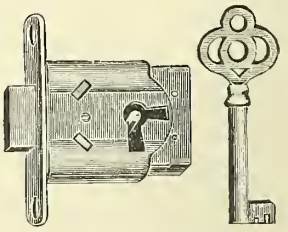


Style of No. 2243 — No. 2244

Mortise, backspring. Can be made for either right or left-hand doors.



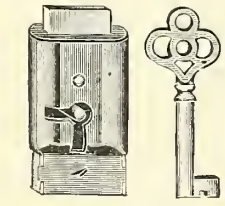
No. 2272



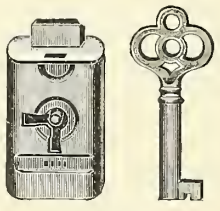
Style of No. 2373 — No. 2274

Mortise, double keyhole. Backspring. Can be made for either right or left-hand doors. Illustrations show right-hand.

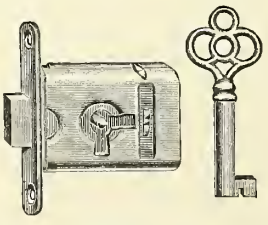
Number	Size Inches	Selvedge to Key-Pin Inch	Material	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
2242	1 x1	$\frac{13}{32}$	Iron	5204	$ .40	.43	.50	.66
2243	1 x1 $\frac{1}{32}$	$\frac{7}{16}$	Iron, brass selvedge	5204	.75	.78	.85	1.01
2244	1 x1 $\frac{1}{32}$	$\frac{7}{16}$	Iron, brass selvedge	5204	....	....	....	1.50
2272	1 $\frac{1}{8}$x1 $\frac{17}{32}$	$\frac{7}{8}$	Iron	76 $\frac{1}{2}$	.46	.49	.55	.72
2273	1 $\frac{1}{8}$x1 $\frac{17}{32}$	$\frac{15}{16}$	Iron, brass selvedge	76 $\frac{1}{2}$	.81	.84	.91	1.07
2274	1 $\frac{1}{8}$x1 $\frac{17}{32}$	$\frac{15}{16}$	Iron, brass selvedge	76 $\frac{1}{2}$	....	....	....	1.50



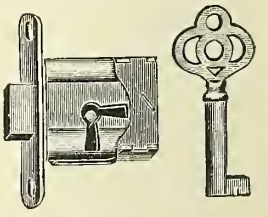
No. 2247
Style of Nos. 2248, 2267, 2268 7701 and 7702



No. 2187
Style of No. 2188



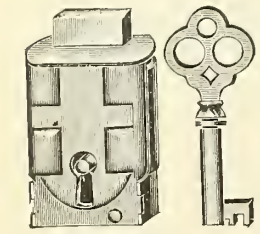
No. 2189



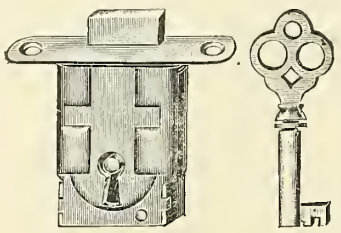
Style of Nos. 2249 and 7703 — No. 2269

Mortise. Backspring. Double keyhole. Can be made for either right or left-hand. Illustrations show right-hand

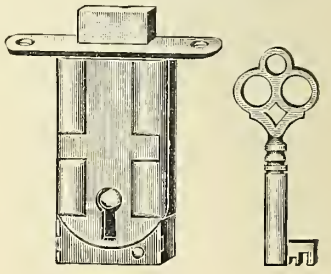
Number	Size Inches	Selvedge to Key-Pin Inch	Material	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
2267	1x1 $\frac{3}{16}$	$\frac{15}{32}$	Iron	5204	$ .40	.43	.50	.66
2268	1x1 $\frac{1}{4}$	$\frac{1}{2}$	Iron, brass selvedge	5204	.75	.78	.85	1.01
2247	1x1 $\frac{11}{16}$	$\frac{7}{8}$	Iron	5204	.46	.49	.55	.72
2248	1x1 $\frac{23}{32}$	$\frac{29}{32}$	Iron, brass selvedge	5204	.81	.84	.91	1.07
7701	1x1 $\frac{7}{16}$	$\frac{11}{16}$	Iron	5204	.40	.43	.50	.66
7702	1x1 $\frac{1}{2}$	$\frac{23}{32}$	Iron, brass selvedge	5204	.75	.78	.85	1.01
2187	1x1 $\frac{7}{16}$	$\frac{5}{8}$	Iron	5204	.40	.43	.50	.66
2188	1x1 $\frac{1}{2}$	$\frac{21}{32}$	Iron, brass selvedge	5204	.75	.78	.85	1.01
2269	1x1 $\frac{1}{4}$	$\frac{1}{2}$	Iron, brass selvedge	5204	....	....	....	1.50
2249	1x1 $\frac{23}{32}$	$\frac{29}{32}$	Iron, brass selvedge	5204	....	....	....	1.50
2189	2x1 $\frac{1}{2}$	$\frac{11}{16}$	Iron, brass selvedge	5204	....	....	....	1.50
7703	2x1 $\frac{1}{2}$	$\frac{23}{32}$	Iron, brass selvedge	5204	....	....	....	1.50



No. 2190
Style of No. 2191



No. 2192



No. 2255

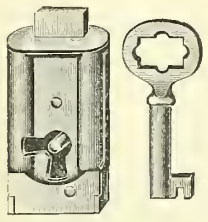
Mortise. Tumbler. Fancy bow key. Can be made for either right or left-hand doors.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
2190	1 $\frac{1}{4}$x1 $\frac{3}{4}$	1 $\frac{1}{16}$	Iron	161	$ .85	$ .90	$ .95	$1.15
2191	1 $\frac{1}{4}$x1 $\frac{3}{4}$	1 $\frac{1}{8}$	Iron, brass selvedge	161	1.20	1.24	1.30	1.50
2192	2 $\frac{1}{4}$x1 $\frac{3}{4}$	1 $\frac{1}{8}$	Iron, brass selvedge	161	....	....	....	1.50
2255	1 $\frac{1}{8}$x2 $\frac{1}{4}$	1 $\frac{9}{16}$	Iron, brass selvedge	161	....	....	....	1.80

For extras and special features, see pages 914 and 915

Eagle Mortise Machine Drawer Locks

One-Half Size Cuts

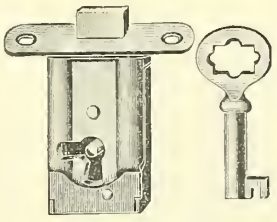


No. 7713—Tumbler

Iron, $\frac{31}{32}$ inch from selvedge to key-pin.

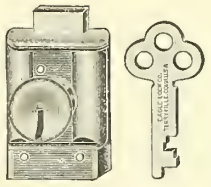
No. 7714—Tumbler

Iron, brass selvedge. 1 inch from selvedge to key-pin.

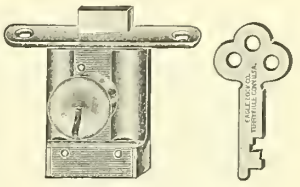


No. 1715

Iron, brass selvedge. 1 inch from selvedge to key-pin. Back spring. Can be made for left-hand doors.



No. 7721



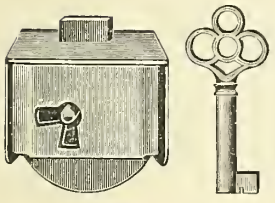
No. 7722

Iron, brass selvedge. $\frac{5}{8}$ inch from selvedge to center of key cylinder. Tumbler, brass cylinder, buffed and lacquered. For right-hand doors. Can be made to order for left-hand doors.

Number	Size Inches	Key Blank	12 KD. Dozen	6 KD. Dozen	4 KD. Dozen	3 KD. Dozen
7713	1 x $1\frac{11}{16}$	7721	$ .72	$ .55	$ .49	$ .46
7714	1 x $1\frac{11}{16}$	7721	1.07	.91	.84	.81
7715	2 x $1\frac{11}{16}$	5204	1.50			
7721	1 x $1\frac{3}{8}$	7721	2.50			
7722	2 x $1\frac{3}{8}$	7721	3.00			

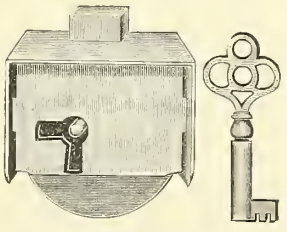
Eagle Machine Drawer Locks

Regularly made for right-hand doors, but can be made left-hand to order.

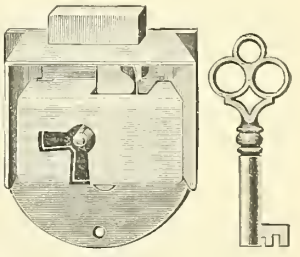


No. 1600

Style of Nos. 1601 and 1603



No. 1602



No. 1606

Style of Nos. 1608 to 1620, inclusive

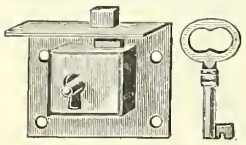
Number	Size Inches	Selvedge to Key-Pin Inches	Material	Router Used Number	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
1600	2 x$1\frac{5}{8}$	$\frac{5}{8}$	Iron	1	$72\frac{1}{2}$	$ .40	.43	.50	.66
1601	2 x$1\frac{5}{8}$	$\frac{5}{8}$	Brass plate	1	$72\frac{1}{2}$	.82	.86	.94	1.10
1602	2 x$1\frac{7}{8}$	$\frac{7}{8}$	Iron	$1\frac{1}{2}$	423	.46	.49	.55	.72
1603	2 x$1\frac{7}{8}$	$\frac{7}{8}$	Brass plate	$1\frac{1}{2}$	423	.85	.89	.97	1.13
1606	$2\frac{1}{4}$x$2\frac{5}{16}$	1	Iron	2	161	.85	.90	.95	1.15
1608	$2\frac{1}{4}$x$2\frac{5}{16}$	1	Iron, sq. brass selvedge	2	161	1.20	1.24	1.30	1.50
1610	$2\frac{1}{4}$x$2\frac{1}{2}$	$1\frac{1}{4}$	Iron	2	161	1.10	1.14	1.20	1.40
1611	$2\frac{1}{4}$x$2\frac{1}{2}$	$1\frac{1}{4}$	Brass plate	2	161	1.80	1.84	1.90	2.10
1612	$2\frac{1}{4}$x$2\frac{13}{16}$	$1\frac{1}{2}$	Iron	2	161	1.14	1.18	1.24	1.44
1614	$2\frac{1}{4}$x3	$1\frac{3}{4}$	Iron	2	161	1.20	1.24	1.30	1.50
1616	$2\frac{1}{4}$x3	$1\frac{3}{4}$	Iron, sq. brass selvedge	2	161	1.50	1.54	1.60	1.80
1618	$2\frac{1}{4}$x3$\frac{5}{16}$	2	Iron	2	161	1.20	1.24	1.30	1.50
1620	$2\frac{1}{4}$x3$\frac{9}{16}$	$2\frac{1}{4}$	Iron	2	161	1.50	1.54	1.60	1.80

Nos. 1600 to 1603 packed 300 dozen in a case.
Nos. 1606 to 1610 packed 150 dozen in a case.
Nos. 1611 to 1620 packed 125 dozen in a case.

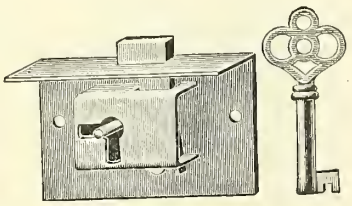
For extras and special features, see pages 914 and 915

Eagle Drawer Locks

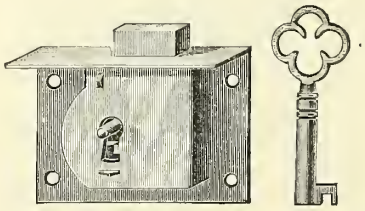
One-Half Size Cuts



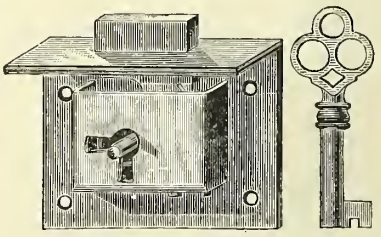
No. 46
Style of Nos. 33, 36, 47 and 48
Back-spring



No. 72
Style of No. 68.
Broad Bolt, Double Key-Hole
Back-spring



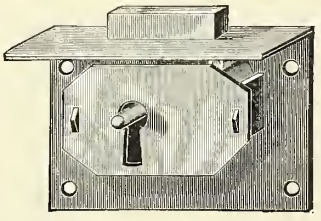
No. 40
Style of No. 49
Back-spring



No. 180
Style of Nos. 423, 0423, 161
Broad Bolt, Double Keyhole
Back-spring

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Ward	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
46	1½x1⅛	9/16	Brass plate	..	1495	....	....	....	$ .75
33	1¾x1¼	9/16	Brass plate	..	34	....	....	....	.95
36	2 x1 7/16	5/8	Brass plate	1	1493	....	....	....	1.00
40	2¼x1 5/8	11/16	Brass plate and bolt	1	667	....	....	....	1.88
72	2¼x1 7/16	5/8	Iron	..	72½	$ .40	.43	.50	.66
68	2¼x1 7/16	5/8	Brass plate	..	72½	.82	.86	.94	1.10
423	2¼x1 11/16	13/16	Iron	..	423	.46	.49	.55	.72
0423	2¼x1 11/16	13/16	Brass plate	..	423	.85	.89	.97	1.13
161	2½x2	7/8	Iron	..	161	.85	.90	.95	1.15
180	2½x2	7/8	Iron, square brass selvedge	1	161	1.20	1.24	1.30	1.50
47	2¾x2	7/8	Brass plate	1	10	1.60	1.64	1.72	1.87
48	2¾x2	7/8	Iron	1	48½	.84	.87	.92	1.12
49	3 x2	7/8	Iron	1	14	.90	.94	1.00	1.20

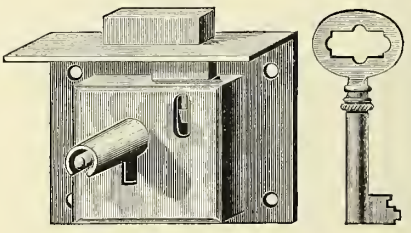
No. 40 has warded keyhole. No. 47 is screwed and has fancy keyhole. Nos. 72, 68, 423, 0423, 161 and 180 can be made for left-hand doors.



No. 1001Q
Style of Nos. 1001 and 01001 Q to A

Square selvedge. Broad heavy bolt, tumbler and ward. Nos. 1001Q to 1001A have iron back and brass selvedge. Nos. 01001Q to 01001A have brass plate and selvedge. Furnished regularly without key. When ordered with iron keys No. 1001 key blank used, add 50 cents to list. If ordered with tubes, add 30 cents to list. Can be made all different in a dozen, with tumbler and patent wards, at an advance of $1.00 on the list price. No. 1005 gilt keys will fit these locks.

Style	Size Inches	Selvedge to Key-Pin Inches	No. 1001 Dozen	No. 01001 Dozen
Q	2¾x1 7/8	¾	$1.50	$2.50
P	2¾x1 15/16	7/8	1.50	2.50
O	2¾x1 7/8	1	1.50	2.50
N	2½x2 5/16	1¼	1.50	2.50
M	2½x2¼	1½	1.60	2.60
L	2½x2¾	1¾	1.70	2.70
K	2½x2¾	2	1.80	2.80
I	2½x3¼	2¼	2.00	3.00
H	2½x3¼	2½	2.20	3.20
G	2½x3¾	2¾	2.40	3.40
F	2½x3¾	3	2.60	3.60
E	2½x4¼	3¼	2.80	3.80
D	2½x4¼	3½	3.00	4.00
C	2½x4¾	3¾	3.20	4.20
B	2½x4¾	4	3.40	4.40
A	2½x5¼	4¼	3.60	4.60



No. 1015L
Style of Nos. 1015 N to A

Brass plate, square selvedge, solid square box. Broad heavy bolt, high pin and tube. Fine flat bow keys, 3 secure levers 12-keyed. All different in a dozen. Nos. 1015 L, K, I and G locks, with iron keys, can also be furnished all alike without extra charge. Locks with iron keys—all different in a dozen—will be sent unless otherwise specified.

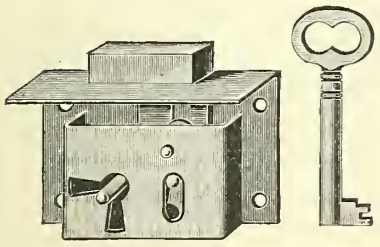
Can be made with 252 key changes.

Number	Size Inches	Selvedge to Key-Pin Inches	With Iron Key Dozen	With No. 1005 Gilt Key Dozen
1015N	2½x1¾	¾	$4.75	$5.75
1015M	2½x1 7/8	7/8	4.75	5.75
1015L	2½x2	1	5.00	6.00
1015K	2½x2¼	1¼	5.25	6.25
1015I	2½x2½	1½	5.50	6.50
1015H	2½x2¾	1¾	5.75	6.75
1015G	2½x3	2	6.00	7.00
1015F	2½x3¼	2¼	6.25	7.25
1015E	2½x3½	2½	6.50	7.50
1015D	2½x3¾	2¾	6.75	7.75
1015C	2½x4	3	7.00	8.00
1015B	2½x4¼	3¼	7.25	8.25
1015A	2½x4½	3½	7.50	8.50

For extras and special features, see pages 914 and 915

Eagle Drawer Locks

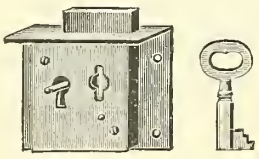
One-Half Size Cuts



No. 2121A

Style of Nos. 2121B and 2122B.

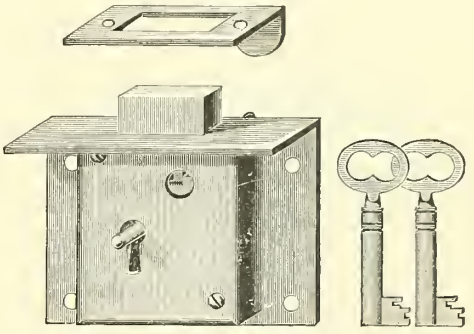
Square selvedge, broad heavy holt. Fine flat bow key.



No. 563

Style of Nos. 562, 454, 455, 237, 238, 674, 198, 456 and 648.

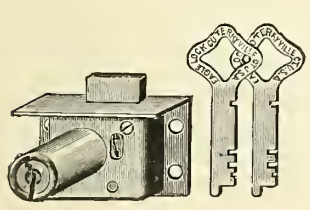
Square selvedge, solid square box, screwed. Heavy bolt. Fine flat bow key.



No. 6027

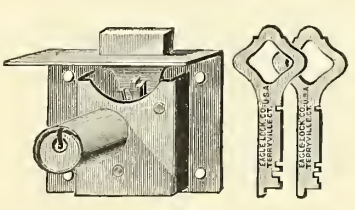
Self-locking. Square selvedge, solid square box, screwed. Broad heavy bolt. Two fine flat bow keys to each lock. Bolt is thrown by pin in back of lock striking lip of plate.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Regular	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
2121A	2½x1⅝	1	Iron	3	12	60	...	408	$3.00
2121B	2½x1⅞	1¼	Iron	3	12	60	...	408	3.50
2122B	2¾x2⅜	1½	Iron	3	12	60	...	408	4.50
563	1½x1 3/16	½	Iron	2	12	60	...	562	3.00
562	1½x1 3/16	½	Brass plate	2	12	60	...	562	4.00
454	2 x1 9/16	⅝	Iron	2	12	....	...	429	3.00
455	2 x1 9/16	⅝	Brass plate	2	12	....	...	429	4.00
237	2½x1 15/16	⅞	Iron	2	12	....	...	266	3.25
238	2½x1 15/16	⅞	Brass plate	2	12	....	...	266	4.00
674	2½x1⅞	1	Brass plate	2	12	252	...	022S	4.25
198	2¾x1 15/16	⅞	Iron	2	12	....	...	266	3.50
456	2¾x1 15/16	⅞	All brass	3	12	3120	620	6000	6.00
648	3 x2⅛	1⅛	Iron	2	12	....	...	650	5.00
6027	2¾x2 1/16	1	Brass plate and strike	2	12	....	...	427	8.00



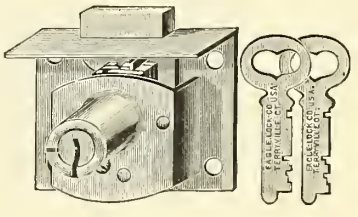
No. 01996

Solid square box. Screwed.



No. 6090

Style of Nos. 6080 and 6092, except No. 6092, which has square selvedge and screwed. Broad heavy bolt.



No. 01901

Broad heavy bolt. Screwed.

Above Locks have two nickel-plated flat-steel keys to each lock. Regularly made for ⅞-inch wood, but can be made for any thickness desired. No. 01996 cannot be made for wood thinner than 5/16 inch when more than 120 changes are wanted or when made master keyed.

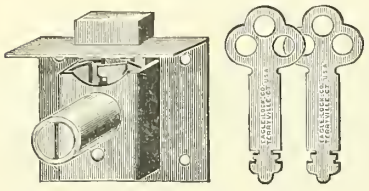
Carried in stock as stated below and in key changes as follows: No. 01996, all different in a dozen; No. 6090, all different in a dozen, also all alike; No. 6080, all different in a dozen; No. 6092, all alike; No. 01901 with 100 changes.

Number	Size Inches	Selvedge to Center of Cylinder Inches	Material	For Wood Inch	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01996	1½x1	½	All brass	⅞	3	3120	620	6080	$5.50
6090	1¾x1 7/16	¾	Iron, brass cylinder	½ and ⅞	2	15600	3120	6080	4.50
6080	1¾x1 7/16	¾	All brass	⅞	2	15600	3120	6080	5.00
6092	2 x1⅝	⅞	All brass	⅞	2	15600	3120	6080	6.00
01901	2 x1⅝	⅞	Cast brass	⅞	3	15600	3120	1901	6.00

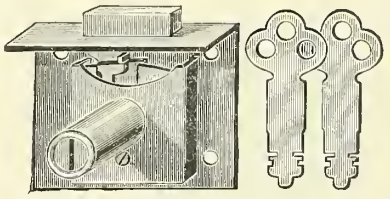
For extras and special features, see pages 914 and 915

Eagle Flat Key Drawer Locks

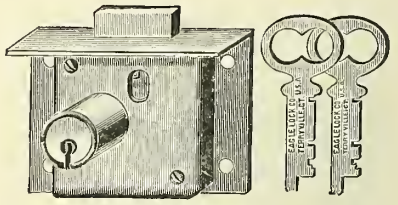
One-Half Size Cuts



No. 01877
Buffed and lacquered



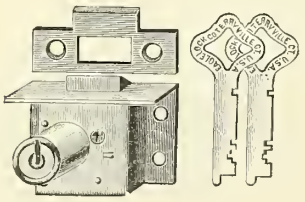
No. 01876
Style of Nos. 01929, 01930 and 01931



No. 6001
Style of Nos. 6003 and 6004. Solid Square Box

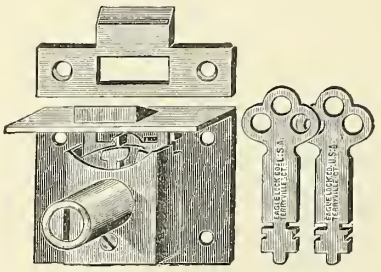
All square selvedge and screwed except No. 01877. Broad heavy bolt. Two nickel-plated flat steel keys to each lock. Made regularly for ⅞-inch wood but can be made for any thickness of wood desired. Carried in stock as specified below and in key changes as follows: No. 01877, all different in a dozen, also all alike; No. 01876 for ⅞-inch wood, all different in a dozen, also alike in six different changes; for 1¼-inch wood, all different in a dozen; No. 01929, for ⅞ and 1¼-inch wood, all different in a dozen, also for ⅞-inch wood, all alike; No. 01930, all different in a dozen, also all alike; No. 01931, all different in a dozen; No. 6001, all different in a dozen, also all alike; Nos. 6003 and 6004, all different in a dozen.

Number	Size Inches	Selvedge to Center of Cylinder Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01877	1¾x1½	¾	All brass	½ and ¾	2	4080	1020	1876	$5.00
01876	2 x1⅝	⅞	All brass	⅞ and 1¼	2	15600	3120	1876	6.00
01929	2 x2	1¼	All brass	⅞ and 1¼	2	15600	3120	1876	7.25
01930	2¼x2¼	1½	All brass	⅞	2	15600	3120	1876	8.00
01931	2¼x2¾	2	All brass	⅞	2	15600	3120	1876	9.25
6001	2¼x1¾	⅞	All brass	⅞	3	15600	3120	6001	7.50
6003	2½x2	1	All brass	⅞	3	15600	3120	6001	9.00
6004	2½x2¼	1¼	All brass	⅞	3	15600	3120	6001	9.75



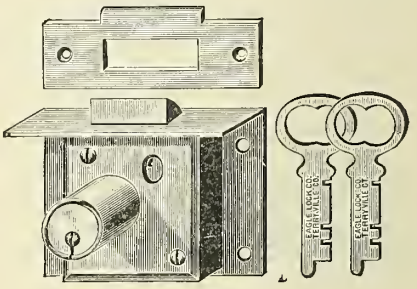
No. 01996½

Square selvedge. Solid square box. Cast brass latch bolt. Screwed.



No. 01876½

Square selvedge. Brass striker, cast brass latch bolt. Screwed.



No. 6001½

Square selvedge. Solid square box, screwed. Brass striker, cast bronze heavy latch bolt.

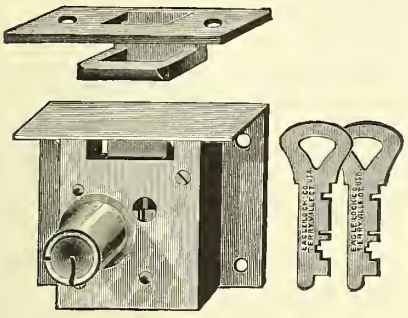
Two nickel-plated flat steel keys to each of the above locks. Made regularly for ⅞-inch wood but can be made for any thickness of wood required. Carried in stock as specified below and in key changes as follows: Nos. 01996½, 01876½, 6001½ all different in a dozen; No. 6001½ for ⅞-inch wood also carried in stock alike.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Material	For Wood Inch	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01996½	1½x1	½	All brass	½	2	620	120	6080	$6.00
01876½	2 x1⅝	⅞	All brass	⅜	2	3120	620	1876	8.00
6001½	2¼x1¾	⅞	All brass	⅞	3	15600	3120	6001	9.00

For extras and special features, see pages 914 and 915

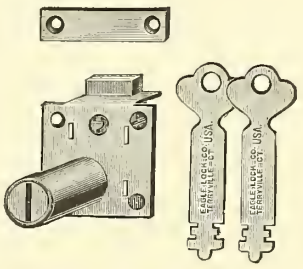
Eagle Flat Key Drawer Locks

One-Half Size Cuts

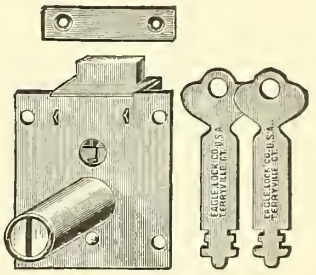


No. 01928

Self-locking. Square selvedge. Heavy cast bronze strike and latch bolt. Screwed.



No. 1987B



No. 01848

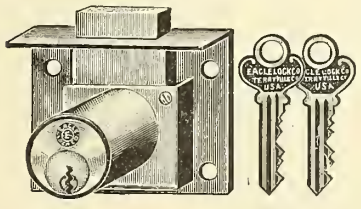
Lock Nos. 1987B and 01848 are applied without cutting the wood, by simply boring hole for cylinder.

Two nickel-plated flat steel keys to each of the above locks. Nos. 01928 and 01848 made regularly for 7/8-inch wood; No. 1987B for 1-inch wood but can be made for any thickness of wood desired. Carried in stock as specified below and in key changes as follows: Nos. 01928 and 1987B, all different in a dozen; No. 01848, all different in a dozen, and in 7/8-inch wood all alike.

Number	Size Inches	Selvedge to Center of Cylinder Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01928	2 1/4 x 1 13/16	1	Cast bronze	7/8	3	620	120	1928	$9.00
1987B	1 3/16 x 1 3/16	3/4	Iron	7/8	2	....	....	1814	4.50
01848	1 3/4 x 1 7/8	1 1/8	All brass	1/2, 7/8 and 1 1/8	2	4080	1020	1814	5.00

Pin Tumbler Drawer Locks

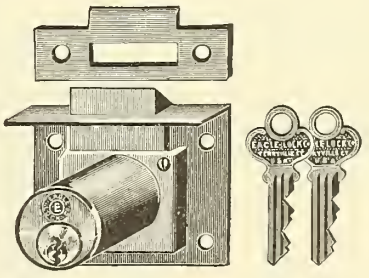
One-Half Size



No. 03203

Style of No. 03202

Broad Bolt



No. 03273

Self-Locking. Cast Brass Latch Bolt. Brass Strike

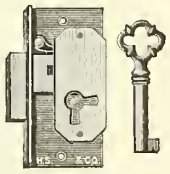
Square selvedge. Screwed. Two embossed gold plated German silver keys to each lock. No two locks alike. Made for wood 3/4, 7/8, 1, 1 1/8, 1 1/4, and 1 1/2 inches thick. Carried in stock as specified below.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Diameter of Cylinder Inch	Material	For Wood Inch	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
03202	2 x 1 11/16	7/8	7/8	All brass	7/8	Unlimited	Unlimited	5040	$14.25
03203	2 x 1 13/16	1	7/8	All brass	7/8	Unlimited	Unlimited	5040	14.50
				Self-Locking					
03273	2 x 1 13/16	1	7/8	All brass	7/8	Unlimited	Unlimited	5040	$17.00

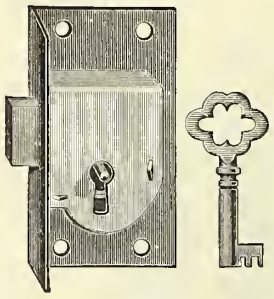
For extras and special features, see pages 914 and 915

Cupboard Locks

One-Half Size Cuts

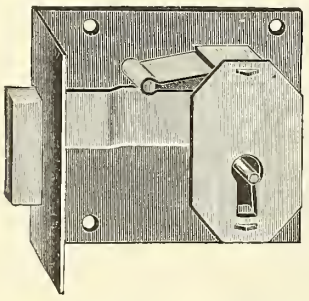


No. 312M
Style of 314M.
Back spring, double cut, iron bolt. Gothic key. Right-hand only.

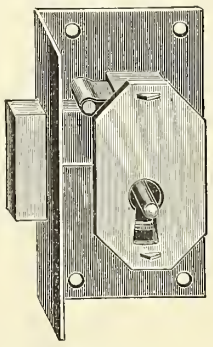


No. 144
Style of Nos. 501, 56, 58, 44, 116.
Back Spring. Fine flat bow keys. Can be made either right or left-hand. Illustration shown right-hand.

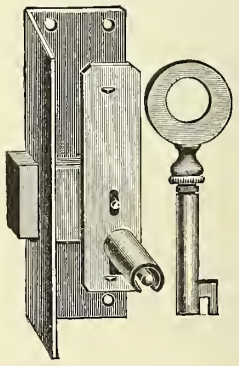
Number	Size Inches	Selvedge to Key-Pin Inch	Material	Ward	Key Blank Used Number	Dozen
314M	1¼x 9/16	5/16	Brass plate	..	4102	$1.50
312M	1⅝x ⅞	½	Brass plate	..	4102	1.50
501	2 x 15/16	7/16	Brass plate	..	501	1.00
56	2¼x1¼	9/16	Brass plate	..	36	1.00
58	2½x1⅜	9/16	Iron	..	36	.87
144	2¾x1½	9/16	Brass plate, broad bolt	1	26	1.50
44	3 x1⅝	11/16	Brass plate, broad bolt	1	5	1.62
116	3 x1⅝	11/16	Iron, broad bolt	1	5	1.25



No. 1001X
Style of Nos. 1001 R to Y, inclusive.



No. 1017D
Style of Nos. 1017 G to A, inclusive.



No. 1016C
Style of Nos. A and B.

Broad Heavy Bolt

These locks are listed without keys or tubes. For tubes add 30 cents and for keys add 50 cents to list. Can be made either right or left-hand. (Illustration shows right-hand.)

Can be made all different in a dozen, with tumbler and patent wards at an advance of $1.00 on list. No. 1005 gilt keys will fit these locks.

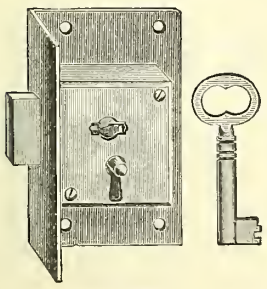
Square selvedge, fine gilt keys. Made regularly for 1-inch wood, but can be made for any thickness desired. Can be made either right or left-hand. (Illustration shows right-hand). Keys all alike.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Tumbler	Secure Levers	Ward	Key Blank Used Number	Dozen
1001R	2¾x1⅞	¾	Iron, brass selvedge	1	..	1	1001	$1.50
1001S	2¾x1⅞	⅞	Iron, brass selvedge	1	..	1	1001	1.50
1001T	2¾x1⅞	1	Iron, brass selvedge	1	..	1	1001	1.50
1001U	2½x2¼	1¼	Iron, brass selvedge	1	..	1	1001	1.50
1001V	2½x2¼	1½	Iron, brass selvedge	1	..	1	1001	1.60
1001W	2½x2¾	1¾	Iron, brass selvedge	1	..	1	1001	1.70
1001X	2½x2¾	2	Iron, brass selvedge	1	..	1	1001	1.80
1001Y	2½x3¼	2¼	Iron, brass selvedge	1	..	1	1001	2.00
1017G	3 x1½	⅝	Brass plate, square selvedge	1	..	1	1000	2.00
1017F	3 x1½	¾	Brass plate, square selvedge	1	..	1	1000	2.00
1017E	3 x1⅝	⅞	Brass plate, square selvedge	1	..	1	1000	2.10
1017D	3 x1 11/16	1	Brass plate, square selvedge	1	..	1	1000	2.20
1017C	3 x1⅞	1⅛	Brass plate, square selvedge	1	..	1	1000	2.30
1017B	3 x2	1¼	Brass plate, square selvedge	1	..	1	1000	2.40
1017A	3 x2 3/16	1½	Brass plate, square selvedge	1	..	1	1000	2.60
1016A	3¼x ¾	½	All brass	..	1	..	1016	6.00
1016B	3¼x1	⅝	All brass	..	1	..	1016	6.50
1016C	3¼x1⅛	¾	All brass	..	1	..	1016	7.00

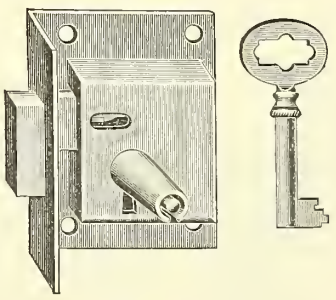
For extras and special features, see pages 914 and 915

Eagle Cupboard Locks

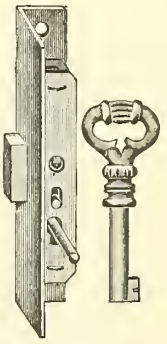
One-Half Size Cuts



No. 6062
Style of No. 503.
Square selvedge, solid square box. Screwed.
Fine flat bow keys.



No. 1015Q
Style of Nos. 1015 O to U.
Square selvedge, solid square box. Broad heavy bolt. High pin and tube. Fine flat bow keys.

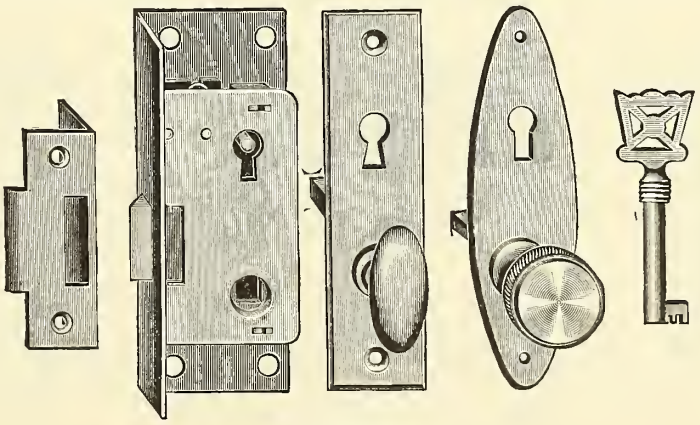


No. 01925
Square selvedge, solid bolt. Tumbler. One buffed brass key to each lock.

These locks can be made either right or left-hand. Illustration shows right-hand.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
503	2 x 7/8	3/8	Brass	1	4	...	510	$4.00
6062	2 1/2 x 1 9/16	3/4	Brass plate	2	12	...	370	3.00
1015O	2 1/2 x 1 3/4	3/4	Brass plate	3	12	252	1001	4.75
1015P	2 1/2 x 1 7/8	7/8	Brass plate	3	12	252	1001	4.75
1015Q	2 1/2 x 2	1	Brass plate	3	12	252	1001	5.00
1015R	2 1/2 x 2 1/4	1 1/4	Brass plate	3	12	252	1001	5.25
1015S	2 1/2 x 2 1/2	1 1/2	Brass plate	3	12	252	1001	5.50
1015T	2 1/2 x 2 3/4	1 3/4	Brass plate	3	12	252	1001	5.75
1015U	2 1/2 x 3	2	Brass plate	3	12	252	1001	6.00
01925	3 x 1/2	9/32	Brass	..	12	...	01925	6.00

Cupboard Latch Bolt Knob Locks



No. 02303D
Style of Nos. 02303C, E, F and G

Cast brass latch bolt. Right-angle strike, No. 5632. Knob and escutcheon buffed and lacquered. Fine gilt key. Can be used either right or left-hand. Adjustable to wood from 1/2 to 1 1/8 inches thick, but can be made for any thickness desired. Packed regularly with square escutcheon and oval knob, but can be furnished with oval escutcheon and round knob when specified. No. 02303D carried regularly in stock only; other numbers to order. Packed with screws.

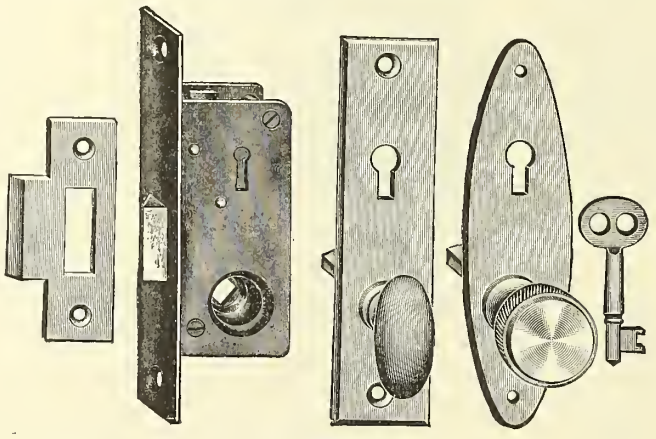
Number	Size Inches	Selvedge to Key-Pin Inches	Material	Tumbler	Key Blank Used	Dozen
02303C	4 x 1 5/16	3/4	Brass lock, strike, escutcheon and knob	1	1102	$29.00
02303D	4 x 1 7/16	7/8	Brass lock, strike, escutcheon and knob	1	1102	30.00
02303E	4 x 1 9/16	1	Brass lock, strike, escutcheon and knob	1	1102	31.00
02303F	4 x 1 13/16	1 1/4	Brass lock, strike, escutcheon and knob	1	1102	32.00
02303G	4 x 2 1/16	1 1/2	Brass lock, strike, escutcheon and knob	1	1102	33.00

For extras and special features, see pages 914 and 915

Eagle Locks

One-Half Size Cuts

Mortise Cupboard Latch Bolt Knob Lock



No. 2302C

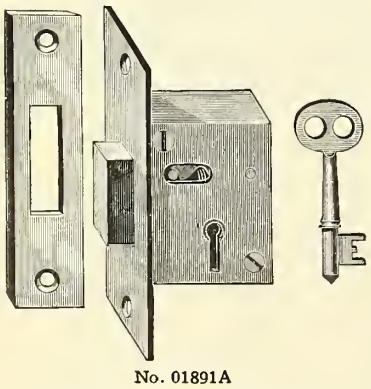
Style of No. 2302D

Self-locking. Mortise. Tumbler. Cast brass latch bolt. Knob and escutcheon buffed and lacquered. Fine gilt key. Adjustable to wood from 5/8 to 1¾ inches thick, but can be made for any thickness desired. Can be used either right or left-hand. Carried in stock alike. Packed regularly with the square escutcheon and oval knob, but can be furnished with oval escutcheon and round knob if desired. Also packed with screws.

No. 2302D carried in stock only; other number to order.

Number	Size Inches	Selvedge to Key-Pin Inch	Material	Key Blank Used Number	Dozen
2302C	4x1¼	¾	Brass selvedge, strike, escutcheon and knob	1106	$29.00
2302D	4x1⅜	⅞	Brass selvedge, strike, escutcheon and knob	1106	30.00

Cupboard Locks

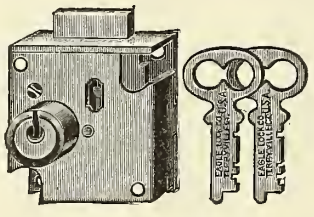


No. 01891A

Style of Nos. 01891B to F, inclusive.

Mortise. Screwed. Fine gilt keys. All different in a dozen. For doors of either hand. Key enters either side.

Sub-Treasury Lock

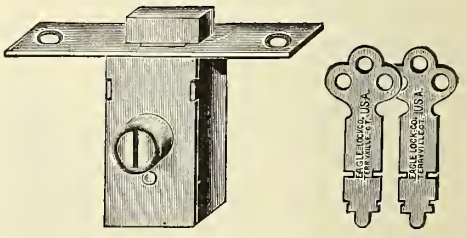


No. 1048½D

Broad bolt, square selvedge polished, solid square box, screwed, buffed bronze cylinder. Two nickel-plated flat steel keys to each lock.

All different in a dozen. Cylinder projects 5/16 inch. Can be made with 620 key and 120 master-key changes.

Mortise Drawer Lock



No. 2137

Brass selvedge, broad heavy brass bolt. Two nickel-plated flat steel keys to each lock.

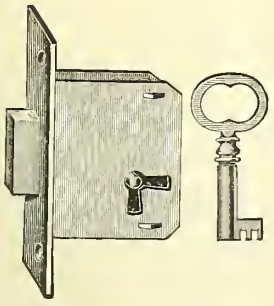
All different in a dozen. Removable cylinder. To remove: Push in as far as possible the brass piece that shows next the bolt on selvedge of lock, when cylinder can be detached.

Number	Size Selvedge Inches	Size Case Inches	Selvedge to Keyhole or Cylinder Inches	Material	For Wood	Secure Levers	Key Blank Used Numbers	Dozen
01891A	3	1⅝x1⅜	¾	Cast bronze	..	3	01891	$10.00
01891B	3	1⅝x1½	1	Cast bronze	..	3	01891	10.50
01891C	3	1⅝x1¾	1¼	Cast bronze	..	3	01891	11.00
01891D	3	1⅝x2	1½	Cast bronze	..	3	01891	11.50
01891E	3	1⅝x2¼	1¾	Cast bronze	..	3	01891	12.00
01891F	3	1⅝x2½	2	Cast bronze	..	3	01891	12.50
1048½D	..	1½x1⅝	⅛	Brass plate	..	2	6001	5.50
2137	..	3 x1¾	⅞	Iron	⅞	2	1876	6.00

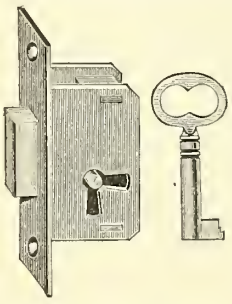
For extras and special features, see pages 914 and 915

Eagle Mortise Cupboard and Drawer Locks

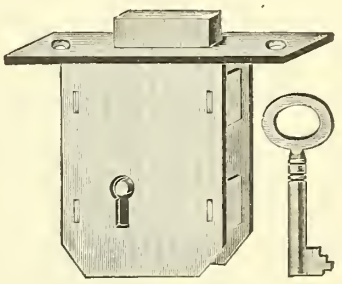
One-Half Size Cuts



No. 474
Style of Nos. 473 to 478, inclusive.
All alike in a dozen.



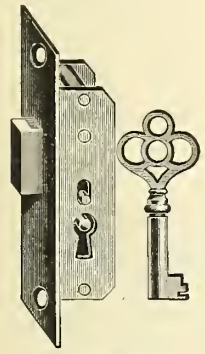
No. 1829
Style of Nos. 1831 and 1833.
All different in a dozen.



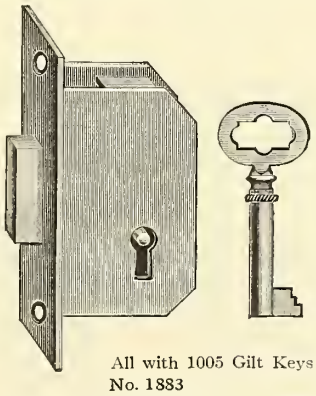
No. 565
Style of Nos. 564 and 565½.
All different in a dozen.

Mortise, broad heavy bolt, fine flat bow keys. Nos. 476, 476½, 477, 564, 565 and 1833, right-hand carried in stock; other numbers for either right and left-hand doors. In ordering the latter state hand required; illustrations show right hand.

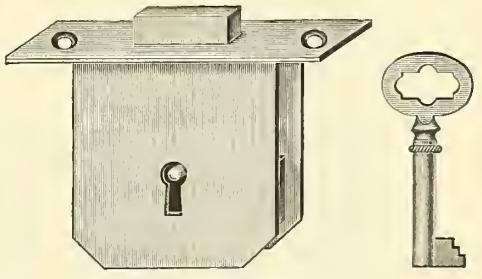
Number	Size Inches	Selvedge to Key-Pin Inches	Material	Tumblers	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
478	2¾x1	½	Brass selvedge	1	..	..	...	303	$1.50
473	2¾x1⅛	⅝	Brass selvedge	1	..	..	...	303	1.50
473½	2¾x1⅜	¾	Brass selvedge	1	..	..	...	303	1.50
474	2¾x1⅜	⅞	Brass selvedge	1	..	..	...	303	1.50
475	2¾x1½	1	Brass selvedge	1	..	..	...	303	1.50
476	2¾x1⅝	1⅛	Brass selvedge	1	..	..	...	303	1.50
476½	2¾x1¾	1¼	Brass selvedge	1	..	..	...	303	2.50
477	2¾x1⅞	1⅜	Brass selvedge	1	..	..	...	303	2.75
1829	2¾x1⅛	⅝	Brass selvedge	..	2	12	252	014	2.25
1831	2¾x1⅜	⅞	Brass selvedge	..	2	12	252	014	2.25
1833	2¾x1⅝	1⅛	Brass selvedge	..	2	12	252	014	2.25
565½	3 x1 15/16	1	Brass selvedge	..	2	12	252	650	4.00
565	3 x2 5/16	1⅜	Brass selvedge	..	2	12	252	650	3.75
564	3 x2 13/16	1⅞	Brass selvedge	..	2	12	252	650	4.00



No. 1888
Style of No. 1890.



All with 1005 Gilt Keys
No. 1883
Style of Nos. 1881, 1881½ and 1882.



No. 1885
Style of Nos. 1885¼, 1886 and 1887.

Broad heavy bolt. Fine flat bow keys. Can be made either right or left-hand. Nos. 1881, 1881½, 1882 and 1883 for drawers also. All the above locks carried in stock alike only. Lock 1888 has gold-plated key. Illustrations show right-hand.

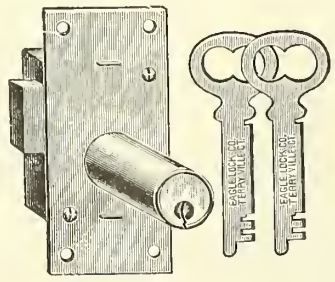
Number	Size Inches	Selvedge to Key-Pin Inches	Material	Tumblers	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
1888	3 x 11/16	⅜	Brass selvedge and bolt	1	..	..	...	1888	$6.50
*1881	3½x 15/16	½	Heavy brass selvedge	1	..	..	...	1001	4.00
*1881½	3½x1 1/16	⅝	Heavy brass selvedge	1	..	..	...	1001	4.50
*1882	3½x1 3/16	¾	Heavy brass selvedge	1	..	..	...	1001	4.50
1890	3 x1 3/16	⅞	Brass selvedge and bolt	1	..	..	...	1888	6.50
*1883	3¼x1½	1	Heavy brass selvedge	1	..	..	...	1001	5.00
1885¼	3¼x2¼	1¼	Heavy brass selvedge	..	2	12	252	1001	6.00
1885	3¼x2⅜	1⅜	Heavy brass selvedge	..	2	12	252	1001	6.00
1886	3¼x2⅝	1⅝	Heavy brass selvedge	..	2	12	252	1001	6.50
1887	3¼x2⅞	1⅞	Heavy brass selvedge	..	2	12	252	1001	7.00

* These locks are also carried with brass keys. Any of the locks on this page can be furnished with double cut key-hole if desired

For extras and special features, see pages 914 and 915

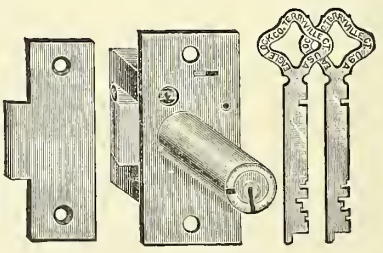
Eagle Wardrobe Locks

One-Half Size Cuts



No. 6098
Style of Nos. 1056, 7098, 6074 and 6073

Solid square box, all screwed except No. 1056. Bolt shoots right and left. Two nickel-plated flat steel keys to each lock. Can be made for any thickness of wood desired. Carried regularly in stock for wood as specified below, and in key changes as follows: Nos. 6073, 7098, 6074, 6098, 1056, all different in a dozen; Nos. 7098 and 6074 also carried in stock, all alike.

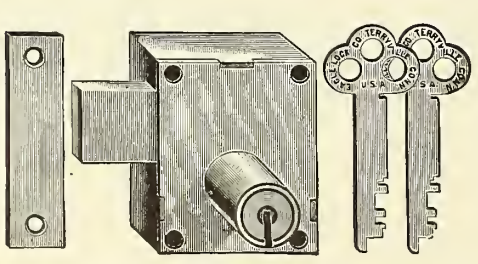


No. 1098

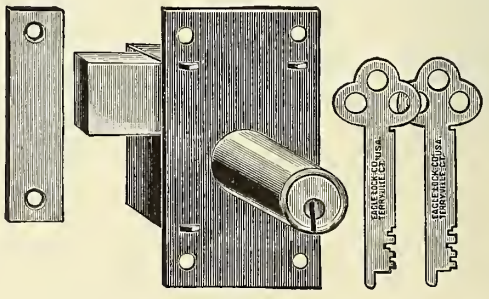
Self-locking, solid square box. Cast bronze latch bolt. Two nickel-plated flat steel keys to each lock, all different. Regularly made for ⅞-inch wood, but can be made for any thickness desired. Regularly made with 3120 changes of keys. For right-hand doors only.

Number	Size Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
1056	1¾x ⅞	All brass	¼ & ¾	2	3120	620	6080	$6.50
7098	2¾x1¼	Iron, brass bolt	⅞ & 1⅛	2	15620	3120	6075	6.00
6098	2¾x1¼	All brass	⅞ & 1⅛	2	15620	3120	6075	8.00
6074	3 x1¾	All brass	⅞ & 1⅛	2	15620	3120	6069	9.00
6073	3½x2	All brass	⅞ & 1⅛	2	4080	1020	6068	10.00
1098	2⅛x1	All brass	⅞	5	3120	3120	6080	8.00

Eagle Locker Locks



No. 01986



No. 1934

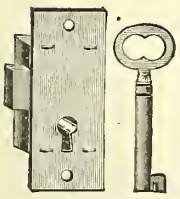
Solid square box. Brass strike, heavy bolt that shoots right and left. Two nickel-plated flat steel keys to each lock. Made regularly for ⅞-inch wood, but can be made for any thickness desired. Carried in stock as specified below. All different in a dozen. Master keyed. Additional charge of 35 cents net for each master key.

Number	Size Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master keyed Changes	Key Blank Used Number	Dozen
01986	2x1¾	All brass	⅞	5	3120	3120	1934	$15.00
1934	3x1¾	Iron, brass bolt and cylinder	⅞ & 1⅛	5	3120	3120	1934	15.00

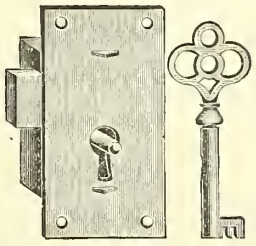
For extras and special features, see pages 914 and 915

Eagle Wardrobe Locks

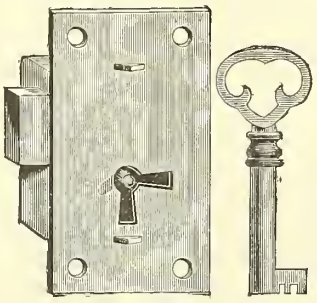
One-Half Size Cuts



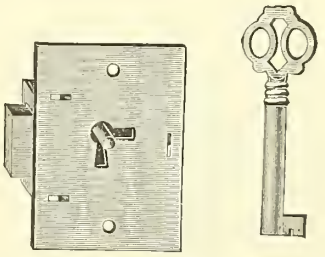
No. 509
Style of No. 508.



No. 415¼
Style of Nos. 1875¼ to 2118.
Solid square box. Bolt that shoots right and left.



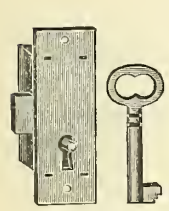
No. 510
Style of Nos. 510¾ to 391½.
Fine bow keys.



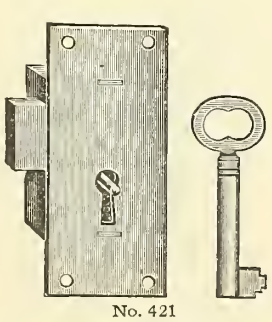
No. 447
Solid square box. Back spring.
Can be made for left-hand doors.

Number	Size Inches	Material and Finish	Tumbler	Key Blank Used Number	Dozen
509	1⅞x ¾	Iron	1	501	$1.50
508	1⅞x ¾	Brass plate and box	1	501	2.00
1875¼	2 x1	Iron, unpolished	1	76½	1.00
1875¼A	2 x1	Iron, unpolished, all brass plated	1	76½	1.50
1805	2½x1	Iron	1	76½	1.50
01805	2½x1	Brass plate and box	1	76½	2.00
415¼	2½x1¼	Iron, unpolished	1	76½	1.00
415¼A	2½x1¼	Iron, unpolished, all brass plated	1	76½	1.50
417	2¾x1¼	Iron	1	76½	1.60
418	2¾x1¼	Brass plate and box	1	76½	2.25
2118	3 x2½	Iron, unpolished	1	510	1.75
510	3 x1¾	Iron, unpolished	1	510	1.00
510¾	3 x1¾	Iron, unpolished, all coppered	1	510	1.50
500	3½x2	Iron	1 and ward	500	1.87
391½	4 x2	Iron, unpolished, coppered, bronze keys	1 and ward	1461	2.75

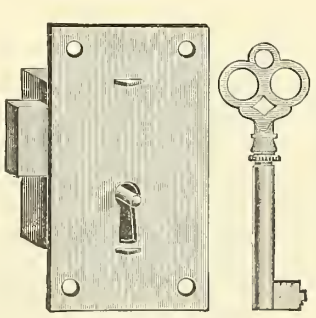
Number	Size Inches	Selvedge to Key-Pin or Center Inch	Material	Key Blank Used Number	3-Keyed Dozen	4-Keyed Dozen	6-Keyed Dozen	12-Keyed Dozen
447	2¼x1 9/16	¾	Iron	4470	$ .40	.43	.50	.66



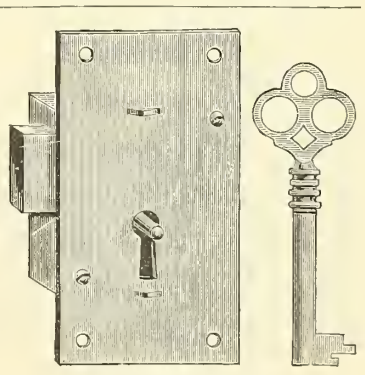
No. 02117
Style of No. 1204



No. 421
Style of No. 422.



No. 158
Style of Nos. 174, 173, 146.



No. 150
Style of No. 151.

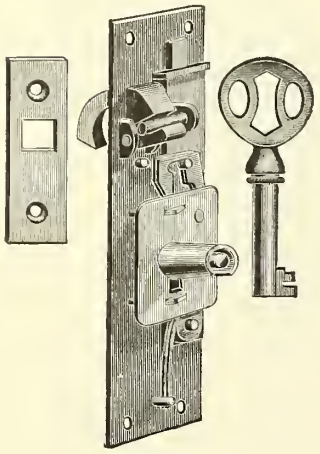
Solid square box. Heavy bolt that shoots right and left. Fancy bow keys. Nos. 146, 150, 151 locks are screwed. Nos. 02117, 1204, 421, 146, 158, 173 carried in stock, all different in a dozen; Nos. 158 and 173 also all alike; No. 174 six changes in a dozen.

Number	Size Inches	Material	Secure Levers	Possible Changes	Master-Keyed Changes	Key Blank Used Number	Dozen
02117	1⅞x ⅝	All brass	2	.....	....	0299	$4.50
1204	2 x ⅞	All brass	2	.....	....	01473	4.50
421	2¾x1¼	Iron, brass bolt	2	.....	....	410	3.50
422	2¾x1¼	All brass	2	.....	....	6000	5.00
158	3 x1¾	Iron	2	15600	3120	1480	3.25
174	3½x2	Iron	2	15600	3120	1470	2.25
173	4 x2¼	Iron	2	....	....	1490	2.50
146	4 x2½	Iron, brass bolt	2	3120	620	1123	6.00
151	3 x1¾	All brass	2	15600	3120	1459	5.50
150	3½x2	All brass	2	15600	3120	1461	6.50

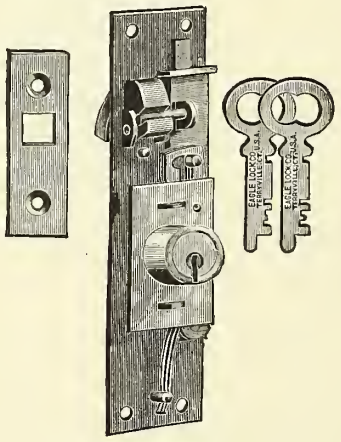
For extras and special features, see pages 914 and 915

Show Case or Sliding-Door Locks

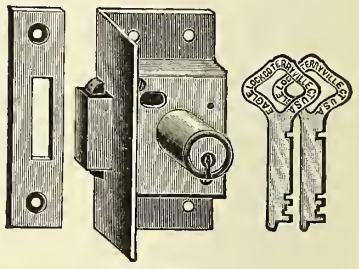
One-Half Size Cut



No. 01935
One Gilt Key.
Cast Brass Hook Bolt.



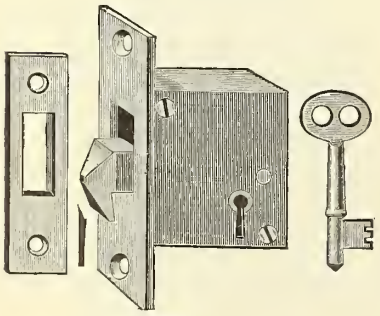
No. 01935½
Two nickel-plated flat steel keys.
Brass striker.



No. 6179
Two nickel-plated flat steel keys. Square selvedge. Solid square box. Screwed. Double hook bolt. Can be locked without using the key by pressing on plate in end of tube.

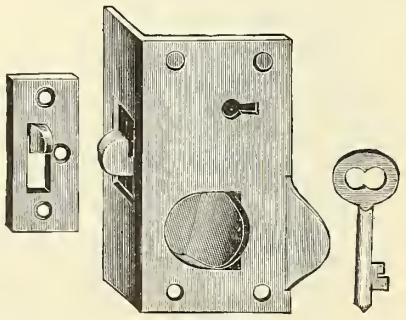
Above locks can be made either right or left-hand and for any thickness of wood desired. Carried in stock right-hand only, for wood as specified below and in key changes as follows: No. 01935, all different in a dozen, also all alike; Nos. 01935½ and 6179, all different in a dozen. Illustrations show right-hand.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Material	For Wood Inch	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01935	4½x1	..	Brass	1	2	252	60	1005	$12.00
01935½	4½x1	..	Brass	⅞	3	252	60	6075	17.00
6179	2¼x1 3/16	11/16	Brass	⅞	4	120	20	6080	8.00



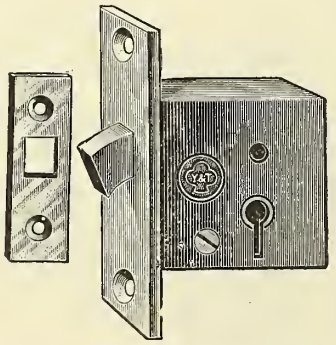
No. 01954

Style of No. 02123.
Mortise. Screwed. Latch bolt, fine buffed key. Key enters from either side. Can be used for either right or left-hand doors.



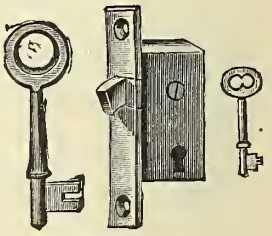
No. 01952

Latch bolt. Tumbler. Solid flat bow key. All buffed and lacquered. Packed with screws.



No. 1712

Bronze bolt, strike and key. One lever tumbler. Key enters from either side. Can be used for either right or left-hand doors.



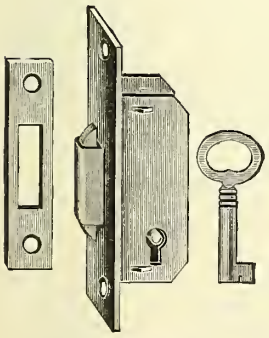
No. 9585

Number	Size Selvedge Inches	Size Case Inches	Selvedge to Key-Hole Inches	Material	Regular Changes	Key Blank Used Number	Dozen
01954	2⅞x ⅝	1½x1⅝	1	Cast bronze	.....	01891	$9.00
02123	2⅜x 9/16	1 3/16x1 5/16	¾	Cast bronze	.....	02123	8.00
01952	2⅞x ½	2⅞x1⅝	1	Cast bronze	.....	01952	12.00
1712	3¼x1⅞	1¾x1⅞	1⅛	Bronze, front, iron case	alike	200	16.65
9585	2¼x ½	1½x1	⅝	Cast bronze throughout	.....	.....	6.60

For extras and special features, see pages 914 and 915

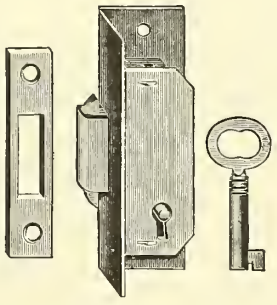
Eagle Locks

One-Half Size Cuts



No. 1958

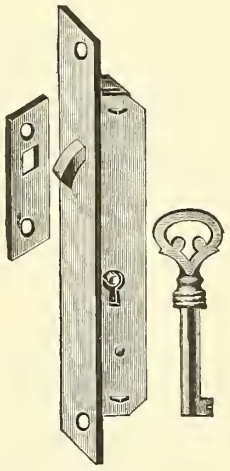
Double-hook bolt. Mortise. Fine flat bow keys.



No. 01959

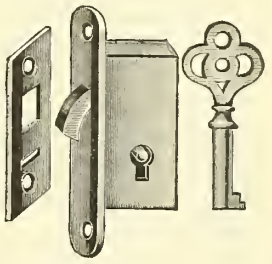
Square selvedge, double-hook bolt. Fine flat bow key.

This lock can be furnished with double cut key-hole if desired.



No. 1926

Mortise. Hook bolt. Fine buffed bronze key.



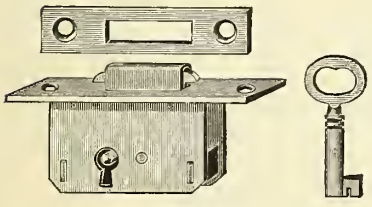
No. 1974

Mortise. Hook bolt. Fine gold-plated key.

When ordering state hand required. Illustrations show right hand.

Number	Size Inches	Selvedge to Key-Pin Inch	Material	Tumblers	Key Blank Used Numbers	Dozen
1958	3 x⅞	½	Brass selvedge and strike	1	015	$3.25
01959	2¾x⅞	½	Brass plate and strike	1	015	3.50
1926	4½x⅝	5/16	Brass selvedge and strike	1	01926	8.00
1974	2½x⅞	½	Brass selvedge and strike	1	423	7.00

Billiard Cue Lock

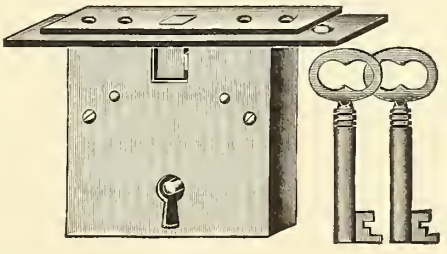


No. 197

Style of Nos. 193 and 194.

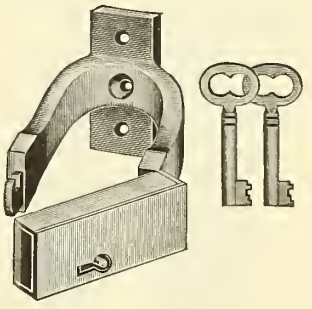
Mortise. Iron box. Double-hook bolts. Fine flat bow key.

This lock can be furnished with double cut key-hole if desired.



No. 1239

Mortise. Self-locking. Solid iron box, screwed. Two flat bow keys to each lock.



No. 207

Self-locking. Two flat bow keys to each lock. For securing billiard cues.

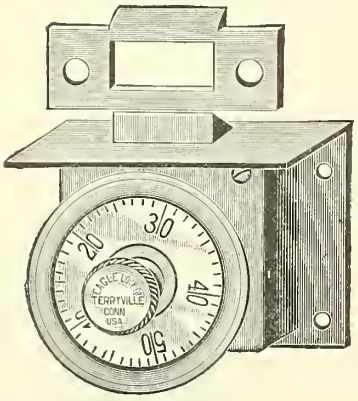
Can be made with 60 master-key changes.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
197	2½x1	⅝	Brass selvedge and strike	..	alike	...	1167	$3.00
193	3 x1⅜	⅞	Brass selvedge and strike	..	alike	...	303	3.00
194	3 x1⅜	⅞	Brass selvedge and strike	2	12	252	014	3.75
1239	3½x2	1½	Brass selvedge and link	3	12	60	258	10.00
207	1¾x1 3/16	...	All brass	3	12	252	299	11.50

For extras and special features, see pages 914 and 915

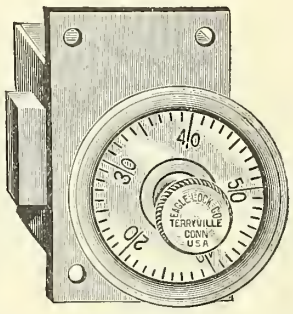
Eagle Combination Locks

One-Half Size Cuts



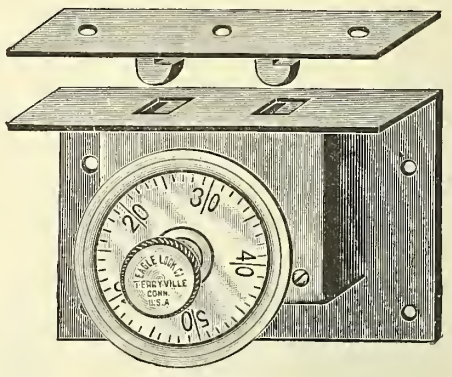
No. 2011

Self-locking. Square selvedge, heavy cast bronze latch bolt. Brass strike. Solid square box. Screwed.



No. 2029

Solid square box. Screwed. Broad heavy bolt.

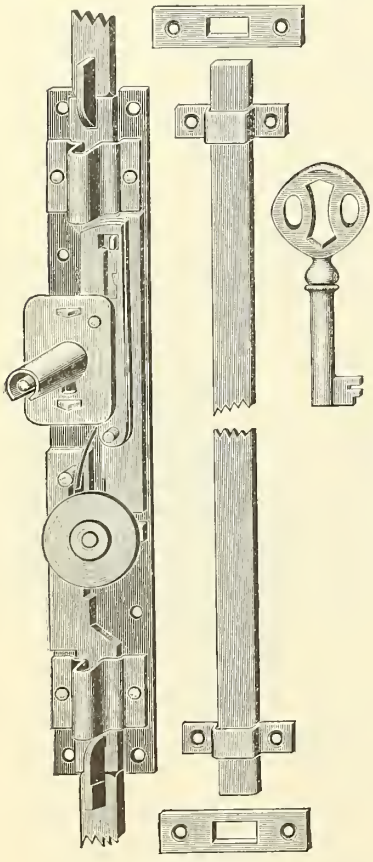


No. 2001

Self-locking. Square selvedge, solid square box. Screwed.

These locks are adjustable to different thicknesses of wood as stated below. The combinations can be changed without removing lock.

Number	Size Inches	Selvedge to Center of Knob Inches	Material	Knob and Dial	For Wood Inches	Possible Changes	Dozen
2011	3x2 5/16	1 1/4	All brass	Nickel-plated	7/8 to 1 1/2	1000	$17.00
2029	3x2	1 1/4	All brass	Nickel-plated	1/2 to 1 1/2	1000	20.00
2001	4x2 9/16	1 3/8	All brass	Nickel-plated	1 to 1 3/4	1000	32.00



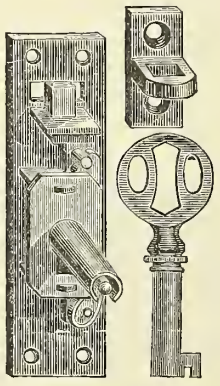
No. 02140A

Style of Nos. 02140, 02140B.

Double Bolt Locks

Brass plate. Brass strikes. Fine gilt key. Two brass plated bolts locking both top and bottom of door. Made for any length of door desired. Made regularly for 1-inch wood. In ordering give exact length of door. Packed with guides and strikes complete. No. 02140A carried in stock, for 6 foot doors only; other sizes and numbers to order. All different in a dozen, but can be made with 252 key changes. Prices in accordance with length of bolts and quantity desired.

Chiffonier Locks



No. 6089

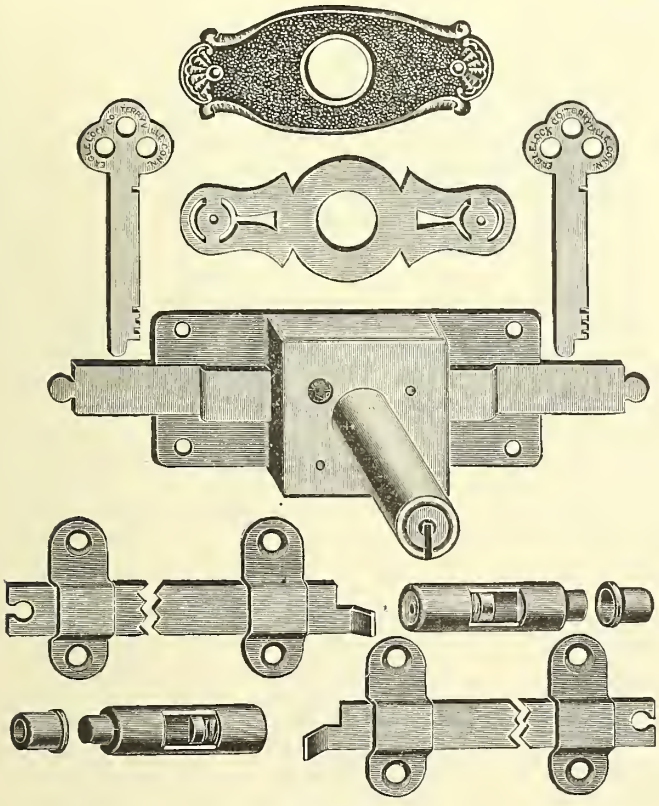
Brass pin and tube. One gilt key to each lock. Suitable for 7/8 to 1 1/4-inch wood, but can be made for any thickness desired. Can be made either right or left hand. Illustration shows right hand as carried in stock.

Number	Size Inches	Material		Secure Levers	Key Blank Used Number	Dozen
02140	7 1/8x1	All brass	Long bolts to be set in wood, flush with plate	2	1005	$12.00
02140A	7 1/8x1	All brass	Long bolts are offset from plate and require no	2	1005	6 foot, 12.00
02140B	7 1/2x1 1/4	All brass	mortise of wood	2	1005	12.00
6089	3 1/2x1	Brass		1	1112	5.50

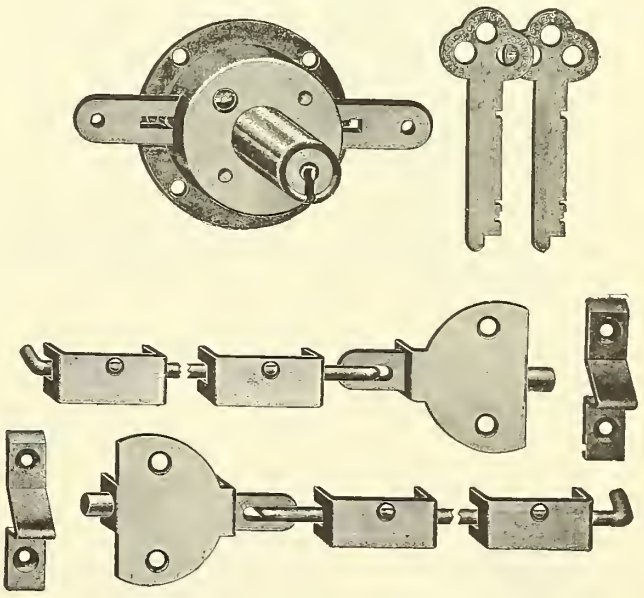
For extras and special features, see pages 914 and 915

"Pasquil" Desk Locks

One-Half Size Cuts



No. 2241C
Style of No. 2241E



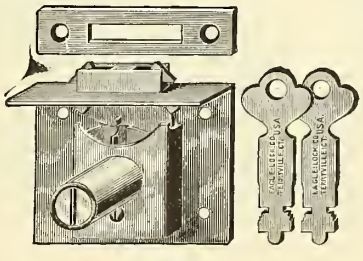
No. 2147C
Style of No. 2147E

Self-locking, two brass strikes, escutcheon and cylinder gold plated, two nickel-plated flat steel keys to each lock, 2 bolts locking into each end of desk. Made regularly for 1½-inch rail, but can be made for any thickness. In ordering give exact length and thickness of rail. All different in a dozen. Can be made with 60 key changes. Packed with screws.

Number	Size Inches	Material	Strikes	Escutcheon	Secure Levers	Key Blank Used Number
2241C	4x1⅝	Iron, brass-plated	Brass, self-locking	Wrought brass	3	2151
2241E	4x1⅝	Iron, brass-plated	Brass, self-locking	Cast bronze	3	2151
2147C	2⅛	Iron, brass-plated	Brass, self-locking	Wrought brass	3	2151
2147E	2⅛	Iron, brass-plated	Brass, self-locking	Cast bronze	3	2151

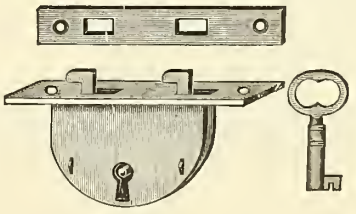
Prices on application. State quantity required and length of bolts.
Locks furnished alike, alike in sets or with more than the regular number of changes at extra price. Also with any lettering on escutcheon.

Eagle Desk Locks



No. 01896

Camp Desk Locks



No. 296

Square selvedge, hook bolt, screwed, two nickel-plated flat steel keys to each lock. Made regularly for ½ and ¾-inch wood, all different in a dozen and for ¾-inch wood all alike.

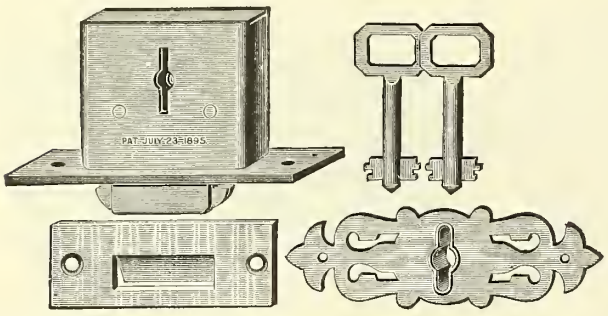
Mortise. Brass selvedge, bolt and strike. Tumbler. One flat bow key to each lock.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Selvedge to Center of Key Pin Inch	Material	Secure Levers	Possible Changes	Master Keyed Changes	Key Blank Used Number	Dozen
01896	2 x1⅝	⅞		All brass	2	15600	3120	1876	$6.50
296	2½x1	..	¾	Iron	..	....	...	562	2.00

For extras and special features, see pages 914 and 915

Eagle Roll-Top Desk Locks

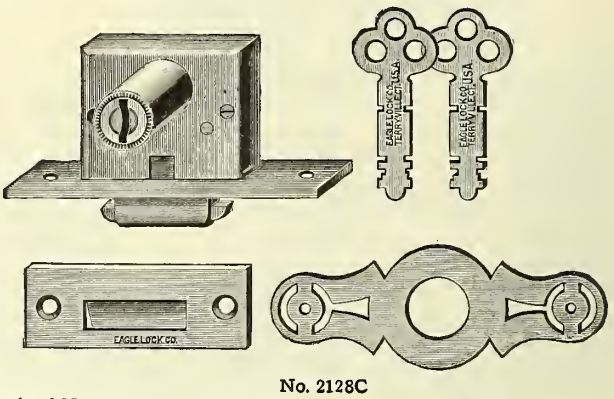
One-Half Size Cuts



No. 1984C

Style of Nos. 1984 A, B, D, E and F, also 1810 A, B, C, D, E and F.

Self-locking. Mortise, solid square iron box, screwed, two nickel-plated solid steel keys to each lock. All different in a dozen. Packed with screws.



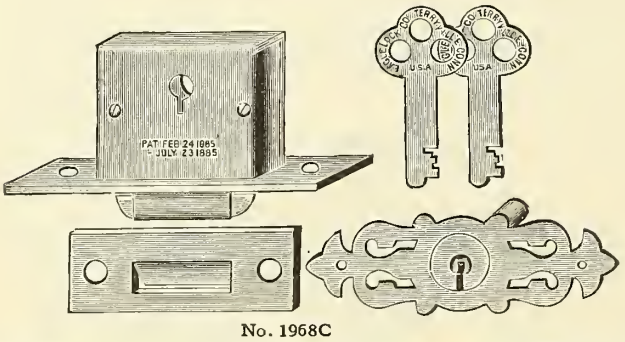
No. 2128C

Style of Nos. 2128 A, B, D, E and F.

Self-locking. Mortise, solid square iron box, screwed, two nickel-plated flat steel keys to each lock. All different in a dozen. Made regularly for 1½-inch desk rail, but can be made for any thickness of rail desired.

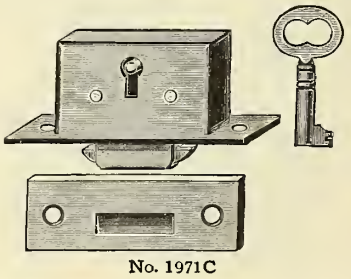
Nos. 2128 A to F have removable cylinders. To remove: Push in as far as possible the brass piece that shows next the bolt on selvedge of lock when the cylinder can be detached. Packed with screws.

Number	Width Selvedge Inches	Selvedge to Center of Hole Inch	Selvedge and Strike	Escutcheon	Secure Hook Tumblers	Ward	Key Blank Used Number	Dozen
1984A	3 x1½	1	Brass, plain	Brass, gilt	4	1	1984	$7.00
1984B	3 x1½	1	Nickel-plated, plain	Nickeled	4	1	1984	8.00
1984C	3 x1½	1	Brass, self-closing	Brass, gilt	4	1	1984	8.00
1984D	3 x1½	1	Nickel-plated, self closing	Nickeled	4	1	1984	9.00
1984E	3 x1½	1	Brass, self-closing	Cast bronze	4	1	1984	8.50
1984F	3 x1½	1	Nickel-plated, self-closing	Cast bronze, nickeled	4	1	1984	9.50
1810A	3¼x1½	1	Brass, plain	Brass, plain	6	..	1948	10.50
1810B	3¼x1½	1	Nickel-plated	Nickeled	6	..	1948	12.30
1810C	3¼x1½	1	Brass, self-closing	Brass, plain	6	..	1948	11.85
1810D	3¼x1½	1	Nickel-plated, self-closing	Nickeled	6	..	1948	13.60
1810E	3¼x1½	1	Brass, self-closing	Cast bronze, gilt	6	..	1948	12.72
1810F	3¼x1½	1	Nickel-plated, self-closing	Cast bronze, nickeled	6	..	1948	14.50
2128A	3¼x1½	1	Brass, plain	Brass, gilt	6	..	2128	14.00
2128B	3¼x1½	1	Nickel-plated, plain	Nickeled	6	..	2128	15.00
2128C	3¼x1½	1	Brass, self-closing	Brass, gilt	6	..	2128	15.00
2128D	3¼x1½	1	Nickel plated, self-closing	Nickeled	6	..	2128	16.00
2128E	3¼x1½	1	Brass, self-closing	Cast bronze, gilt	6	..	2128	15.50
2128F	3¼x1½	1	Nickel plated, self-closing	Cast bronze, nickeled	6	..	2128	16.50



No. 1968C

Self-locking. Mortise, solid square iron box, screwed, two nickel-plated flat steel keys to each lock. All different in a dozen. Patent selvedge, adjustable to any bevel. Key guides adjustable to wood from 1 to 1¼ inches thick. Can be made for any thickness of wood desired. Packed with screws.



No. 1971C

Self-locking. Mortise, solid square iron box. Flat bow keys. Six changes in a dozen.

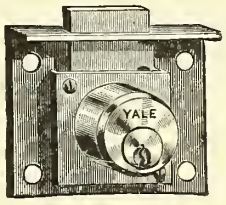
Number	Size Inches	Selvedge to Center of Key Guide	Selvedge and Strike	Escutcheon	Secure Hook Tumblers	Ward	Key Blank Used Number	Dozen
1968C	3¼x1¼	1	Brass, self-closing	Brass, gilt	6	..	1968	$14.00
1971C	2½x1	¾	Brass, self-closing		4	1	276	8.00

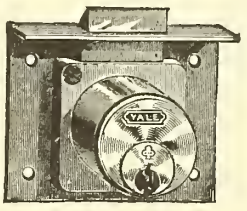
For extras and special features, see pages 914 and 915

Yale Locks

Drawer Locks

One-Half Size Cuts



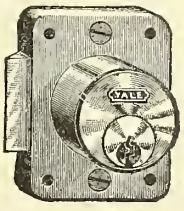

No. 5563
Style of 5563S

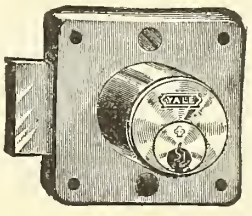
Solid box, screwed, broad heavy bolt. Square selvedge. Two paracentric keys to each lock. Buffed nose. Changes practically unlimited. No. 5563 carried in stock alike and all different; other numbers all different only.

No. 563S Self-Locking
Style of 563

Number	Size Inches	Selvedge to Center of Cylinder Inch	Diameter of Cylinder Inches	Material	For Wood Inch	Key Blank Used Number	Dozen
5563	1¾x2	1	⅝	All brass	⅞	10	$12.90
5563S	1¾x2	1	⅞	All brass, spring bolt and strike	⅞	10	14.60
563	1⅞x2¼	1	1⅛	All brass	⅞	9	14.65
563S	1⅞x2¼	1	1⅛	All brass, spring bolt and strike	⅞	9	16.85

Cupboard Locks




No. 513S

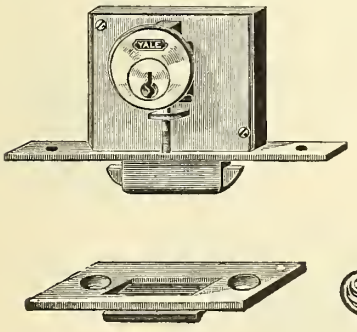
Carried in stock right hand only.
Solid box, screwed, broad heavy bolt. Two paracentric keys right and left. Buffed nose. Changes practically unlimited.

No. 501

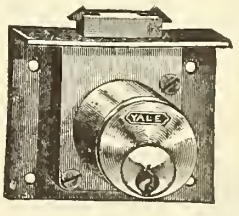
Style of No. 513. Bolt shoots right and left.

Number	Size Inches	Selvedge to Center of Key Cylinder Inch	Diameter of Cylinder Inches	Material	For Wood Inch	Key Blank Used Number	Per Dozen
513	2x1½	1	1⅛	All brass	⅞	8	$17.75
513S	2x1½	1	1⅛	All brass, brass spring bolt and strike	⅞	8	20.00
501	2x2	1	1⅛	All brass	⅞	8	18.65

Desk Locks








No. S236

Solid square iron box, screwed. Heavy brass bolt with solid brass hooks. Cast bronze cylinder. Tumbler. Self-locking and guarded against tampering. Two paracentric keys, nickel-bronze, gold-plated bows. Changes practically unlimited. For any thickness of desk rail which must always be specified in ordering. Carried in stock as below. Cast-bronze escutcheon. Packed with screws.

No. 543

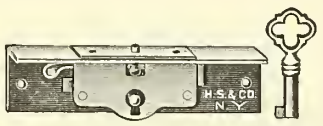
Solid box, screwed. Square selvedge. Double-hook bolt with brass strike. Cylinder 1⅛ inches diameter, buffed nose. Paracentric keys, nickel bronze, gold-plated bows. Changes practically unlimited.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Material	For Wood Inches	Key Blank Used Number	Dozen
S236	1½x3½	1	Brass selvedge, self-closing strike	1¼ to 2½	10	$19.75
543	1⅞x2¼	1	All brass	⅞	8	16.95

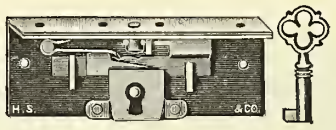
For extras and special features, see pages 914 and 915

Jewel Case and Box Locks

One-Half Size Cuts



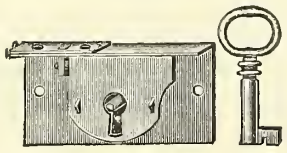
No. 30
Style of No. 4102



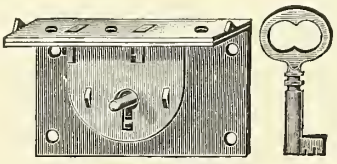
No. 4100
Style of No. 4100N.

One Gothic key to each lock.

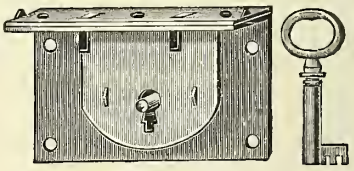
Number	Size Inches	Selvedge to Key-Pin Inch	Length Link-Plate Inches	Material	Key Used Number	Dozen
30	2 5/8 x 5/8	7/16	1 1/8	Brass, nickel-plated	4102	$1.80
4102	2 5/8 x 7/8	5/8	1 3/8	Iron, brass selvedge	4102	.96
4100	2 5/8 x 7/8	5/8	2 5/8	Iron, brass selvedge	4102	1.44
4100N	2 5/8 x 7/8	5/8	2 5/8	Iron, brass selvedge, nickel-plated	4102	1.68



No. 34
Style of Nos. 42, 55 and 142. Single link.

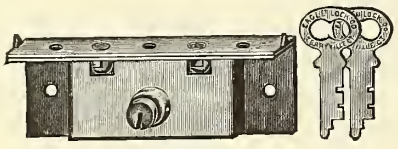


No. 105
Style of Nos. 37 and 181. Double link.

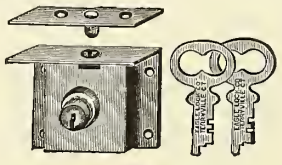


No. 164
Style of Nos. 83 and 28. Double link.

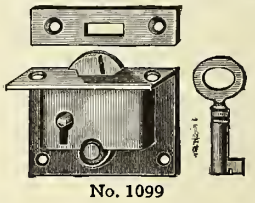
Number	Size Inches	Selvedge To Key-Pin Inches	Material	Key	Wards	Changes Regular	Key-Blank Used Number	Dozen
42	1 1/4 x 13/16	7/16	Brass plate	Plain	..	..	593	$ .75
55	1 1/2 x 13/16	7/16	Iron	Plain	..	..	42	.68
34	2 x 1 1/16	9/16	Iron	Plain	..	..	34	.75
142	3 1/2 x 2	15/16	Iron	Paper	1	..	142	1.50
181	1 1/2 x 15/16	1/2	Brass plate	Plain	..	..	181	2.25
37	2 x 1 1/4	3/4	Brass plate	Plain	1	..	1494	2.25
105	2 1/4 x 1 3/8	3/4	Brass plate	Plain	1	..	1494	2.50
164	2 1/2 x 1 9/16	13/16	Brass plate	Fancy	1	4	164	2.62
28	2 3/4 x 1 9/16	7/8	Brass plate	Fancy	1	3	28	3.00
83	3 1/2 x 2 1/16	1 1/4	Iron	Fancy	1	3	10	2.75



No. 02314
For 7/16-inch wood.



No. 01817
For 5/16-inch wood.

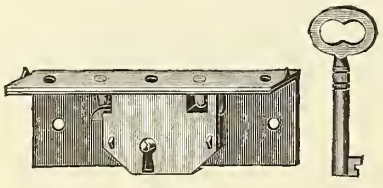


No. 1099

Self-locking. Two nickel-plated flat steel keys to each lock. When unlocked may be used as a catch and unlatched by pressing end of cylinder.

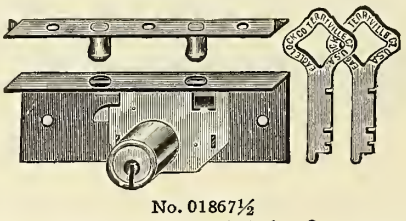
Self-locking. All nickel-plated. Flat bow keys.

Number	Sizes Inches	Selvedge to Center of Cylinder Inch	Selvedge to Key-Pin Inch	Material	Key-Blank Used Number	Dozen
02314	2 3/4 x 15/16	9/16	..	All brass, nickel-plated, double link	2314	$8.00
01817	1 1/4 x 1	9/16	..	All brass, solid square box, single link	1817	3.50
1099	1 1/2 x 1 1/8	..	1/2	Brass, nickel-plated	586	3.00



No. 01867

Fine flat bow key.



No. 01867½

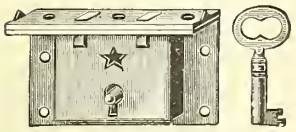
Two nickel-plated flat steel keys to each lock. One secure lever. Made for ½-inch wood.

Number	Size Inches	Selvedge to Center of Cylinder Inch	Selvedge to Key-Pin Inch	Material	Key-Blank Used Number	Dozen
01867	2 3/4 x 15/16	11/16	11/16	All brass, buffed selvedge and link plate	01489	$3.75
01867½	2 3/4 x 15/16	..	..	All brass, buffed selvedge and link plate	6080	8.25
01867N	.....	..	..	All brass, nickel-plated	01489	10.00

For extras and special features, see pages 914 and 915

Eagle Chest Locks

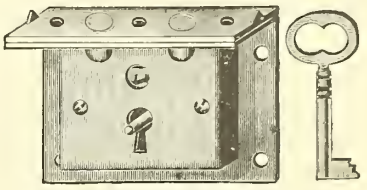
One-Half Size Cuts



No. 585
Style of No. 585N



No. 470
Style of No. 471

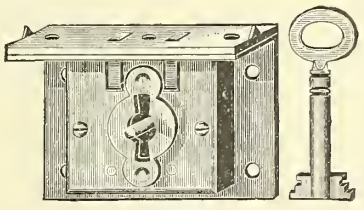


No. 428
Style of Nos. 467, 410, 0427, 411, 408 and 409

Screwed

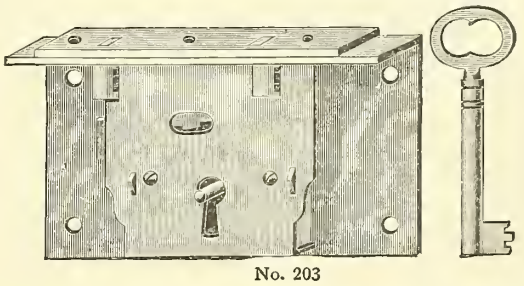
Square selvedge. Solid square box. Double link. Fine flat bow keys.

Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Regular Changes	Possible Changes	Key-Blank Used Number	Dozen
585	2 x1 1/8	11/16	All brass	1	4	....	584	$3.00
585N	2 x1 1/8	11/16	All brass, nickel-plated	1	4	....	584	3.45
470	1 3/4 x1 1/8	11/16	Brass plate	2	12	....	469	3.62
471	1 1/2 x1 1/8	11/16	Iron	2	12	....	469	3.00
467	2 x1 5/16	11/16	Iron	2	12	60	293	3.25
428	2 1/2 x1 11/16	15/16	Brass plate	2	12	252	014	4.00
0427	2 1/2 x1 11/16	15/16	All brass	2	12	262	01497	5.00
410	3 x1 15/16	1	Iron	2	12	252	411	4.00
411	3 x1 15/16	1	Brass plate	2	12	252	411	4.50
408	3 1/2 x2 1/4	1 1/8	Iron	2	12	1020	408	4.50
409	3 1/2 x2 1/4	1 1/8	All brass	2	12	1020	409	6.50



No. 582
Style of No. 218

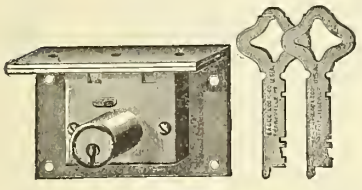
Self-locking square selvedge. Screwed. Double link. Double fitted keys. Brass escutcheon. All different in a dozen.



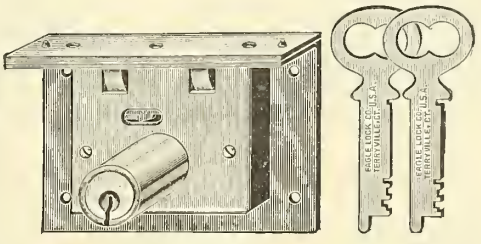
No. 203

Square selvedge. Screwed. Double link. Fine flat bow keys. All different in a dozen; also all alike.

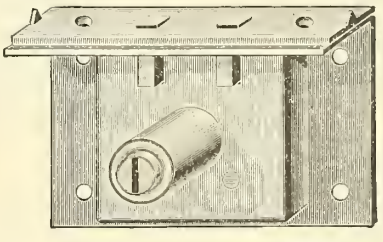
Number	Size Inches	Selvedge to Key-Pin Inches	Material	Secure Levers	Tumblers	Wards	Key-Blank Used Numbers	Dozen
582	2 1/2 x1 11/16	7/8	Brass plate	..	4 hook	2	582	$6.25
218	4 x2 13/16	1 3/8	Iron	..	4 hook	2	218	8.00
203	4 x2 1/4	1 1/2	Iron	2	.....	..	425	4.50

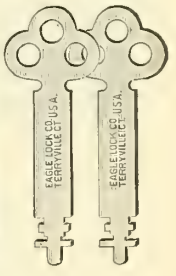


No. 6087
Style of Nos. 6087½, 6088 and 7088½.



No. 6070
Style of Nos. 6068, 6071, 1058 and 1059.





No. 01961
Style of No. 01962.

Square selvedge, solid square box, screwed, double link. (Two nickel-plated flat steel keys to each lock.) All different in a dozen, except Nos. 1058 and 1059 which are carried in stock. Can be made any thickness of wood desired. Carried in stock as specified below.

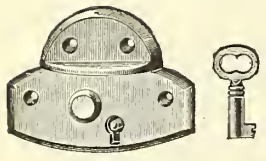
Number	Size Inches	Selvedge to Center: Of Tube Inches	Selvedge to Center: Of Cylinder Inches	Material	For Wood Inches	Secure Levers	Possible Changes	Master Keyed Changes	Key-Blank Used Number	Dozen
6088	1 3/4 x1 3/16	3/4	...	All brass	1/2	3	1440	288	6080	$7.50
7088 1/2*	1 3/4 x1 3/16	3/4	...	Iron, brass cylinder	1/2 and 3/4	3			6080	7.50
6087	2 x1 5/16	3/4	...	All brass	1/2 and 7/8	3	1440	288	6080	9.00
6087 1/2*	2 x1 5/16	3/4	...	All brass	1/2 and 7/8	3			6080	10.00
1058	2 1/4 x1 9/16	7/8	...	Iron	5/8	3	620	120	6080	9.00
1059	2 1/4 x1 9/16	7/8	...	All brass	3/4	3	620	120	6080	10.50
6077†	2 1/2 x1 11/16	1	...	All brass	3/4 and 1	4	620	120	6075	12.00
6071†	3 x2	1 1/8	...	All brass	1	4	1020	252	6069	14.00
6068†	4 x2 9/16	1 3/8	...	All brass	1 and 1 1/4	4	1020	252	6068	18.00
01961*	3 1/2 x2 3/16	...	1 1/8	All brass	1	..	....	...	1961	12.00
01962*	4 x2 5/16	...	1 1/4	All brass	1	..	....	...	1962	14.00

* Nos. 7088½, 6087½, 01961 and 01962 are self-locking. † Nos. 01961 and 01962 have 2 wards and 4 hook tumblers

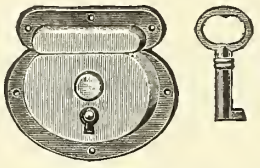
For extras and special features, see pages 914 and 915

Sample and Suitcase Locks

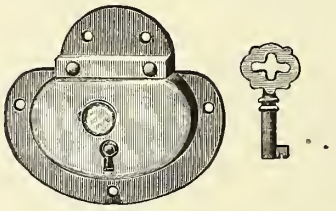
One-Half Size Cuts



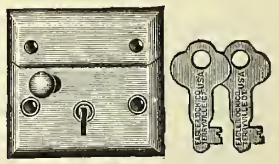
No. 08336
Self-locking. Spring thumb push. Flat bow key.



No. 08296
Self-locking. Spring thumb push. Flat bow key.

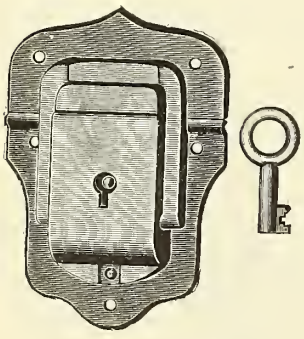


No. 0897
Self-locking. Spring thumb push. Flat bow key.



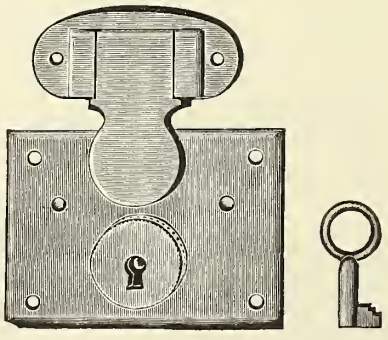
No. 08331
Self-locking. Spring thumb push. Two nickel plated flat steel keys to each lock.

Number	Size Lock Without Hasp Inches	Material	Finish	Hasp	Key Blank Used Number	Dozen
08336	2 x 7/8	Cast brass	Nickel-plated	Flush	679	$5.00
08336¼	2 x 7/8	Cast brass	Buffed and lacquered	Flush	679	4.50
08296	1¾x1 1/16	Brass	Nickel-plated	Flush	1179	3.00
08297	2¼x1⅜	Brass	Nickel-plated	.....	1405	4.00
08331	1⅝x1	Brass	Nickel-plated	Flush	331	5.00



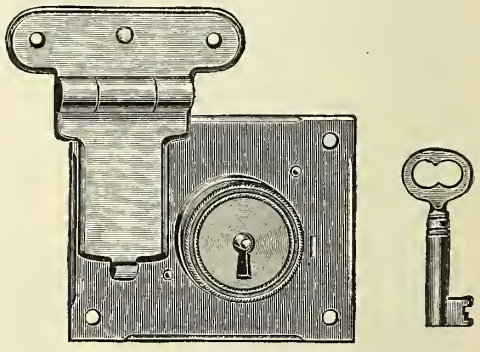
No. 08368

Secure lever. Brass-plated key.



No. 08341

Spring-stop hasp. Self-locking. Nickel-plated key. When unlocked may be used as a catch and unlatched by pressing the escutcheon.



No. 08377

Solid cast brass spring hasp. 3 secure levers. High sliding escutcheon. Fine flat bow keys. Can be made with 60 changes of keys.* When unlocked may be used as a catch and unlatched by pressing the escutcheon.

Number	Size Plate Inches	Material	Finish	Hasp	Key Blank Used Number	Dozen
08368	2¼x3⅜	Brass	Buffed and lacquered	.....	368	$7.00
08341	3 x2	Brass	Buffed and lacquered	Cast, straight	8341	8.00
†08377	3 x2 5/16	Brass	Buffed and lacquered	.....	1607	13.00

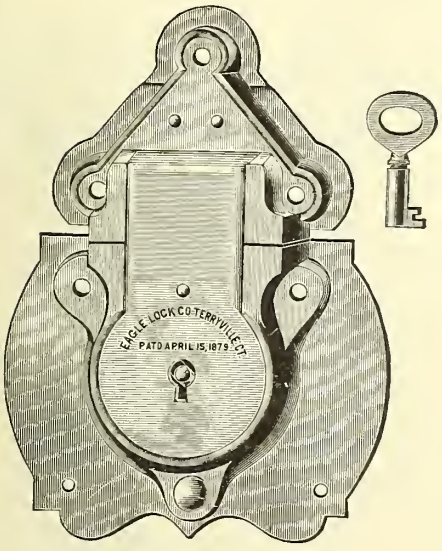
* For making with more than 12 changes add 50 cents per dozen net.

† No. 08377 lock can be made left hand.

For extras and special features, see pages 914 and 915

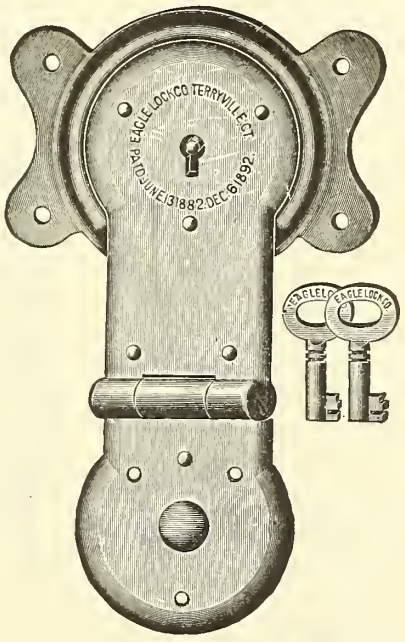
Eagle Trunk Locks

Half Size Cuts



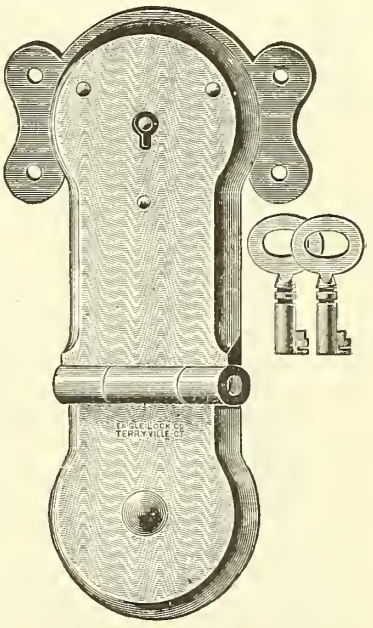
No. 8199

Guard cup. Flat bow keys. No top back plate.



No. 8355½

Guard cup. Two nickel-plated wrought-steel keys to each lock.

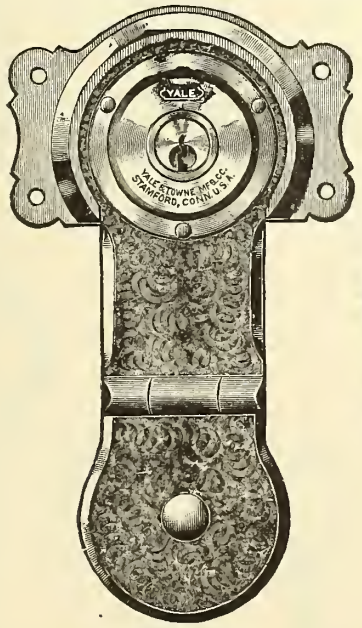


No. 8186

Style of No. 08818. "Jiggered" surface, buffed edges. Two nickel-plated wrought-steel keys to each lock. Furnished with bolts, nuts and washer to attach hasp to trunk.

Number	Size Inches	Material and Finish	Secure Levers	Regular Changes	Possible Changes	Key Blank Used Number	Dozen
8199	5¼x4	Iron, all brass plated, unpolished	..	..	..	178	$4.25
8355½	6½x3¾	Wrought iron, brass plated	2	4	..	5007	6.00
8186	6¼x3⅛	Cast bronze, wrought-bronze cup, riveted case	2	4	4	5007	11.00
08818	6⅛x3⅛	Cast bronze, wrought-bronze cup, cast case	3	3	36	5006	15.00

Yale Trunk Lock



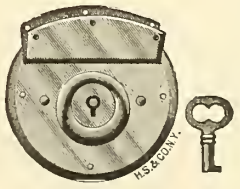


No. TB-600

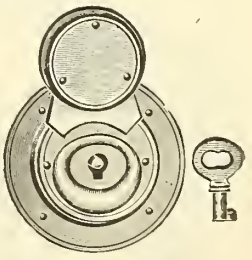
Self-locking, buffed edges, cap and guard cup. Two paracentric nickel-bronze keys to each lock. Changes unlimited. Furnished with bolt, nut and washer to attach hasp to trunk.

Number	Size Inches	Material	Key Blank Used Number	Dozen
TB-600	6½x3½	Cast bronze	TB-600	$30.00

Portfolio Locks



No. 4199



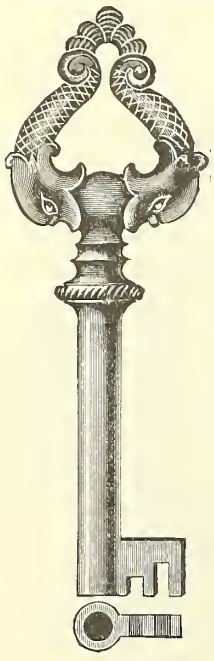
No. 08723

Self-locking. When unlocked may be used as a catch and unlatched by pressing the ring down.

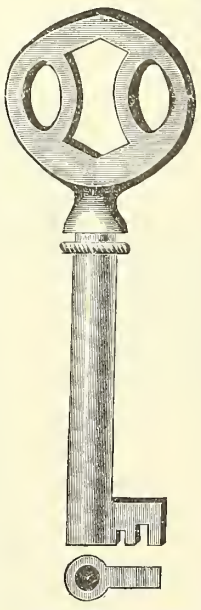
Number	Size Inches	Material and Finish	Key Blank Used Number	Dozen
4199	1¾x1¾	Nickel-plated		$3.00
08723	2½x1⅞	Brass, nickel-plated	8918	10.00

Eagle Cabinet Keys

Full Size Cuts



No. 1010, 1¼ inches
Gilt



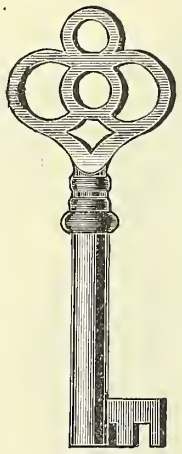
No. 1005, 1½ inches
Gilt 1¼ inches



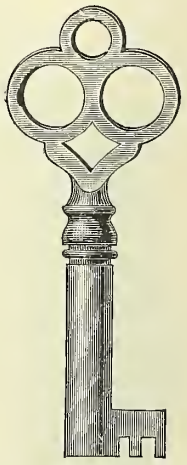
No. 10301
¾ and 1½ inches



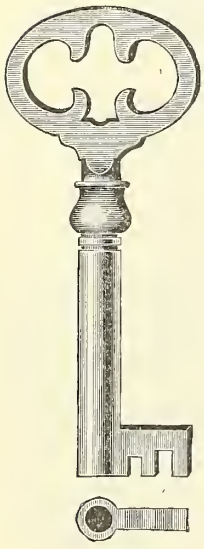
No. 5003
Iron



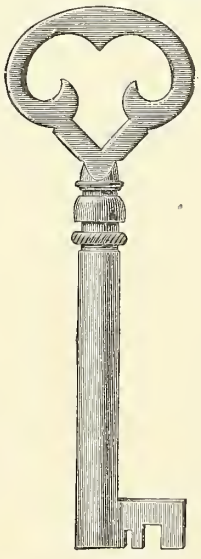
No. 76½ Iron
No. 1129 Gilt



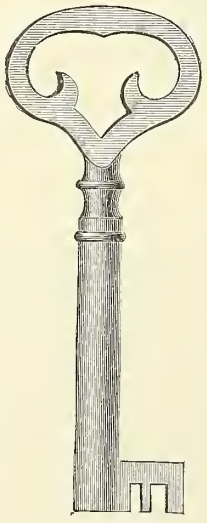
No. 0161 Gilt
No. 161 Iron



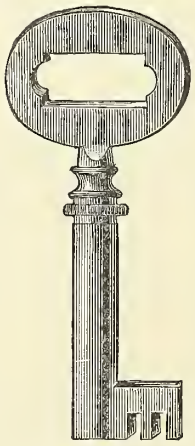
No. 500
Iron



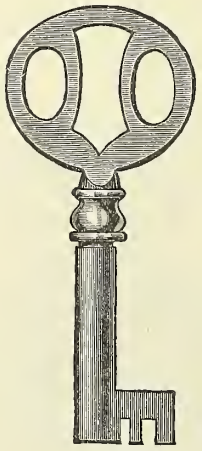
No. 3920
Iron



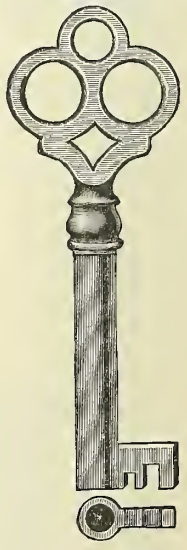
No. 510
Iron



No. 1001, 1¼ inches
Iron 1½ inches



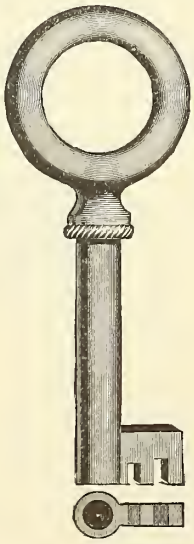
No. 48½
Iron



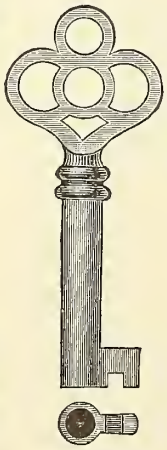
No. 5061
Iron



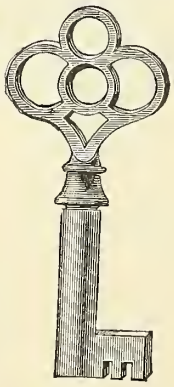
No. 447
Iron



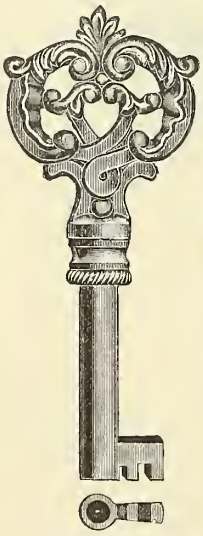
No. 5083
1¼ inches
Iron



No. 72½
Iron



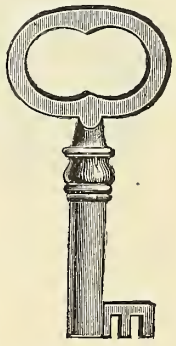
No. 423 Iron
No. 1130 Gilt



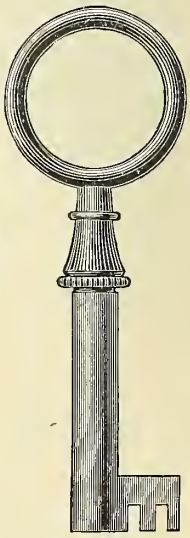
No. 5201, 1 inch
Dull Brass



No. 501
Iron



No. 475
Iron



No. O, 1¼ inches
Gilt

For description and list prices see page 939

Eagle Cabinet Keys

Illustrations on Preceding Page

Number	Barrel Inches	Material	Suitable for Locks	Dozen
0	1¼	Gilt	No. 161	$1.20
48½	1	Iron	Nos. 47, 48 and 49	.30
72½	1	Iron	Nos. 72, 1296 and 1600	.20
76½	1¼	Iron	Nos. 415, 416, 417, 418, 423, 1602, 1805 and 01805	.25
161	1	Iron	Nos. 48, 161, 180, 423, 1602 and 1606	.25
0161	1	Gilt	Nos. same locks as No. 161	1.00
423	⅞	Iron	Nos. 423 and 1602	.20
447	1¼	Iron	Nos. same locks as No. 72½	.20
475	¾	Iron	Nos. 56, 58, 193, 473, 473½, 474, 475, 476, 476½, 477 and 478	.25
500	1¼	Iron	No. 500	.35
501	1	Iron	Nos. 501, 508 and 509	.25
510	1⅜	Iron	Nos. 510, 510½ and 2118	.30
1001	1¼ & 1½	Iron	Nos. 47, 49, 1001, 01001 and 1017	.35
1005	1¼, 1½ & 2	Gilt	Nos. 44, 47, 48, 49, 161, 180, 193, 423, 473, 473½, 474, 475, 476, 476½, 477, 478, 510, 510½, 1001, 01001, 1017 and 1606.	1.20
1010	1¼	Gilt	Nos. same locks as No. 1005	1.50
1010	1½	Gilt	Nos. 1001	1.50
1106	⅞	Gilt	Nos. 40, 56, 58, 193, 473, 473½, 474, 475, 476, 476½, 477, 478, 501, 508 and 509.	1.20
1129	1⅛	Gilt	Nos. 415, 416, 417, 418, 423, 501, 508, 509, 1805 and 01805	1.20
1130	1	Gilt	No. 423	1.20
3920	1½	Iron	Nos. same locks as No. 161	.25
5003	1⅜	Iron	Nos. same locks as No. 72½	.25
5061	1⅛	Iron	Nos. same locks as No. 161	.25
5083	1¼	Iron	Nos. 161 and 1001	.60
5084	1	Gilt	Nos. same locks as No. 475	1.50
5084	1¼	Gilt	Nos. 161 and 1001	1.50
5201	⅞	Dull brass	Nos. same as lock No. 475	1.50
10301	¾	Dull brass	Nos. same as lock No. 475	1.50
10301	1½	Dull brass	Nos. same as lock No. 475	1.50

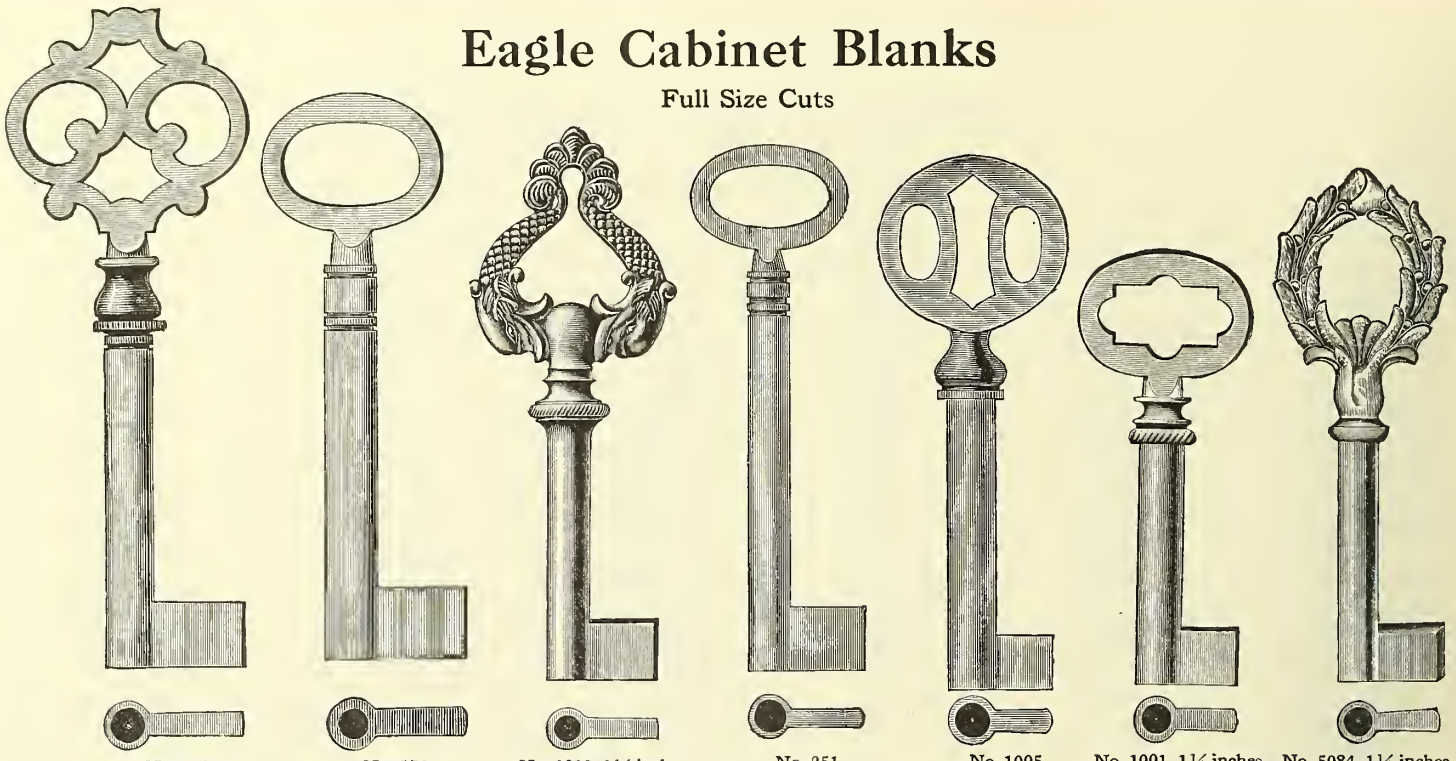
Extra keys can be furnished for the following number of Eagle Locks.

In ordering be sure to specify what lock the key is intended to fit.

For Lock Number	Keys Per Dozen	For Lock Number	Keys Per Dozen	For Lock Number	Keys Per Dozen	For Lock Number	Keys Per Dozen
28	$ .25	42	$ .20	83	$ .35	181	$ .25
34	.18	44	.30	141	.25	197	.28
36	.20	55	.15	142	.25	296	.25
37	.20	58	.20	164	.25	01867	1.00

Eagle Cabinet Blanks

Full Size Cuts



No. 1124 Bronze

No. 574 Iron

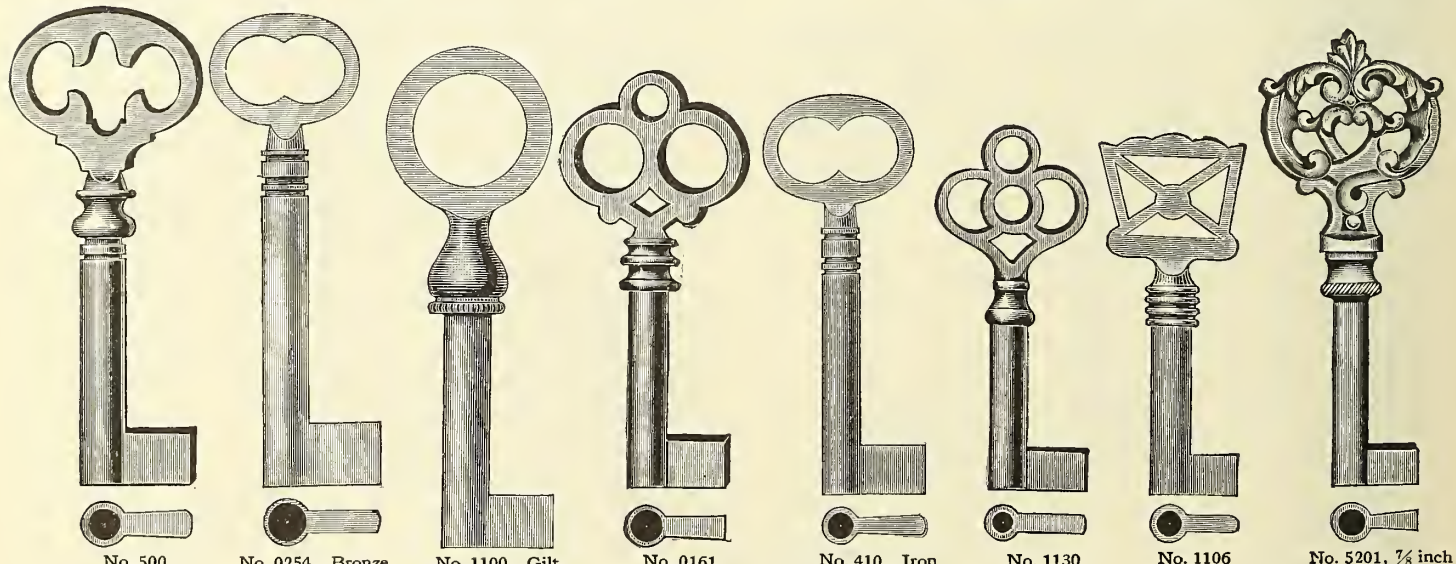
No. 1010, 1¼ inches Gilt

No. 251 Iron

No. 1005 1¼, 1½, 2 inches Gilt

No. 1001, 1¼ inches
No. 1001, 1½ inches Iron

No. 5084, 1¼ inches Gilt



No. 500 Iron

No. 0254 Bronze
No. 254 Iron

No. 1100 Gilt
No. 10301 Dull Brass

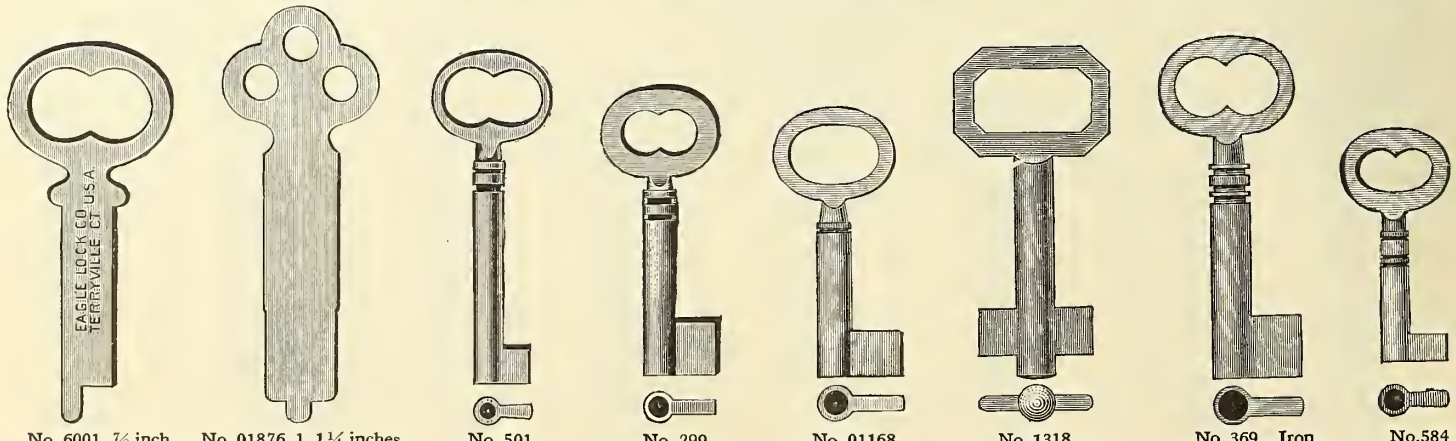
No. 0161 Gilt

No. 410 Iron
No. 6000 Bronze

No. 1130 Bronze

No. 1106 Gilt

No. 5201, ⅞ inch Gilt



No. 6001, ⅞ inch Steel

No. 01876, 1, 1¼ inches Steel

No. 501 Iron

No. 299 Iron

No. 01168 Bronze

No. 1318 Bronze N. P.

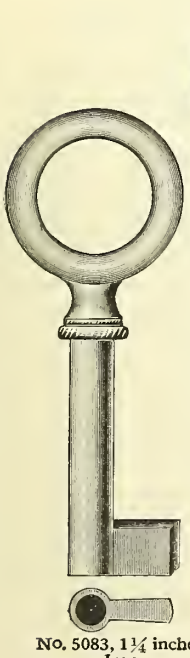
No. 369 Iron
No. 1146 Gilt

No. 584 Bronze

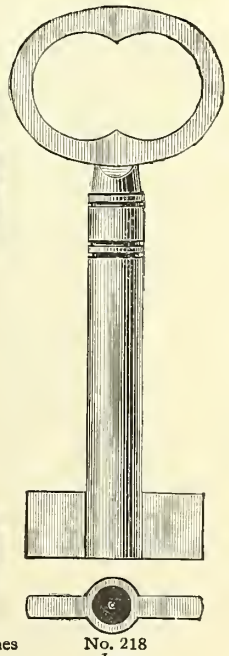
For description and list prices, see following page

Eagle Cabinet Blanks

Full Size Cuts



No. 5083, 1¼ inches
Iron

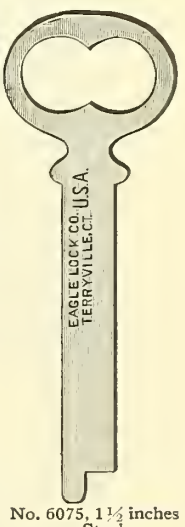


No. 218
Iron

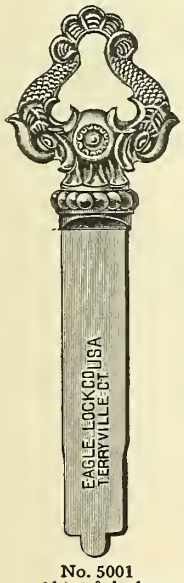
Number	Material	Dozen
0	Gilt	
0161	Bronze	$1.00
218	Iron	.75
251	Iron	.45
254	Iron	.38
0254	Bronze	1.00
299	Iron	.28
369	Iron	.30
410	Iron	.35
500	Iron	.35
501	Iron	.25
574	Iron	.50
582	Iron	.40
584	Bronze	1.00
1001 x 1¼ inches	Iron	.35
1001 x 1½ inches	Iron	.35
1005 x 1¼, 1½, 2 inches	Gilt	1.50
1010 x 1¼ inches	Gilt	1.50
1053	Steel	.75
1100	Gilt	1.50
1106	Gilt	1.50
1124	Bronze	1.00
1130	Bronze	1.00
1146	Gilt	1.00
01168	Bronze	1.00
1318	Bronze, N.P.	1.00
01876 x 1¼ inches	Steel	.75
5001 x 1⅛, 1 5/16 inches	Gilt bow	1.80
5083	Iron	.50
5084	Gilt	1.50
5201	Gilt	1.20
6000	Bronze	1.00
6001 x ⅞ inch	Steel	.75
6068 x 1½ inches	Steel	.75
6075 x 1½ inches	Steel	.75
10301	Dull Brass	



No. 6068, 1½ inches
Steel



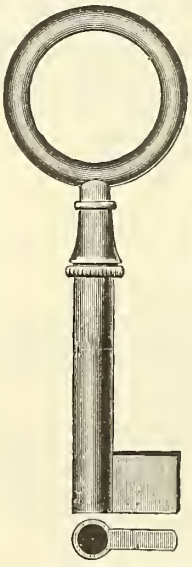
No. 6075, 1½ inches
Steel



No. 5001
1⅛, 1 5/16 inches
Gilt Bow



No. 582, 1½ inches
Style No. 218, 2 inches
Iron



No. O, 1¼ inches
Gilt



No. 1053
Steel

Yale & Towne Cabinet Blanks

Full Size Cuts



No. 9

No. 9 Dozen..... $1.50

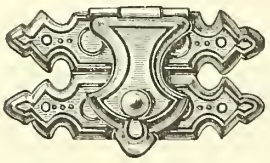


No. 10

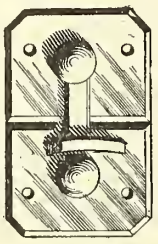
No. 10 Dozen.... $1.50

Box Catches

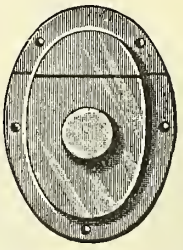
Full Size Cuts



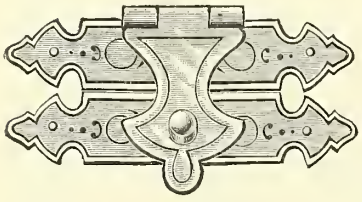
No. 52 Brass, dipped, gross..... $1.75
No. 52N Brass, nickel-plated, gross.. 3.60



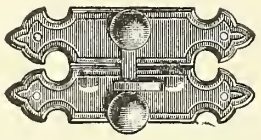
No. 771 Brass, nickel-plated, gross...$10.60



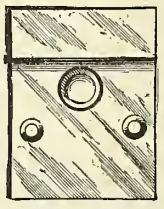
No. 789 Brass, nickel-plated, gross...$16.00



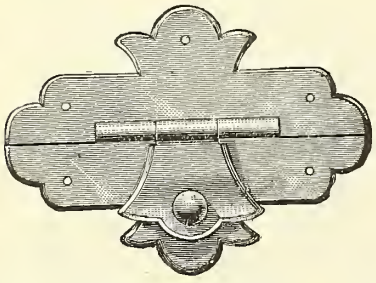
No. 102 Brass, nickel-plated, gross....$4.70



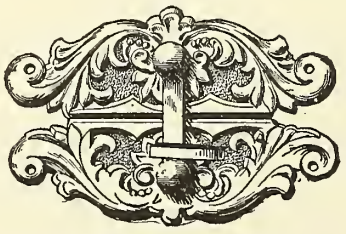
No. 89 Brass, nickel-plated, gross.....$6.00



No. 790 Brass, nickel-plated, gross...$13.30



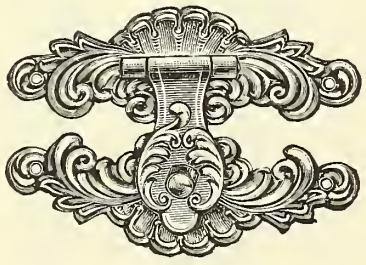
No. 786 Brass, polished, gross..... $8.80
No. 786N Brass, nickel-plated, gross. 8.80



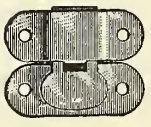
No. 767 Brass, nickel-plated, gross.. $7.90



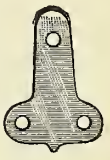
Brass, Nickel-plated
No. 1025 Size $\frac{5}{8}$x1$\frac{1}{2}$ inches, gross... $6.90
No. 1026 Size $\frac{9}{16}$x1$\frac{3}{8}$ inches, gross... 6.75



No. 1043 Brass, silver dipped, gross.. $4.50



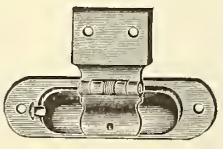
No. 425 Brass, dipped, gross..... $ .80



No. 856 Brass, dipped, gross..... $ .40

Violin Box Catch

Half Size Cut



No. 1 Steel, nickel-plated, gross.... $15.00

Desk Buttons

Full Size Cuts



No. 1075



No. 1078



No. 1460



No. 1077

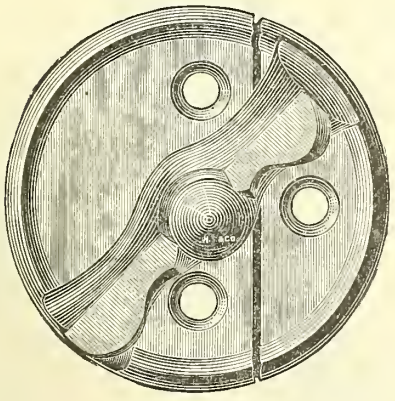


No. 2422

No. 1075 Brass, dipped, gross..... $ .60
No. 1078 Brass, dipped, gross..... .80
No. 1460 Brass, dipped, gross..... 1.60
No. 1077 Brass, dipped, gross..... 1.00
No. 2422 Brass, dipped, gross..... 2.50

SEE DISCOUNT SHEET

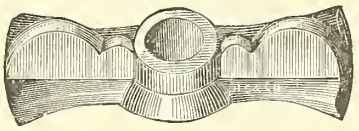
Turn Buttons



No. 20

Cast Iron, Japanned

Diameter, inches	2	2½
Gross	$4.30	6.10



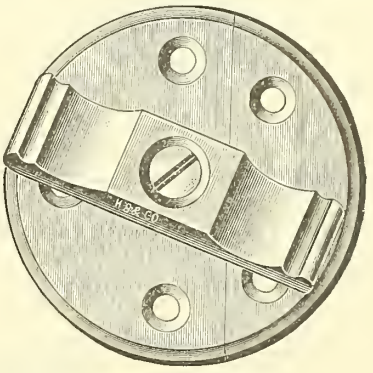
No. 10

Cast Iron, Japanned

Length, inches	1¼	1½	2	2½
Gross	$ .52	.60	.80	1.60

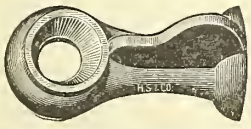
No. 110

Cast iron, coppered, 1½ inches long, gross ..... $ .60

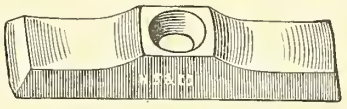


No. 187

No. 187 Cast brass, polished, 2 inches diameter, dozen $2.60



No. 48 Cast iron, japanned, 1¼ inches long, gross ..... $ .45



No. 196

Wrought Brass, Polished

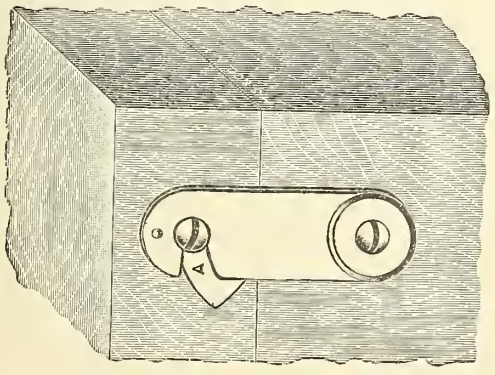
Length, inches	1¼	1½	2
Gross	$5.83	6.41	9.72



No. 1883 Cast brass, polished, ⅞ inch long, gross $5.28

Box Hooks

Full Size Cuts

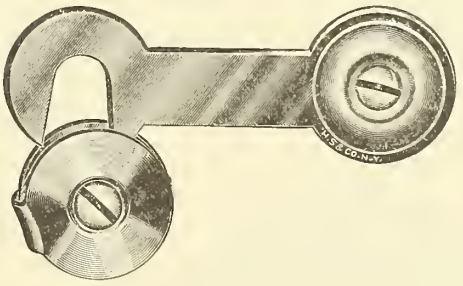


No. 7 Fancy Embossed

Packed with screws

Made of wrought brass. Quickly attached and easily operated. The part "A" is hinged and is released by thumb pressure. It springs back over screw head at slight pressure and cannot unlock.

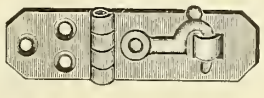
Dipped, gross	$9.50
Nickel-plated, gross	9.50



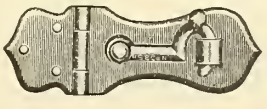
No. 6

Brass, nickel-plated, gross	$10.50
Brass, polished, gross	10.50

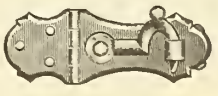
Half Size Cuts



No. 840 Wrought brass, polished, 2¾ inches long. Made right or left hand. State which wanted. Illustration shows right hand. Gross, $16.00

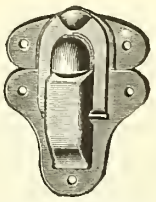


No. 1780 Wrought brass, nickel-plated, 2¾ inches long. Made right or left hand. State which wanted. Illustration shows right hand. Gross $10.80



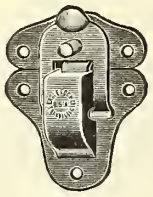
No. 846 Wrought brass, nickel-plated, 2¼ inches long. Made right or left hand. State which wanted. Illustration shows right hand. Gross $9.00

Suit Case Bolts



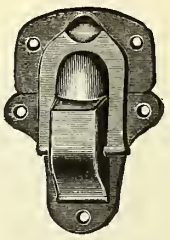
1½ x 1⅞ Inches

No. 01778 Brass, polished, gross.... $19.00
No. 01778N Brass, nickel-plated, gross..... 22.75
No. 3120N Iron, nickel-plated, gross 6.60
No. 3120 Iron, brass-plated, gross.. 6.60



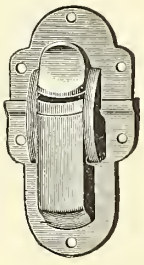
1½ x 1⅞ Inches

No. 1778D Iron, nickel-dipped, gross..$6.60

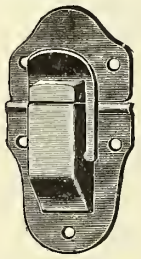


1½ x 2⅜ Inches

No. 3100N Iron, nickel-plated, gross..$6.25
No. 3100B Iron, brass-plated, gross.. 5.20



No. 3392 1⅜ x 2⅞ inches, cast brass, polished, gross..... $40.00

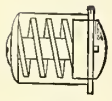


1¼ x 2⅝ Inches

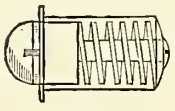
No. 05523 Brass, polished, gross..... $20.00
No. 05523N Brass, nickel-plated, gross..... 23.00

Door Catches

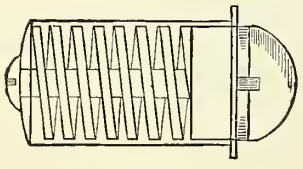
Full Size Cuts



No. 10½



No. 11



No. 13



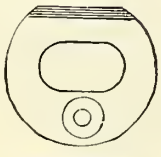
No. 85



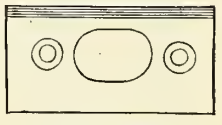
No. 86



No. 87



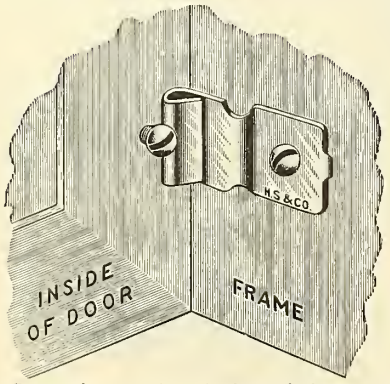
Round Strike



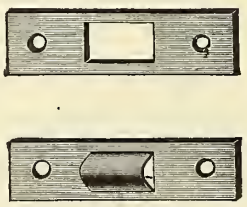
Square Strike

Number	Material	Strike	Gross
10½R	Brass	Round	$8.25
10½S	Brass	Square	8.25
11 R	Brass	Round	9.00
11 S	Brass	Square	9.00
13	Brass, Iron Strike	Square	18.00
85 R	Iron, Iron Strike	Round	2.40
85 S	Iron, Brass Strike	Square	3.10
86 R	Iron, Brass Strike	Round	2.95
86 S	Iron, Brass Strike	Square	2.95
86 NS	Iron, Brass Strike nickel-plated	Square	5.50
87 R	Iron, Brass Strike	Round	2.75
87 S	Iron, Brass Strike	Square	2.75

Cabinet Catches

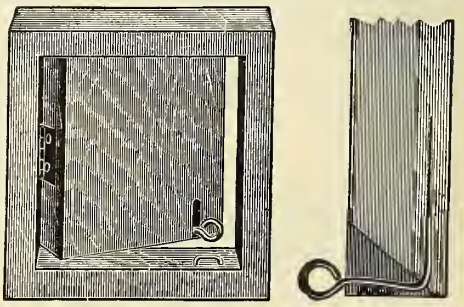


Screw is attached inside of door; catch is fastened to jamb or bottom like a stop.
No. 90 Brass, dipped. Packed with round head brass-plated screws. Gross..... $1.80



No. 05593 2⅜ x ⅝ inch, wrought brass, polished, spring bolt. Gross $12.00

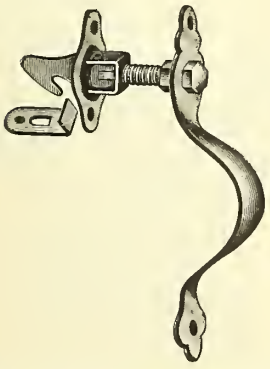
Champion



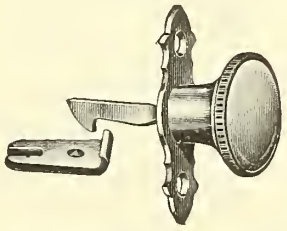
Loop and staple. Best spring steel wire. Gross..... $1.20

Cabinet Catches

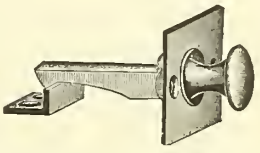
Half Size Cuts



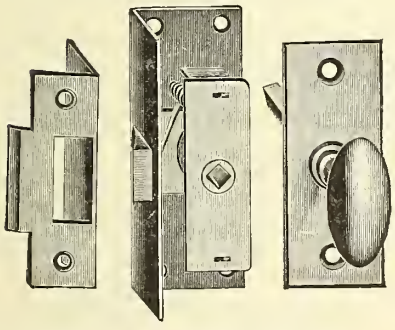
No. 2288E Sheet brass, push-button style. Packed with screws. Dozen $1.50



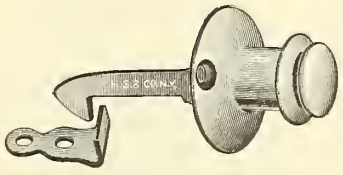
No. 21 Wrought brass, polished. Packed with screws. Dozen.... $2.00



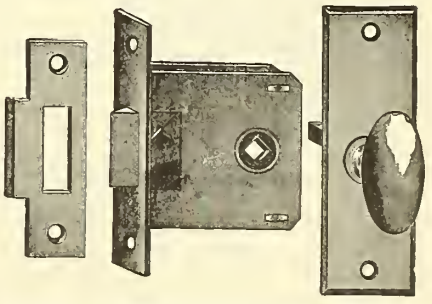
No. 329 Cast bronze, polished. Packed with screws. Dozen..... $6.00



No. 05549E Cast bronze, latch bolt, for either right or left hand, adjustable for wood 1 to 1¼ inches thick, selvedge to center of hub ⅞ inch. Packed with screws. Dozen..... $15.75



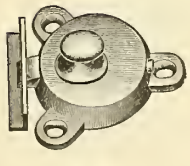
No. 121 Cast brass, polished. Packed with screws. Dozen..... $3.40



No. 5590 Brass knob and plate, cast brass latch bolt, adjustable to wood ⅝ to 1¼ inches thick, selvedge to center of hub 1⅛ inches. Packed with screws. Dozen..... $9.00

Table Catches

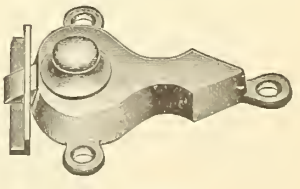
Half Size Cuts



No. 350

Cast Brass, Polished. Packed with screws

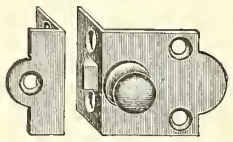
No. 350 Dozen..... $4.08
No. 351 Dozen..... 4.80



No. 351

Cupboard Catches

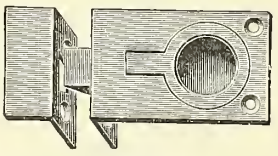
Dimensions Given are Exclusive of Strikes



Half Size Cut

Packed with screws

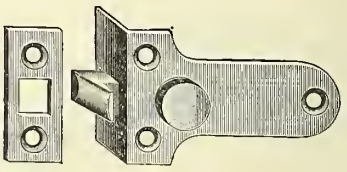
No. 303 Size 1 x 1⅝ inches, wrought brass, polished, dozen..... $1.65
No. 311 Size 1x1⅞ inches, cast brass, polished, dozen..... 3.00
No. 311½ Size 1 1/16 x 1¼ inches, cast brass, polished, dozen..... 2.80
No. 312 Size 1⅛x2 inches, cast brass, polished, dozen..... 3.15



Cast Brass, Polished

Packed with screws

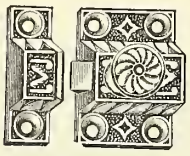
No. 25 Size 1⅞ inches, dozen..... $5.50
No. 27 Size 2 9/16 inches, dozen..... 7.40
No. 5947 Size 1½ inches, dozen.... 4.95



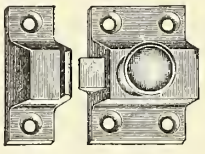
Cast Brass, Polished

Packed with screws

No. 363 2½ inches, dozen..... $3.12



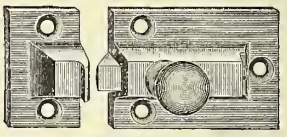
No. 3270 Packed with screws.
1½ x 1 inch, cast iron, amber bronzed, gross..... $11.88



Packed with screws

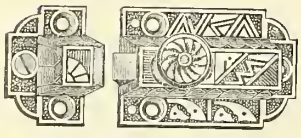
1½ x 1 Inch

No. 2270½ Cast bronze, polished, dozen..... $3.75
No. N13270 Cast iron, bronze-plated, gross..... 27.72



Packed with screws

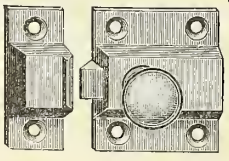
No. N13029 Size 1¼x1¾ inches, cast iron, bronze plated, gross..... $27.72
No. N13030 Size 1½x2 inches, cast iron, bronze-plated, gross..... 29.70
No. E13030 Size 1½x2 inches, cast iron, nickel-plated, gross..... 36.83
No. 2031½ Size 1½x2¼ inches, cast bronze, polished, dozen..... 4.80



Cast Iron, Amber Bronzed

Packed with screws

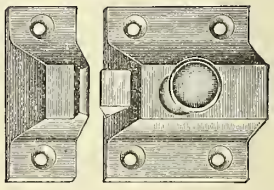
No. 3029 Size 1¼x1¾ inches, gross..$11.88
No. 3030 Size 1½x2¼ inches, gross.. 12.87



Packed with screws

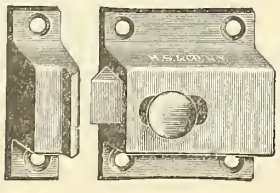
1½ x 1⅜ Inches

No. 2271½ Cast bronze, polished, dozen..... $4.15
No. L.B. 2271½ Cast bronze, statuary bronze finish, dozen..... 4.75
No. A. 2271½ Cast brass, polished, dozen..... 4.15
No. E. 2271½ Cast bronze, nickel-plated, dozen..... 4.75
No. N. 13271 Cast iron, bronze-plated, gross..... 29.70



No. N. 13272 Packed with screws. 1⅞ x 1½ inches, cast iron, bronze-plated, gross..... $33.66

This Catch can be furnished with reverse bevel, if so ordered.



No. O.B. 3502 Packed with screws. 1¾ x 1½ inches, cast brass, old brass finish, dozen..... $5.25

Cupboard Turns

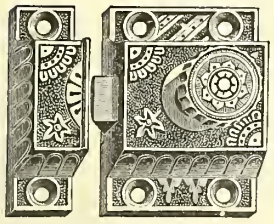
Half Size Cuts

Dimensions Given are Exclusive of Strikes

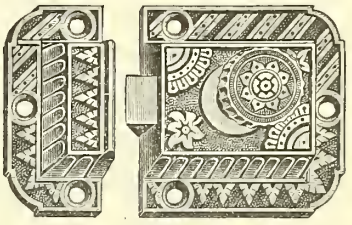
Cast Iron, Amber Bronzed

Packed with screws

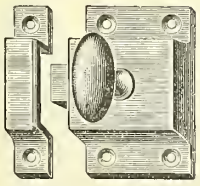
No. 3041 Size 2⅛ x 1½ inches, dozen..... $1.80
No. 3042 Size 2⅛ x 2⅛ inches, dozen..... 2.52



No. 3041

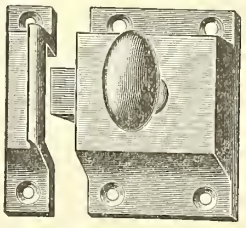


No. 3042



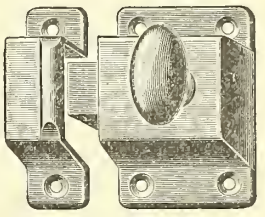
Packed with screws
1⅞ x 1 3/16 Inches

No. Y. 4455 Cast iron, bronze-plated, dozen..... $3.40
No. A.B. 4425 Cast iron, antique copper finish, dozen..... 3.65
No. O.B. 4855 Cast brass, old brass finish, dozen..... 7.30
No. 4855 P. Cast bronze, polished, dozen..... 6.20



Packed with screws
2¼ x 1 9/16 Inches

No. Y. 4405 Cast iron, bronze-plated, dozen..... $3.40
No. O.B. 4505 Cast brass, old brass finish, dozen..... 8.80
No. 4505 P. Cast bronze, polished, dozen..... 7.70
No. A 3 B 4505 P. Cast bronze, statuary bronze finish, dozen 8.80



Packed with screws
2⅛ x 1 7/16 Inches

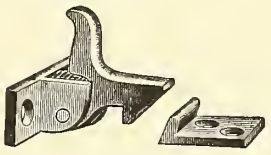
No. Y. 4425 Wrought steel, bronze-plated, dozen..... $3.45
No. A.B. 4425 Wrought steel, antique copper finish, dozen..... 3.65
No. O.B. 4825 Wrought brass, old brass finish, dozen..... 8.20
No. 4825 P. Wrought bronze, polished, dozen..... 7.05

Elbow Catches

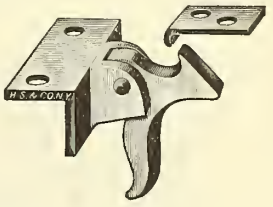
Half Size Cuts



No. 6500 Packed with screws. Cast brass, gross..... $27.20



No. 6301 Cast iron, coppered, gross.. $6.25
No. 6301 B.T. Cast iron, brass-plated, gross..... 7.00



No. B.T. 6301½ Cast iron, brass-plated, gross..... $14.00

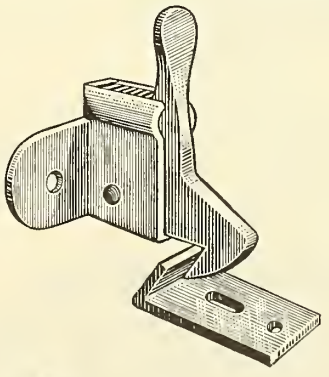


With No. 1 Strike Plate

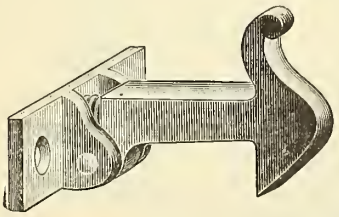


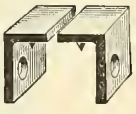
With No. 2 Strike Plate

No. 520 Brass, dipped, projects only ¾ inch, with either No. 1 or No. 2 Strike Plate, gross..... $10.50

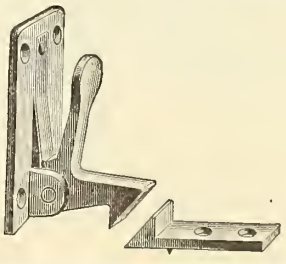


No. 57 Made from wrought steel, brass-plated, gross, $4.00





No. 6303 Extra heavy. Holds entire edge of door. Strikes are fastened on each edge. Cast iron, japanned, with two strike plates as shown. Gross..... $20.40

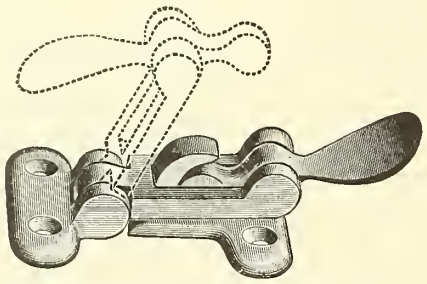


Packed with screws
Plate 1 x 2⅛ Inches

No. 6502 P. Cast bronze, polished, gross $56.00
No. O.B. 6502 Cast brass, old brass finish, gross 67.00

Door Fasteners

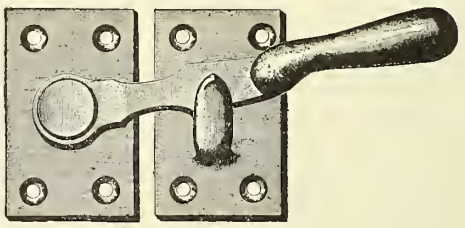
Half Size Cut



No. 48 Size of base 2 x 3 inches. Packed with screws. Cast brass, polished. An excellent fastener for doors or for box covers. Has lever action which holds the door or cover tightly closed.
Dozen..... $13.30

Lever Fastener

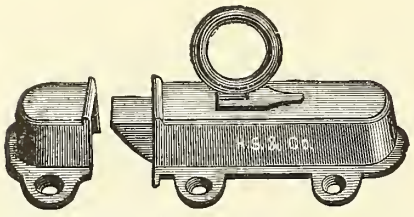
Half Size Cut



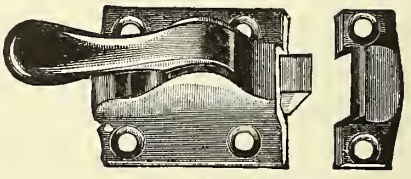
No. 830 2¼ x 3 inches. Cast brass, polished, dozen..... $8.00

Refrigerator Catches and Levers

Half Size Cuts

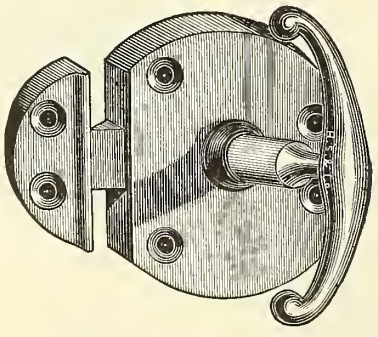


No. 1 2⅝ inches long. Packed with screws. Cast brass, polished, dozen..... $4.70



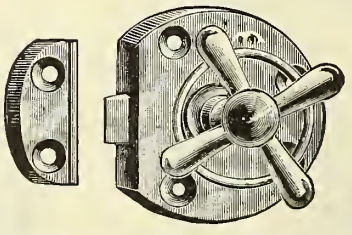
Cast Brass, Polished

No. 192 Length 1¾ inches, dozen..... $6.00
No. 198 Length 2¼ inches, dozen..... 9.40

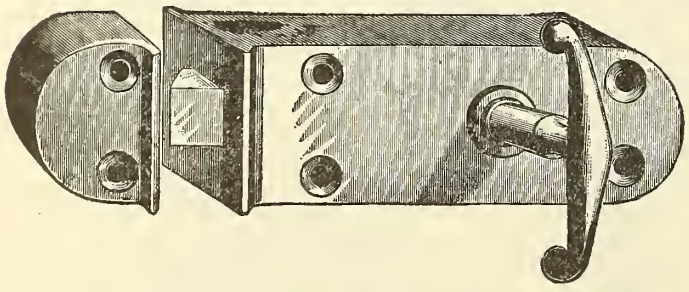


Cast Brass, Polished

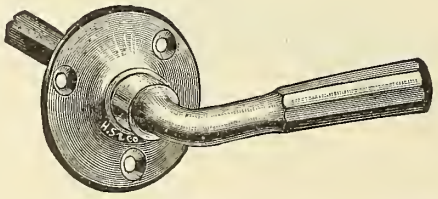
No. 5 2¼ inches diameter, dozen..... $6.70
No. 6 2¾ inches diameter, dozen..... 8.70



No. 9 2¼ inches diameter, cast brass, polished. Packed with screws. Dozen..... $9.00



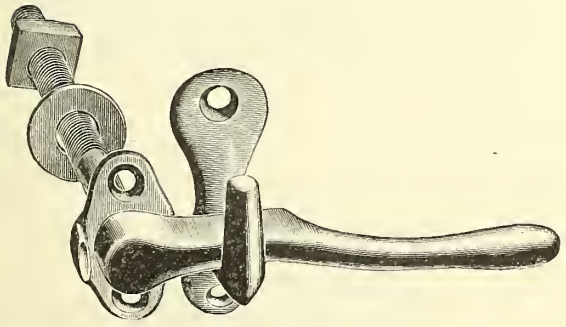
No. 8 Can be used with a crank lever (listed and illustrated opposite), on inside of door, thereby operating from both sides. 5 inches long. Made of cast brass, polished. Packed with screws. Dozen..... $16.00



Crank lever for No. 8 Catch (listed opposite). Packed with screws. Made of cast brass, unpolished, dozen..... $3.20

Refrigerator Lever Fasteners

Half Size Cuts

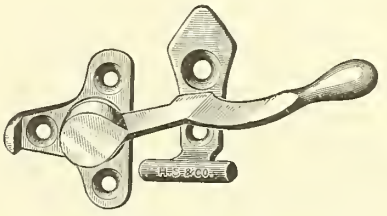


Number	2	3	4	5
Length of lever, inches	9	6½	5½	4½
Cast brass, polished, dozen	$19.80	11.00	7.90	5.80
Cast iron, japanned, dozen	8.30	4.80		
Cast iron, galvanized, dozen	11.00	7.00		

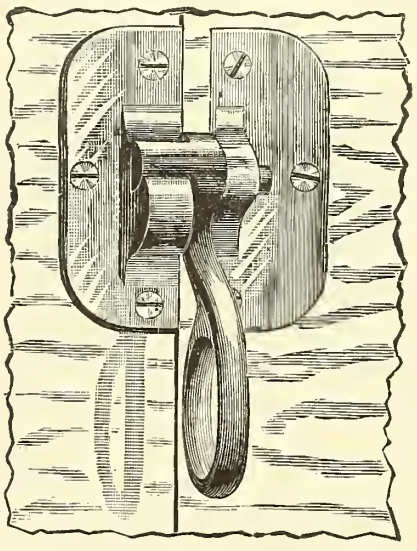
The No. 2 can also be furnished with bolts flattened to receive inside levers, which are listed and illustrated below.

No. 2 Inside levers for No. 2 fasteners listed above

Cast iron, japanned, dozen $5.20
Cast iron, galvanized, dozen 5.80



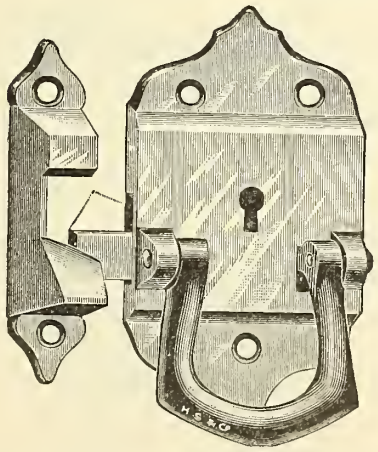
No. 8 Cast brass, polished, 3½-inch lever, dozen $5.20



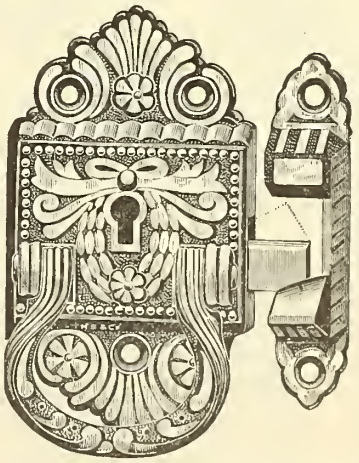
Cast brass, polished, 3½-inch lever. Made both left and right hand. State which wanted. Illustration shows left hand.

No. 4 Flush, dozen $7.00
No. 4¼ With ⅜-inch offset, dozen 7.00

Refrigerator Lock Latches



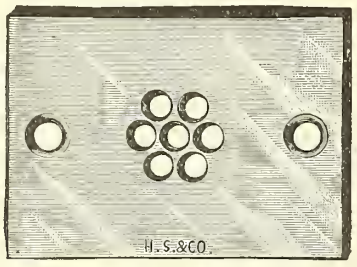
No. 38 Cast brass, polished, ⅜-inch offset, size 2½ x 4 inches. Made both left and right hand. State which wanted. Illustration shows left hand. Dozen $10.50



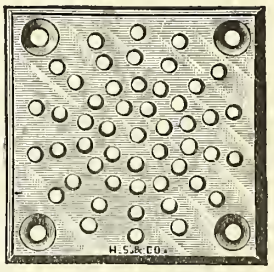
No. 41 Cast brass, ⅜-inch offset, size 2½ x 2 inches. Made both left and right hand. State which wanted. Illustration shows right hand. Dozen $10.00

Refrigerator Ventilating Plates

Brass



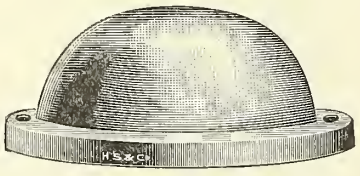
No. 1 1¾ x 1¼ inches, dozen..... $1.70



No. 2 2 x 2 inches, dozen..... $2.50

Refrigerator Bolt Covers

Full Size Cut

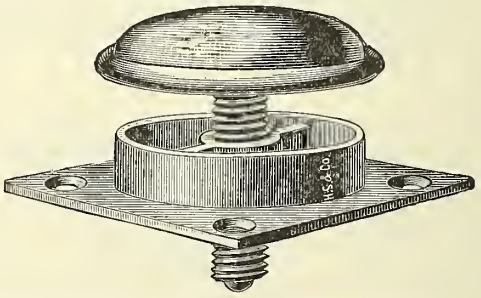


No. 9076 1⅞ inches diameter, cast brass, polished, dozen..... $2.00

No. 9075 1⅞ inches diameter, wrought brass, polished, gross.. 6.00

Refrigerator Ventilators

Half Size Cut



No. 9109 2½ x 2½ inches, cast brass, polished, dozen..... $6.70

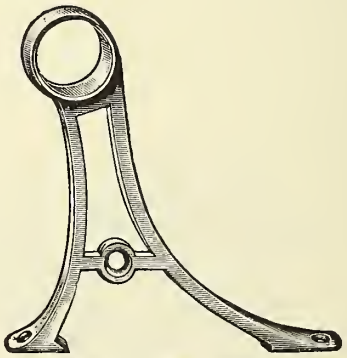
Foot Rail Brackets



Height, 7 inches overall

No. 5 For 1⅜-inch, outside diameter, tubing. Cast iron, galvanized, dozen..... $5.00

No. 9 For 1½-inch, outside diameter, tubing. Cast brass, polished, dozen..... 14.40



Height, 7 inches overall

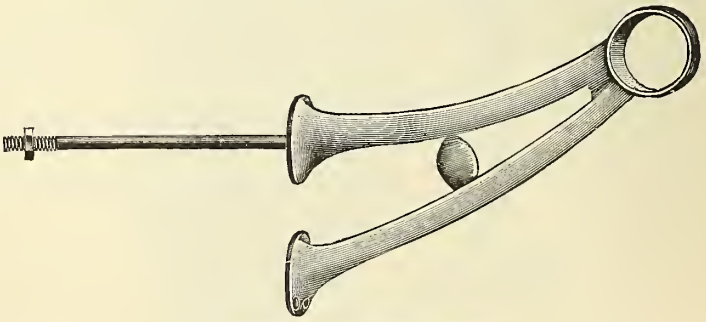
No. 10 For 1½-inch, outside diameter, tubing, cast brass, polished, dozen..... $10.25



Height, 8 inches overall

No. 6 For 1⅜-inch, outside diameter, tubing. Cast iron, galvanized, dozen. $6.00

No. 11 For 1½-inch, outside diameter, tubing. Cast brass, polished, dozen. 21.40



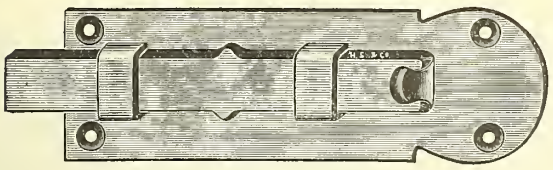
Length from base to end, 9 inches

No. 7 For 1⅜-inch, outside diameter, tubing. Cast iron, galvanized, dozen..... $8.40

No. 4½ For 1½-inch, outside diameter, tubing. Cast brass, polished, dozen..... 13.00

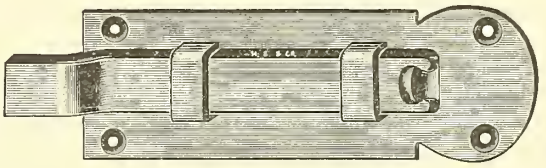
Spring Cabinet Bolts

Full Size Cuts



No. 2900 Wrought Iron

Size, inches	2	2½	3
Dozen	$ .38	.40	.45

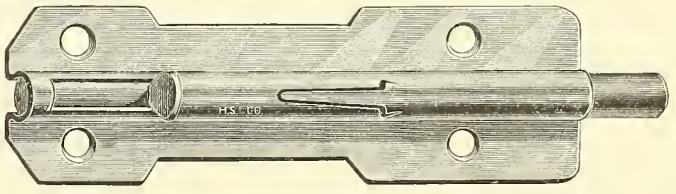


No. 2903 Wrought brass, dipped, 2½ inches long, dozen..... $1.10

No. 2902 Wrought Brass, Dipped

Size, inches	1½	2	2½	3	3½
Dozen	$ .90	1.00	1.10	1.80	2.40

Nosings for No. 2902, gross..... $3.40
Strikes for No. 2902, gross..... 3.60

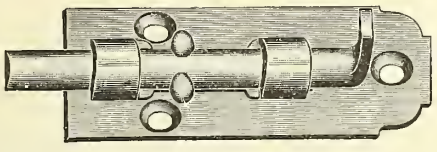


Wrought Brass, Dipped, Iron Bolt

No. 38 Length 2 inches, dozen..... $ .50
No. 39 Length 2½ inches, dozen..... .70
No. 40 Length 3 inches, dozen..... .95

Mosquito Bar Bolts

Full Size Cut



No. 1585 Wrought brass, polished, 2 inches long. Packed with screws. Dozen..... $1.50

Cupboard Bolts

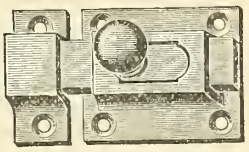
Half Size Cuts



No. 1581

Packed with screws

No. 1581 Cast brass, polished, length 2 inches, dozen..... $3.24



No. 201 Cast brass, polished, 1½ x 1¾ inches. Packed with screws. Dozen..... $5.60

Spring Bolts

Half Size Cut



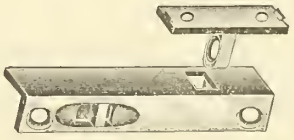
No. 1551

Wrought Brass, Polished. Packed with screws

Size, inches	2	2½	3
Dozen	$3.42	3.96	5.22

Gun Case Bolts

Half Size Cut

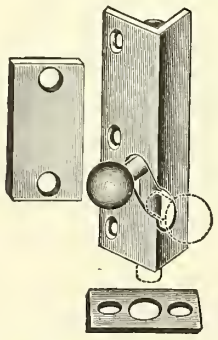


No. 139 Reversible. Cast brass, polished. Packed with screws. 2½ inches long, dozen..... $3.12

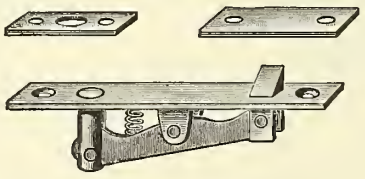
Book Case Bolts

Half Size Cuts

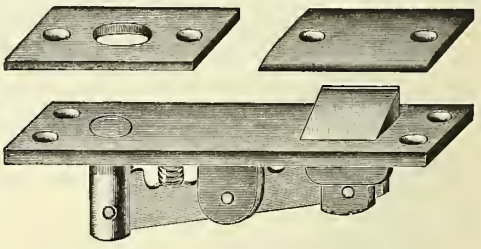
Made Right or Left Hand. State which wanted. Illustrations show Left Hand



No. 1406 Cast brass, polished, 2½ inches long. Packed with screws. Dozen..... $7.20



No. 1407 Wrought brass, polished, ⅝ x 3¼ inches. Packed with screws. Dozen..... $7.20



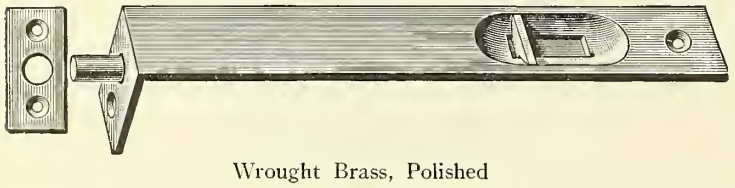
No. 1407½ Cast bronze, polished, ⅞ x 4⅜ inches. Packed with screws. Dozen..... $18.00

Flush Cabinet Bolts



Wrought brass, polished. Packed with screws. For strikes, add $0.25 dozen to list prices.

Length, inches.....	2	2½	3	3½	4	5	6
No. 30 ⅜ inch wide, dozen.....	$1.10	1.20	1.40	1.70	1.90		
No. 40 ½ inch wide, dozen.....	....	1.40	1.60	....	2.20	2.70	3.10



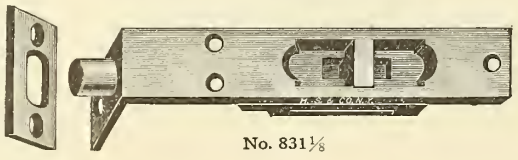
Wrought Brass, Polished
Packed with screws and strikes

Length, inches.....	4	5	6	8	10	12
No. 50 ⅝ inch wide, dozen..	$3.50	3.90	4.50	6.50	7.30	
No. 60 ¾ inch wide, dozen..	3.90	4.30	5.10	7.10	9.60	11.20



No. 16 P. ⅝ inch wide, cast bronze, polished.
No. O.B. 16 ⅝ inch wide, cast brass, old brass finish.
Packed with screws and strikes

Length, inches.....	3½	5	10	15	24
No. 16 P. Dozen.....	$12.40	13.90	25.90	32.40	46.30
No. O.B. 16 Dozen.....	13.90	15.40	28.70	35.20	50.00



No. 831⅛

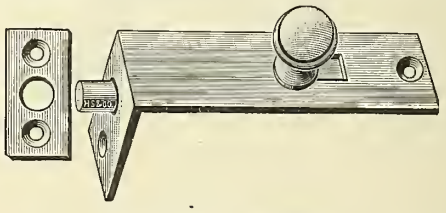


No. 111 ¾ inch wide. Cast brass, polished. Packed with screws and strikes.

Length, inches.....	3	4	6	10	12
Dozen.....	$4.80	6.00	8.34	13.80	15.78



No. 55P Wrought bronze, polished, ⅝ x 4 inches. Packed with screws and strikes. Dozen..... $4.90



Cast Bronze, Polished
Packed with screws and strikes
No. 56 P. ⅝ inch wide

Length, inches.....	2	3
Dozen.....	$4.00	4.90

No. 66 P. ¾ inch wide

Length, inches.....	3	4	6	12
Dozen.....	$4.90	6.20	7.40	13.90

No. 831⅛ Cast bronze, polished, ⅝ inch wide. Packed with screws and strikes.

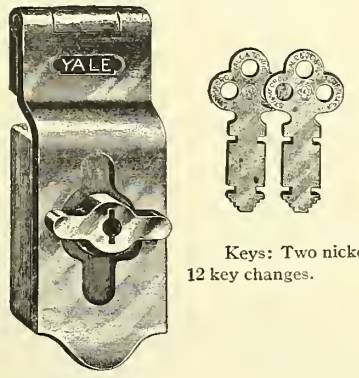
Length, inches.....	3	4	5
Dozen.....	$8.66	10.66	11.86

Secure Lever Locks

Yale Flat Key

For Tool Boxes

Half Size Illustrations



Showing Lock Closed

Keys: Two nickel-plated flat steel. 12 key changes.

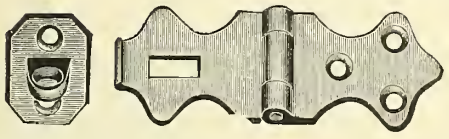
This Lock is designed especially for use on tool boxes where a permanently attached lock is desired. The lock and hasp are attached to the box with rivets or screws.

Lock is operated by a quarter turn of thumb-turn. The key operation securely deadlocks thumb-turn, making it impossible to operate same until released by key.

When hasp is in the locked position (as shown in illustration) all means of attachment are entirely concealed.

No. TAS00 Made of cast brass, buffed, 3½ inches long by 1¼ inches wide, dozen..... $15.00

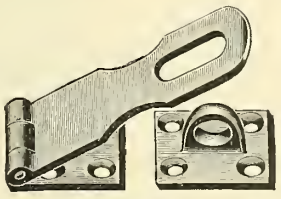
Hinge Box Hasps



No. 10 Cast brass, polished, 3½ inches long, dozen..... $3.50
Staples only, dozen..... 1.50



No. 03009¼ Wrought brass, polished, 4⅝ inches long, dozen.. $2.40
Staples only, dozen..... .90



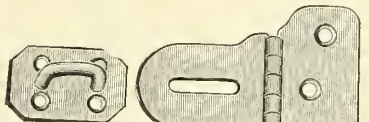
Safety Type

Cast Brass, Polished

No. 100 Length 2⅞ inches, dozen, $4.20; staples only, dozen, $1.80
No. 101½ Length 3¾ inches, dozen, 5.40; staples only, dozen, 1.80

Wrought Brass, Polished

No. 1862C. Length 2¾ inches, dozen, $2.40; staples only, dozen, .90



No. 03025¼ Wrought brass, polished, 2⅜ inches long, dozen.. $1.70
Staples only, dozen..... .90



No. 803 Wrought brass, polished, 3 inches long, gross..... $8.40
Staples only, dozen..... .55

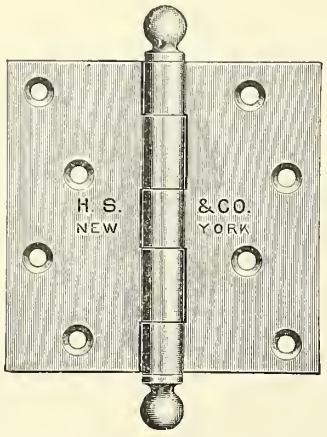


Wrought Brass, Polished

No. 804 Length 2¾ inches, gross....$9.30 Staples only, dozen..$ .90
No. 806 Length 3⅝ inches, gross....20.00 Staples only, dozen.. .90

Loose Pin Ball Tipped Butts

Cast Brass and Bronze



Per dozen pairs, packed with screws

Size Open Inches	No. 213 Cast Brass Polished	No. 2213 Cast Bronze Polished	No. O.B. 213 Cast Brass Old Brass Finish	No. S.B. 2213 Cast Bronze Statuary Bronze Finish
2 x 1½	$9.45	$9.45	$10.80	
2 x 1¾	10.35	10.35	11.70	
2 x 2	11.25	11.25	12.60	$12.60
2½ x 1¾	12.15	12.15	13.95	
2½ x 2	13.05	13.05	14.85	
2½ x 2½	13.95	13.95	15.75	15.75
3 x 2	15.21	15.21	17.01	17.01
3 x 2½	16.65	16.65	18.45	
3 x 3	20.25	20.25	22.05	22.05

Heavy Steel Bushed

Per pair, packed with screws

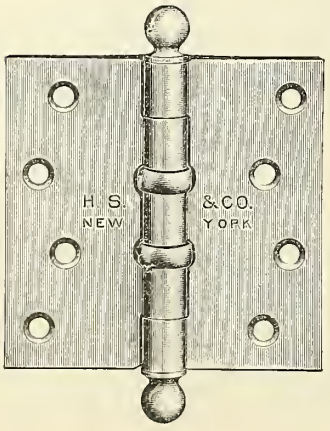
Size Open Inches	No. 2214 Cast Bronze Polished	No. A.C. 2214 Cast Bronze Antique Copper Polished	No. O.B. 214 Cast Brass Old Brass Finish	No. S.B. 2214 Cast Bronze Statuary Bronze Finish	No. N. 2214 Cast Bronze Nickel-plated
3½ x 3½	$2.55	$2.70	$2.70	$2.70	$2.70
4 x 4	3.00	3.30	3.30	3.30	3.30
4½ x 4½	3.75	4.05	4.05	4.05	4.05
5 x 5	4.50	4.80	4.80	4.80	4.80
5½ x 5½	7.20	7.65	7.65	7.65	
5 x 6	9.00	9.45	9.45	9.45	
5 x 7	7.20	7.65	7.65	7.65	
6 x 6	9.00	9.45	9.45	9.45	

Extra Heavy Steel Bushed

Per pair, packed with screws

Size Open Inches	No. 2215 Cast Bronze Polished	No. A.C. 2215 Cast Bronze Antique Copper Finish	No. O.B. 215 Cast Brass Old Brass Finish	No. S.B. 2215 Cast Bronze Statuary Bronze Finish
4 x 4	$4.04	$4.35	$4.35	$4.35
4½ x 4½	5.25	5.55	5.55	5.55
5 x 5	6.00	6.30	6.30	6.30
5½ x 5½	8.00	8.46	8.46	8.46
5 x 6	8.43	8.88	8.88	8.88
6 x 6	10.00	10.44	10.44	10.44
6 x 7	15.00	15.45	15.45	15.45
6 x 8	17.25	17.70	17.70	17.70

Ball Bearing



Wrought Bronze

Per pair, packed with screws

Size Open Inches	No. 2223 Polished Bronze	No. S.B. 2223 Statuary Bronze	No A.C. 2223 Antique Copper	No. O.B. 223 Old Brass
4 x 4	$3.55	$3.85	$3.85	$3.85
5 x 5	5.05	5.35	5.35	5.35
6 x 6	9.50	10.00	10.00	10.00

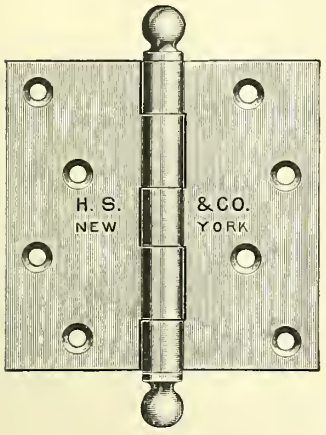
Wrought Steel

Per pair, packed with screws

Size Open Inches	No. B. 23 Bronze Plated Polished	No. S.B. 23 Statuary Bronze	No. A.C. 23 Antique Copper	No. O.B. 23 Old Brass
4 x 4	$1.67	$1.71	$1.71	$1.71
5 x 5	2.04	2.08	2.08	2.08
6 x 6	2.60	2.63	2.63	2.63

SEE DISCOUNT SHEET

Loose Pin, Ball Tipped Butts

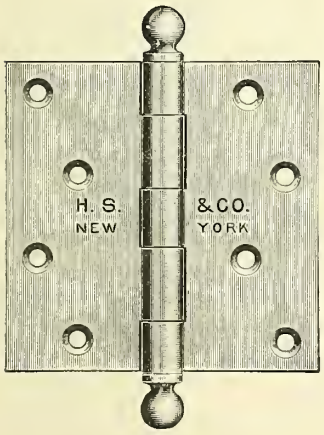


Wrought Steel, Polished

Per pair, packed with screws

Size, Open Inches	No. B. 24 Bronze Plated Polished	No. S.B. 24 Statuary Bronze	No. A.C. 24 Antique Copper	No. O.B. 24 Old Brass	No. B.B. 24 Bower-Barff	No. N. 24 Nickeled
2 x 2	$ .63	$ .67	$ .67	$ .67	$ .82	$ .78
2½ x 2	.68	.72	.72	.72	.90	.83
2½ x 2½	.70	.74	.74	.74	.93	.85
3 x 2½	.80	.84	.84	.84	1.05	.95
3 x 3	.82	.86	.86	.86	1.08	1.00
3½ x 3	.94	.98	.98	.98	1.30	1.12
3½ x 3½	.96	1.00	1.00	1.00	1.34	1.15
4 x 4	1.12	1.15	1.15	1.15	1.52	1.30
4½ x 4½	1.30	1.34	1.34	1.34	2.00	1.50
5 x 5	1.50	1.52	1.52	1.52	2.40	1.67
5½ x 5½	1.85	1.89	1.89	1.89	3.04	2.04
6 x 6	2.04	2.08	2.08	2.08	3.63	2.22

The 3½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 3½-inch have three knuckles

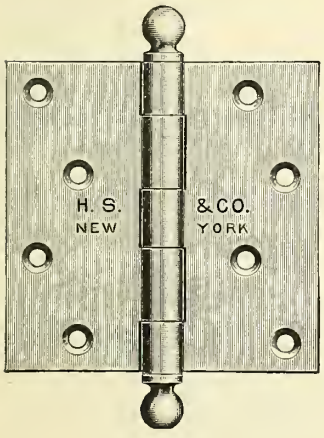


Wrought Steel, Planished

Per pair, packed with screws

Size Open Inches	No. B. 25 Bronze Plated	No. A.C. 25 Antique Copper	No. O.B. 24 Old Brass
2 x 2	$ .34	$ .34	$ .34
2½ x 2½	.35	.35	.35
3 x 3	.38	.38	.38
3½ x 3½	.40	.40	.40
4 x 4	.47	.47	.47
4½ x 4½	.74	.74	.74
5 x 5	.94	.94	.94
6 x 6	1.40	1.40	1.40

The 3½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 3½-inch have three knuckles



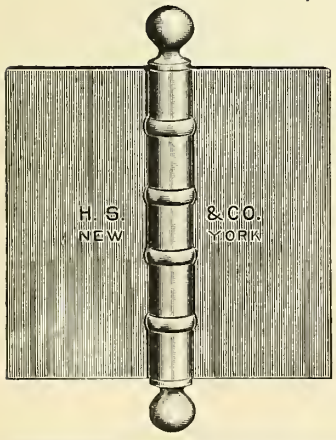
Wrought Steel, Heavy

Per pair, packed with screws

Size Open Inches	Screw Holes in Each Butt	Size of Screw No.	Per Dozen Pairs No. 26 Bright Steel	Per Dozen Pairs No. J. 26 Japanned
2½ x 2½	6	8	$1.60	$2.00
3 x 3	6	9	1.85	2.15
3½ x 3½	6	10	2.25	2.40
4 x 4	8	10	2.75	2.90
4½ x 4½	8	11	3.35	4.00
5 x 5	8	12	4.50	5.50
6 x 6	8	13	7.00	9.20

Size Open Inches	No. G. 26 Galvanized with Brass Pins Galvanized Steel Tips
2½ x 2½	$ .40
3 x 3	.50
3½ x 3½	.65
4 x 4	.80
4½ x 4½	1.05
5 x 5	1.40
5½ x 5½	1.75
6 x 6	2.10

The 3½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 3½-inch have three knuckles

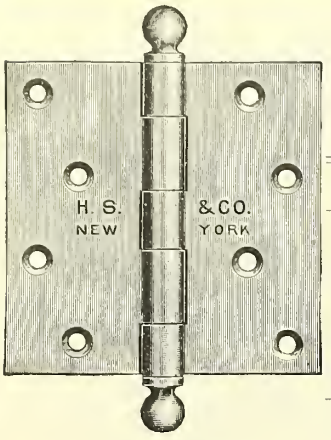


Wrought Steel Extra Heavy, Ball Bearing

These Butts are designed for heavy iron work and are furnished in plain steel without screw holes. They have four ball-bearing washers, and will not bear down under any weight. They can be cut down in width to suit special requirements.

No. 27

Size Open, Inches	Per Pair	Size Open, Inches	Per Pair
6 x 6	$5.00	7 x 8	$7.50
6 x 7	5.50	7 x 10	8.00
6 x 8	6.00	8 x 6	8.50
7 x 6	6.50	8 x 8	9.80
7 x 7	7.00	8 x 10	11.00



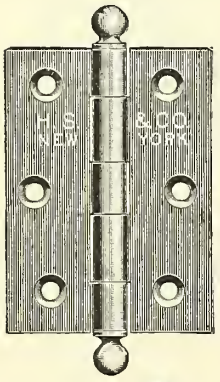
Loose Pin Ball Tipped Butts

Light, Wide Wrought Steel, Planished

Per dozen pairs, packed with screws

Size Open, Inches	No. B. 28 Planished Bronze	No. S.B. 28 Statuary Bronze	No. A.C. 28 Antique Copper	No. O.B. 28 Old Brass
2 x 2	$4.00	$4.45	$4.45	$4.45
2 x 2½	4.10	4.55	4.55	4.55
2 x 3	4.25	4.70	4.70	4.70
2½ x 2	4.15	4.60	4.60	4.60
2½ x 2½	4.25	4.70	4.70	4.70
2½ x 3	4.50	4.95	4.95	4.95
3 x 2½	4.85	5.30	5.30	5.30
3 x 3	5.00	5.45	5.45	5.45

The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.

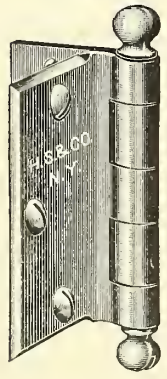


Light, Narrow Wrought Steel, Planished

Per dozen pairs, packed with screws

Size Open, Inches	No. B. 29 Planished Bronze	No. S.B. 29 Statuary Bronze	No. A.C. 29 Antique Copper	No. O.B. 29 Old Brass
1½ x 1 7/16	$2.90	$3.35	$3.35	$3.35
1¾ x 1 7/16	3.20	3.65	3.65	3.65
2 x 1 9/16	3.60	4.05	4.05	4.05
2¼ x 1 11/16	3.75	4.20	4.20	4.20
2½ x 1 11/16	3.90	4.35	4.35	4.35
3 x 2	4.60	5.05	5.05	5.05
3½ x 2¼	5.50	6.00	6.00	6.00
4 x 2 7/16	6.50	7.00	7.00	7.00

The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.



Ornamental Surface Door Butts

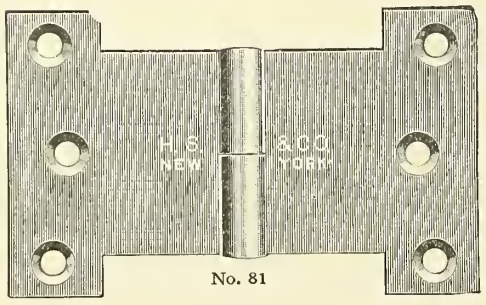
Beveled Edge. Wrought Steel, Planished

These Hinges are reversible, and can be made either right or left hand by unscrewing the ball tip, reversing the pin and screwing the tip in the opposite end. One tip is slotted so it may be easily taken out with a screwdriver. Time and labor are saved in hanging doors with these hinges as the casement only is mortised, the door put in place and the ornamental leaf screwed to the surface of the door.

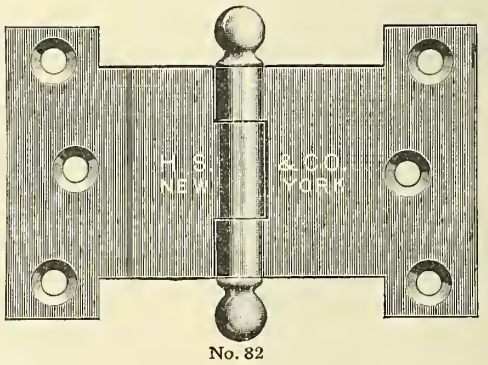
Per pair, packed with screws

Length of Joint Inches	No. B. 31 Bronze	No. O.B. 31 Old Brass	No. N. 31 Nickeled
3	$ .63	$ .63	$ .78
3½	.69	.69	.86
4	.80	.80	.98
4½	1.04	1.04	1.22

Wrought Steel Parliament Butts



No. 81



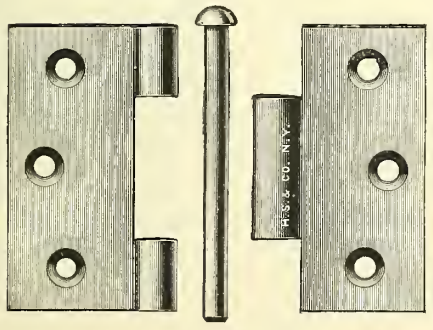
No. 82

Per dozen pairs, packed with screws

Width open, inches	3½	4	4½	5	6
Size of screw, number	9	9	9	9	10
Width between flanges, inches	2	2 7/16	2 7/8	3 3/8	4 3/16
Length of joint, inches	1¾	1¾	1¾	1¾	2
Length of sides, inches	2 7/16	2 7/16	2 7/16	2 7/16	2 11/16
No. B. 81, planished and bronzed	$7.50	8.10	8.80	9.70	11.60
No. G.B. 81, galvanized, with brass pins	6.75	7.30	7.90	8.75	10.50
With ball tips and loose pins, No. B. 82, planished and bronzed	4.85	5.30	5.80	6.50	8.00

Loose Pin Butts

Wrought Steel. Reversible. Heavy

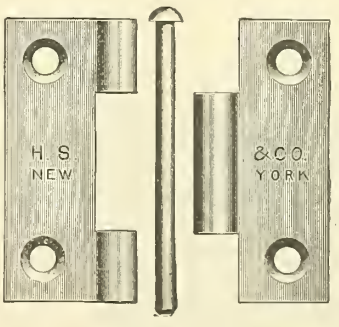


Size Open Inches	Screw Holes in Each Butt	Size of Screw Number	No. 32 Bright Steel Per Dozen Pair	No. B32 Planished Light Bronze Per Dozen Pair Packed with Screws
2 x 2	4	7	$1.40	$2.80
2 x 2½	4	7	1.50	3.00
2½ x 2	6	8	1.60	3.60
2½ x 2½	6	8	1.80	3.80
2½ x 3	6	8	2.20	3.95
3 x 2½	6	9	2.40	4.20
3 x 3	6	9	2.60	4.50
3 x 3½	6	9	3.00	4.90
3½ x 3	6	10	3.60	5.30
3½ x 3½	6	10	3.80	5.60
3½ x 4	6	10	4.30	5.90
4 x 3½	8	10	4.60	6.30
4 x 4	8	10	4.70	6.80
4 x 4½	8	10	4.80	7.15
4½ x 4	8	11	5.30	7.90
4½ x 4½	8	11	5.90	8.50
5 x 5	8	12	7.70	11.00
5½ x 5½	8	13	9.60	13.00
6 x 6	8	13	11.40	14.00

The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.

Wrought Steel. Reversible. Light

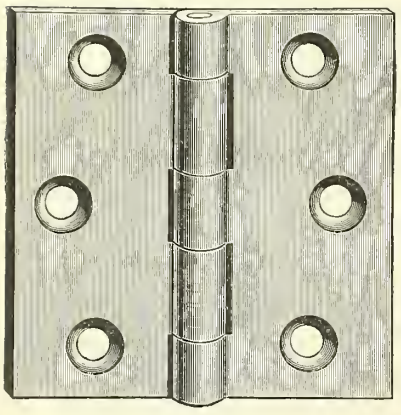
Size Length Inches	Width Open Inches	Screw Holes in Each Butt	Size of Screw Number	No. 33 Bright Steel Per Dozen Pair	No. B33 Planished Light Bronze Per Dozen Pair Packed With Plated Screws
1½	1 7/16	4	5	$ .90	$1.05
1¾	1 7/16	4	5	1.00	1.16
2	1 9/16	4	6	1.10	1.30
2¼	1 11/16	6	6	1.25	1.44
2½	1 11/16	6	6	1.45	1.57
2¾	1 7/8	6	7	1.55	1.65
3	2	6	7	1.80	1.75
3¼	2 1/8	6	8	2.25	2.10
3½	2 1/4	6	8	2.70	2.40
3¾	2½	6	8	3.30	3.00
4	2 7/8	8	9	3.70	3.00
4½	3	8	10	4.45	
5	3 3/16	8	10	5.50	
5½	3 11/16	8	10	7.50	
6	3 15/16	8	11	8.85	



The 2½-inch and larger sizes have five knuckles in the joint. Sizes smaller than 2½-inch have three knuckles.

Fast Joint Butts

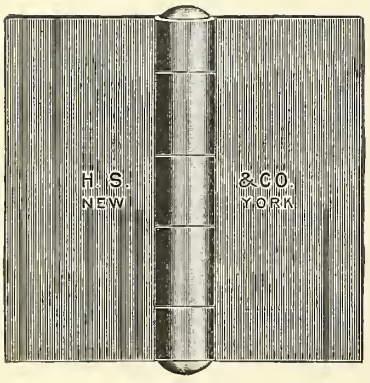
Cast Brass and Bronze. Brass Pin



Per Dozen Pairs

Size Inches	No. E. 242 Cast Brass Emery Finish Without Screws	No. 242 Cast Brass Polished With Screws	No. O.B. 242 Cast Brass Old Brass Finish With Screws	No. 2242 Cast Bronze Polished With Screws	No. S.B. 2242 Cast Bronze Statuary Bronze Finish, with Screws
1½ x 1¼	$3.30	$4.50	$5.85	$4.50	$5.85
1½ x 1½	3.60	5.04	6.39	5.04	6.39
1¾ x 1½	3.99	5.40	6.75	5.40	6.75
1¾ x 1¾	4.20	5.58	6.93	5.58	6.93
2 x 1½	4.59	7.20	8.55	7.20	8.55
2 x 2	5.40	9.00	10.35	9.00	10.35
2¼ x 2	6.30	9.36	11.16	9.36	11.16
2½ x 1¾	6.66	9.90	11.70	9.90	11.70
2½ x 2	7.20	10.80	12.60	10.80	12.60
2½ x 2½	8.10	11.70	13.50	11.70	13.50
3 x 2	9.00	12.96	14.76	12.96	14.76
3 x 2½	10.26	14.40	16.20	14.40	16.20
3 x 3	12.00	18.00	19.80	18.00	19.80
3½ x 3	18.00	22.50	24.30	22.50	24.30
3½ x 3½	19.80	25.20	27.00	25.20	27.00
4 x 4	28.80	32.40	36.00	32.40	36.00

Wrought Steel. Extra Heavy. Without Screw Holes. For Iron Shutters, Gates, Jail Work, Etc.

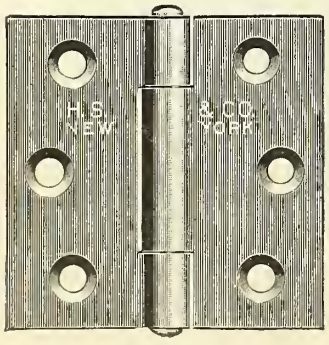


No. 43 Plain Steel

Size Open, Inches	Per Dozen Pairs	Size Open, Inches	Per Dozen Pairs
2 x 2	$1.80	3½ x 5	$7.00
2½ x 2½	3.00	4 x 3	7.00
3 x 3	4.00	4 x 3½	7.50
3 x 3½	4.50	4 x 4	8.00
3½ x 3	5.50	4 x 5	9.50
3½ x 3½	6.00	4½ x 4½	10.00
3½ x 4	6.50	5 x 5	15.00

Wrought Steel. Broad

No. 44 Plain Steel



Size Open, Inches	Screw Holes in Each Butt	Size of Screw Number	Per Dozen Pairs
3 x 3	6	9	$2.40
3½ x 3½	6	10	3.50
4 x 4	8	10	4.30
4½ x 4½	8	11	5.60
5 x 5	8	12	6.90
6 x 6	8	13	10.20

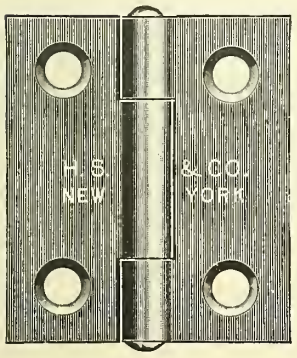
Plated. Per Dozen Pairs. Packed with Screws

Size Open, Inches	No. B. 44 Planished Bronze	No. O.B. 44 Planished Old Brass	No. A.C. 44 Planished Antique Copper	No. G.B. 44 Galvanized With Brass Pins
3 x 3	$2.70	$3.40	$3.40	$3.60
4 x 4	4.10	4.80	4.80	6.80
4½ x 4½	5.10	5.80	5.80	8.50
5 x 5	6.60	7.30	7.30	12.00
6 x 6	10.50	11.20	11.20	16.30

SEE DISCOUNT SHEET

Fast Joint Butts

Wrought Steel. Narrow



No. 45 Bright Steel

Length Inches	Width, Open Inches	Screw Holes in Each Butt	Size of Screws Number	Dozen Pairs
1	1 3/16	4	5	$ .40
1 1/4	1 5/16	4	6	.50
1 1/2	1 7/16	4	6	.65
1 3/4	1 9/16	4	6	.80
2	1 11/16	4	7	.90
2 1/4	1 3/4	6	7	1.05
2 1/2	1 7/8	6	7	1.10
2 3/4	2	6	8	1.30
3	2 1/8	6	8	1.45
3 1/4	2 3/16	6	8	1.70
3 1/2	2 1/2	6	9	2.00
3 3/4	2 5/8	6	9	2.70
4	2 7/8	8	9	2.85
4 1/2	3	8	10	3.70
5	3 1/4	8	11	4.60
5 1/2	3 13/16	8	11	6.00
6	4 1/16	8	12	7.10
7	4 3/8	8	13	11.50
8	4 7/8	8	14	19.00

Plated. Per Dozen Pairs. Packed with Screws

No. 45 Steel

Length Inches	No. B. 45 Planished Bronze Plated	No. A.C. 45 Planished Antique Copper	No. S.B. 45 Planished Statuary Bronze	No. O.B. 45 Planished Old Brass	No. 1315 Galvanized With Brass Pins
1	$ .70	$1.00	$1.00	$1.00	
1 1/4	.75	1.07	1.07	1.07	
1 1/2	.82	1.15	1.15	1.15	$1.00
1 3/4	.90	1.22	1.22	1.22	1.25
2	1.05	1.37	1.37	1.37	1.40
2 1/4	1.25	1.57	1.57	1.57	
2 1/2	1.40	1.75	1.75	1.75	1.90
3	1.70	2.35	2.35	2.35	2.50
3 1/2	2.20	2.85	2.85	2.85	3.70
4	3.00	3.65	3.65	3.65	5.00
4 1/2	4.00	4.65	4.65	4.65	6.00
5	5.00	5.65	5.65	5.65	7.70

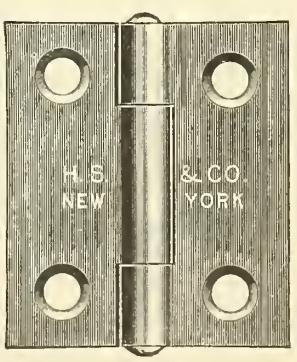
No. 46 Steel

Length Inches	No. B. 46 Planished Bronze Plated	No. AC. 46 Planished Antique Copper	Nos. B. 46 Planished Statuary Bronze	No. O.B 46 Planished Old Brass	No. B.B. 46 Bower Barff	No. G. 46 Galvanized With Brass Pins
3/4	$ .50	$ .82	$ .82	$ .82		
1	.65	.97	.97	.97		
1 1/4	70	1.02	1.02	1.02		
1 1/2	.75	1.07	1.07	1.07		$ .90
1 3/4	.83	1.15	1.15	1.15		
2	.92	1.25	1.25	1.25	2.70	1.30
2 1/4	1.03	1.35	1.35	1.35	3.40	1.50
2 1/2	1.13	1.45	1.45	1.45	3.95	1.70
2 3/4	1.20	1.55	1.55	1.55		
3	1.25	1.85	1.85	1.85	5.20	2.30
3 1/4	1.60	2.25	2.25	2.25		
3 1/2	1.90	2.55	2.55	2.55	7.00	3.50
3 3/4	2.25	2.90	2.90	2.90		
4	2.50	3.15	3.15	3.15		4.80
4 1/2	3.35	4.00	4.00	4.00		
5	4.20	4.85	4.85	4.85		

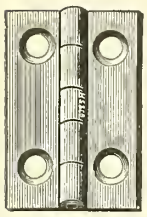
Wrought Steel. Light Narrow

No. 46 Bright Steel

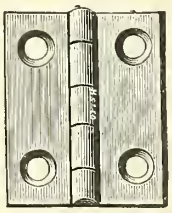
Length Inches	Width, Open Inches	Screw Holes in Each Butt	Size of Screws Number	Dozen Pairs
3/4	11/16	4	2	$ .40
1	1	4	3	.40
1 1/4	1 1/16	4	4	.50
1 1/2	1 7/16	4	5	.65
1 3/4	1 7/16	4	5	.80
2	1 9/16	4	6	.90
2 1/4	1 11/16	6	6	1.05
2 1/2	1 11/16	6	6	1.10
2 3/4	1 7/8	6	7	1.30
3	2	6	7	1.45
3 1/4	2 1/8	6	8	1.70
3 1/2	2 1/4	6	8	2.00
3 3/4	2 1/2	6	8	2.70
4	2 7/8	8	9	2.85
4 1/2	3	8	10	3.70
5	3 3/16	8	10	4.60
5 1/2	3 11/16	8	10	6.00
6	3 15/16	8	11	7.10



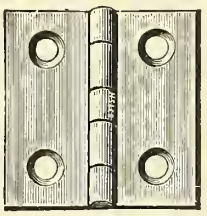
Wrought Brass Butts



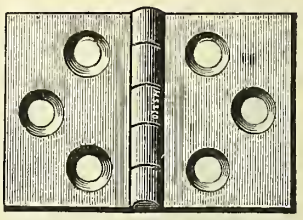
1-inch Narrow



1-inch Middle



1-inch Broad



1-inch Desk

Narrow, Middle and Broad Butts up to and including 1½-inch have four screw holes. Larger sizes and all Desk Butts have six screw holes.

	NARROW			MIDDLE			BROAD			DESK		
Length Inches	Width Open Inches	Size Screw Number	Dozen Pairs	Width Open Inches	Size Screw Number	Dozen Pairs	Width Open Inches	Size Screw Number	Dozen Pairs	Width Open Inches	Size Screw Number	Dozen Pairs
½	7/16	0	$ .24	9/16	0	$ .26	5/8	0	$ .28			
¾	5/8	1	.28	11/16	2	.30	1	2	.32	1 5/16	2	$ .40
⅞	5/8	1	.30	13/16	2	.34	29/32	2	.36	1 13/32	3	.50
1	¾	2	.32	13/16	3	.38	1 1/32	3	.40	1½	4	.60
1⅛	11/16	2	.40	27/32	3	.44	1	3	.48	1 5/8	4	.72
1¼	¾	3	.46	⅞	3	.48	1 1/16	3	.54	1⅞	4	.84
1⅜	⅞	4	.50	31/32	4	.56	1⅛	4	.60	2	5	1.10
1½	⅞	3	.52	1	4	.60	1¼	4	.68	2	5	1.20
1⅝	29/32	4	.60	1 1/16	4	.68	1¼	4	.76	2 5/16	5	1.50
1¾	29/32	4	.68	1	4	.76	1¼	4	.84	2 7/16	6	2.00
1⅞	1 1/16	5	.76	1 3/16	5	.84	1 5/16	5	.96	2¾	7	2.40
2	1	5	.80	1 3/16	5	.92	1⅜	5	1.04	3 1/16	7	2.80
2¼	1 3/16	6	1.12	1 5/16	6	1.30	1½	6	1.50			
2½	1 11/32	7	1.40	1 17/32	7	1.70	1¾	7	2.00			
2¾	1½	7	2.00	1 5/8	7	2.30	1⅞	7	2.60			
3	1 5/8	7	2.50	1⅞	8	3.00	2⅛	8	3.50			

We can furnish these Butts in quantities in any finish. Prices quoted on receipt of specifications. They can be furnished polished on face only on face and back of joint, or on back of joint only.

Continuous Hinges

Full Size Cut



The following lengths are carried regularly in stock: 51, 52, 52½, 53, 53½, 54, 54½, 55, 55½, 56, 56½, 57, 58, 58½, 59, 60, 61, 61½, 62, 62½, 63, 63½ and 64 inches in nickel-plated; in brass polished we have 54 and 62 inches. We can supply any length to order up to 72 inches. Special facilities for supplying talking machine and humidor lengths.

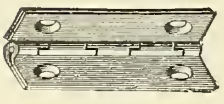
We can also supply hinges of special design for automobile wind shields, etc.

Brass, Polished or Nickel-plated, Double Metal

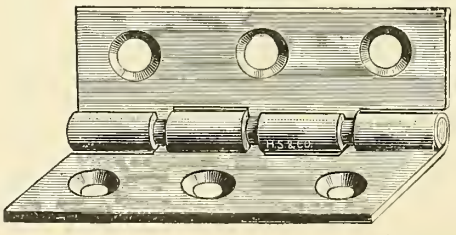
Case lots (50 hinges), per foot..... $ .11
Less than case lots, per foot..... .12½

Stop Butts

Wrought Brass



No. 274N 1 inch long, for ¼-inch stock. Double thick brass, nickeled. Suitable for jewelry cases, light boxes, etc. Gross pairs..... $9.00



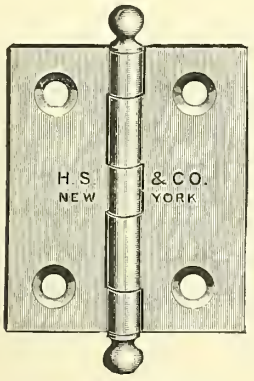
Length Inches	Width of Flap from Center of Pin Inch	Size Screw Number	Holes in Each Butt	Dozen Pairs: Number 248D Brass	Dozen Pairs: Number 248N Nickel-plated
1	3/8	2	4	$ .85	$1.25
1¼	3/8	2	4	1.20	1.60
1½	7/16	3	4	1.40	1.90
1¾	½	5	6	1.70	2.20
2	5/8	6	6	2.00	2.50

We also have the 2-inch size with one wide flap, measuring ⅞ inch from center of pin; other flap is ⅝ inch.

No. 249D Brass, dozen pairs..... $2.25
No. 249N Nickel-plated, dozen pairs..... 2.75

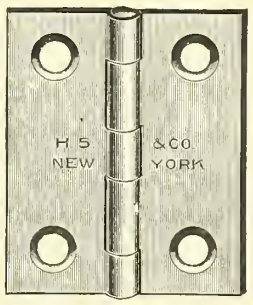
Wrought Steel Furniture Butts

Per 100 Dozen Pairs. Packed in Bulk, without Screws



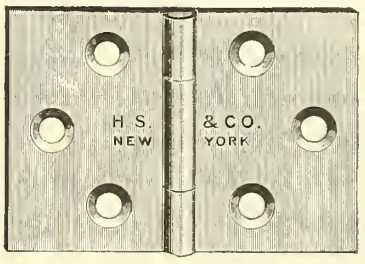
Nos. 298 and 299

No. 298 1½-inch tight pin, ball tips.
No. 299 1½-inch loose pin, ball tips.



No. 300

1½-inch, tight pin, no tips



No. 308

1¼-inch, tight pins, flush riveted

These Butts are made from cold rolled steel, which gives them a bright smooth surface

Length Inches	Pattern	Width Open Inches	Screws: Length Inch	Screws: Number	Dozen Pairs in a Case	No. 298C7 Brass-plated	No. 298D Dull, Copper-plated	No. 298N9 Nickel-plated	No. 299C7 Brass-plated	No. 299D Dull, Copper-plated	No. 299N7 Nickel-plated
1	Regular	1	½	3	200	$16.50	$16.50	$27.59	$20.00	$20.00	$29.86
1¼	Regular	1	½	4	200	18.22	18.22	29.30	21.00	21.00	.30.86
1½	Regular	1¼	½	4	200	19.89	19.89	30.57	22.50	22.50	33.07
1½	Special	1½	½	4	100	24.83	24.83	35.51	26.00	26.00	36.68
1¾	Regular	1¼	½	5	100	23.11	23.11	33.83	24.76	24.76	35.21
1¾	Special	1 9/16	½	5	100	25.22	25.22	35.94	27.50	27.50	37.96
2	Regular	1⅜	½	5	100	25.44	25.44	37.00	27.78	27.78	39.33
2	Special	1¾	½	5	100	30.56	30.56	37.90	32.78	32.78	44.33
2½	Regular	1 11/16	¾	6	50	29.72	29.72	37.07	32.70	32.70	44.25

In above table the 1¾, 2 and 2½-inch Butts have six screw holes; smaller sizes, four

Length Inches	Pattern	Width Open Inches	Screws: Length Inch	Screws: Number	Dozen Pairs in a Case	No. 300 Bright Steel	No. 300C7 Brass-plated	No. 300D Dull Copper-plated	No. 300N7 Nickel-plated
¾	Broad	1 1/16	⅜	3	300	$6.90	$7.67	$7.67	$16.63
1	Middle	27/32	⅜	3	300	7.00	7.78	7.78	17.63
1	Broad	1	⅜	3	300	7.30	8.11	8.11	17.97
1¼	Broad	1	½	4	200	9.60	10.67	10.67	20.52
1½	Broad	1¼	½	4	200	10.66	11.83	11.83	22.52
1½	Broad special	1½	½	4	100	12.90	14.33	14.33	25.01
1¾	Broad	1¼	½	5	100	12.86	14.28	14.28	24.88
1¾	Broad special	1 9/16	½	5	100	15.26	16.94	16.94	27.54
2	Broad	1⅜	½	5	100	15.00	16.67	16.67	28.22
2	Broad special	1¾	½	5	100	19.50	21.67	21.67	33.22

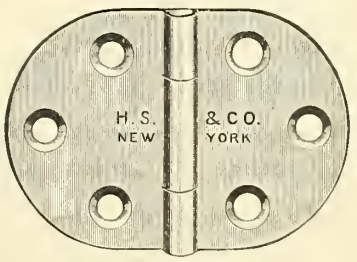
In above table the 1¾ and 2-inch butts have six screw holes; smaller sizes, four

Length Inches	Width Open Inches	Screws: Length, Inch	Screws: Number	Dozen Pairs in a Case	No. 308 Bright Steel	No. 308C7 Brass-plated	No. 308D Dull Copper-plated	No. 308N7 Nickel-plated
1	1½	½	4	200	$10.00	$11.11	$11.11	$20.97
1¼	1 13/16	½	5	100	12.00	13.33	13.33	22.44
1½	2	⅝	5	100	14.00	15.56	15.56	26.23

No. 310 Loose joint, ball tips, four screw holes.

1½ inches long; 1¼ inches wide, open. Takes No. 4 screw, ½ inch long. 100 dozen pairs in a case.

No. 310C7 Brass-plated $27.78
No. 310D Dull copper-plated 27.78
No. 310N7 Nickel-plated 38.46

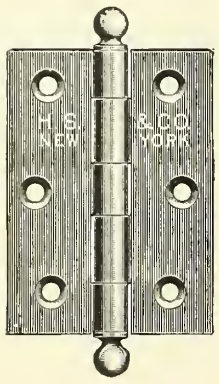


No. 309 Tight pins, flush riveted

1¼ inches long; 1 13/16 inches wide, open. Takes No. 5 Screw, ½ inch long. 100 dozen pairs in a case.

No. 309 Bright steel $14.00
No. 309C7 Brass-plated 15.56
No. 309D Dull, copper-plated 15.56
No. 309N7 Nickel-plated 25.41

Wrought Brass Furniture Butts

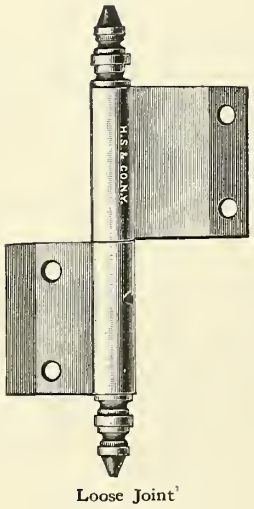


No. 110 Polished on face and back of joint.
No. 110N Nickel-plated and polished on face and back of joint.
No. 111 Dipped.
Other finishes to order. Price on receipt of specifications and quantities.

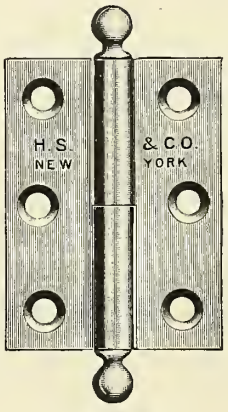
Size Inches	Size Screw No.	No. 110	No. 110NP	No. 111
1¼x1⅛	3	....	....	$1.00
1½x1¼	4	$2.10	....	1.20
1¾x1¼	4	....	....	1.40
2 x1⅜	5	3.30	$3.30	1.80
2 x1¾	6	3.50	....	1.90
2½x1¾	7	4.30	4.30	2.60
3 x2⅛	8	6.60	....	5.00

Wardrobe Hinges

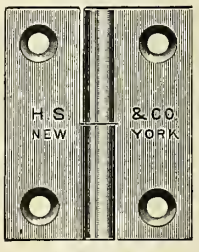
Wrought Steel



Loose Joint
German Pattern
Nos. 90 and K90



Loose Joint
American Pattern
Nos. 92 and K92



Loose Joint
American Pattern
Nos. 94 and K94

List Per Dozen Pairs

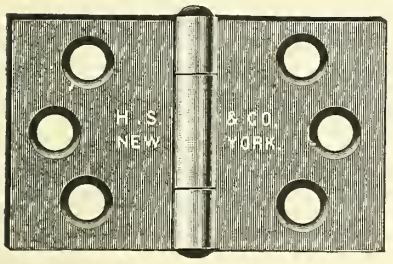
No.	Finish	Packed	Length 1¾ Inches	Length 2 Inches	Length 2½ Inches
90	Bright Steel	Without Screws	.....	.....	$2.45
K90	Brass-plated	Without Screws	.....	.....	3.15
92	Bright Steel	Without Screws	.....	.....	2.40
K92	Brass-plated	With Screws	.....	.....	3.50
94	Bright Steel	Without Screws	$1.00	$1.10	1.45
K94	Brass-plated	With Screws	1.50	1.90	2.30

SEE DISCOUNT SHEET

Inside Blind Butts

Wrought Steel

Per Dozen Pairs



Size, Inches	Size Screw Number	No. 51 Bright Steel Without Screws	No. B51 Planished Bronze Packed with Screws to Match
$\frac{7}{8}$ x $1\frac{9}{16}$	4	$ .55	$ .70
1 x $1\frac{5}{8}$	4	.60	.75
$1\frac{1}{8}$ x $1\frac{3}{4}$	5	.65	.80
$1\frac{1}{4}$ x $1\frac{7}{8}$	5	.70	.84
$1\frac{3}{8}$ x 2	5	.75	.90
$1\frac{1}{2}$ x $2\frac{1}{8}$	5	.80	.95
$1\frac{3}{4}$ x $2\frac{3}{8}$	5	.95	1.05
2 x $2\frac{1}{2}$	6	1.20	1.30
$2\frac{1}{2}$ x $2\frac{1}{2}$	6	1.60	1.75
3 x 3	7	2.00	2.25

Cast Brass and Bronze

Per Dozen Pairs, Packed with Screws to Match

Size, Inches	No. 251 Cast Brass Polished	No. 2251 Cast Bronze Polished
$1\frac{1}{4}$ x $1\frac{3}{4}$	$5.04	$5.04
$1\frac{1}{4}$ x 2	6.30	6.30
$1\frac{1}{4}$ x $2\frac{1}{4}$	7.95	7.95
$1\frac{1}{2}$ x $1\frac{3}{4}$	5.40	5.40
$1\frac{1}{2}$ x 2	7.20	7.20
$1\frac{1}{2}$ x $2\frac{1}{2}$	9.54	9.54
$1\frac{1}{2}$ x 3	11.70	11.70
$1\frac{3}{4}$ x 2	$8.10	$8.10
$1\frac{3}{4}$ x $2\frac{1}{2}$	9.90	9.90
2 x $2\frac{1}{2}$	10.80	10.80
2 x 3	12.96	12.96

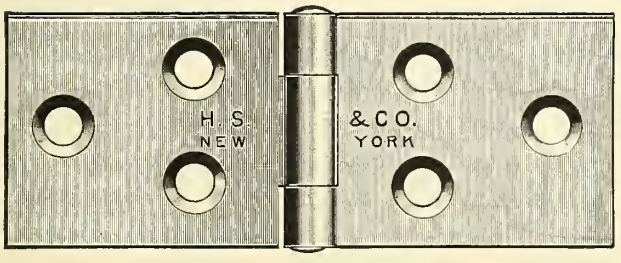
Wrought Brass. No. 251D

Size, inches	$1\frac{1}{2}$ x $1\frac{1}{2}$	$1\frac{1}{2}$ x $2\frac{1}{4}$	2 x 2	2 x $2\frac{1}{2}$
Dozen pairs	$1.10	1.50	2.00	2.50

Back Flaps

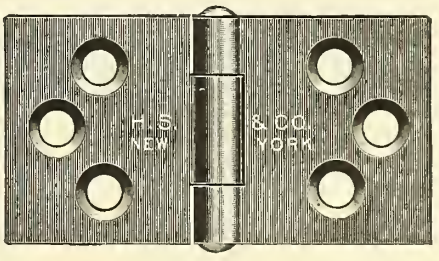
Wrought Steel, Wide

Per Dozen Pairs



Length Inches	Width, Open Inches	Screw Holes in Each Hinge	Size Screw Number	No. 56 Bright Steel	No. GB56 Galvanized Brass Pins Packed with Screws to Match
$\frac{3}{4}$	$2\frac{3}{4}$	4	6	$ .70	$1.50
$\frac{7}{8}$	$2\frac{13}{16}$	6	6	.75	1.60
1	$2\frac{7}{8}$	6	6	.80	1.80
$1\frac{1}{8}$	3	6	6	.90	2.00
$1\frac{1}{4}$	$3\frac{3}{16}$	6	7	1.00	2.20
$1\frac{3}{8}$	$3\frac{3}{16}$	6	7	1.10	2.50
$1\frac{1}{2}$	$3\frac{7}{16}$	6	8	1.20	2.70
$1\frac{5}{8}$	$3\frac{7}{8}$	6	8	1.30	3.00
$1\frac{3}{4}$	4	6	8	1.45	3.20
2	$4\frac{3}{8}$	6	8	1.70	3.75
$2\frac{1}{4}$	$5\frac{1}{16}$	6	9	2.35	5.70
$2\frac{1}{2}$	$5\frac{7}{8}$	6	10	3.40	8.00
$2\frac{3}{4}$	$6\frac{1}{4}$	6	11	3.90	9.20
3	$6\frac{3}{4}$	8	11	4.30	10.50

Wrought Steel, Square

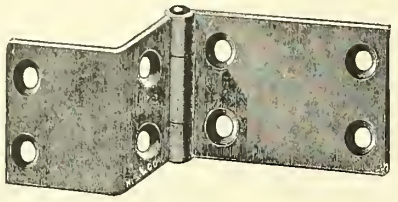


Size, Length of Joint Inches	Width, Open Inches	Screw Holes in Each Hinge	Size of Screw Number	No. 58 Bright Steel	No. GB58 Galvanized Brass Pins Packed with Screws to Match
1	2	6	6	$ .75	$1.60
$1\frac{1}{8}$	$2\frac{1}{4}$	6	6	.80	1.75
$1\frac{1}{4}$	$2\frac{5}{16}$	6	7	.90	2.00
$1\frac{3}{8}$	$2\frac{9}{16}$	6	7	1.00	2.25
$1\frac{1}{2}$	$2\frac{3}{4}$	6	8	1.05	2.50
$1\frac{5}{8}$	3	6	8	1.20	2.75
$1\frac{3}{4}$	$3\frac{3}{16}$	6	8	1.30	3.00
2	$3\frac{11}{16}$	6	8	1.40	3.50
$2\frac{1}{4}$	$4\frac{1}{8}$	6	9	2.10	5.00
$2\frac{1}{2}$	$4\frac{5}{8}$	6	10	3.00	7.00
$2\frac{3}{4}$	$5\frac{1}{4}$	6	11	3.60	8.50
3	$5\frac{1}{2}$	8	11	4.00	9.80

SEE DISCOUNT SHEET

Chest Hinges

Wrought Steel

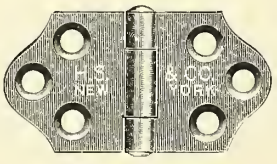


No. 61

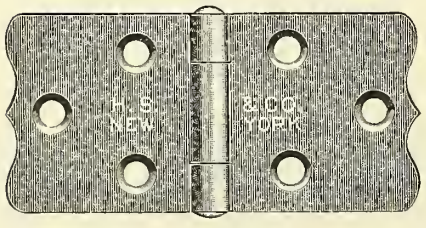
Length Inches	Width of Offset From Joint to Bend Inch	Screw Holes in Each Hinge	Size Screw Number	Dozen Pairs
1½	½	7	7	$1.35
1½	⅝	7	7	1.35
1½	¾	8	7	1.35
1½	⅞	8	7	1.35
2	½	7	8	1.90
2	⅝	7	8	1.90
2	¾	8	8	1.90
2	⅞	8	8	1.90

Wash Tray Hinges

Half Size Cuts



1½ and 1¾ inches



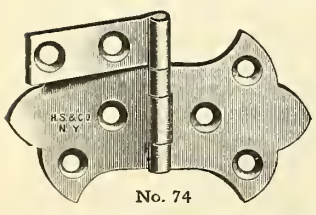
No. 1036 2 inches

Galvanized Brass Pins Packed with Screws to Match

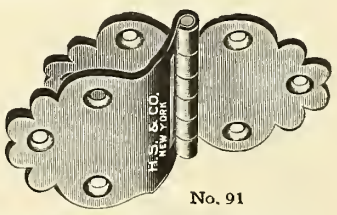
Length, inches	1½	1¾	2
Width open, inches	2¾	3⅛	4⅛
Dozen pairs	$2.25	2.70	3.25

Water Closet Flaps

Half Size Cuts



No. 74



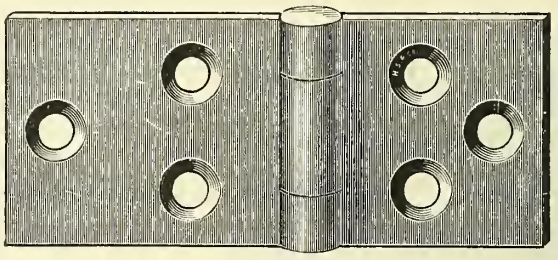
No. 91

Wrought Brass Nickel-Plated Packed with Screws

Number	74	91
Dozen pairs	$1.50	3.40

Table Hinges

Wrought Steel Flush Riveted

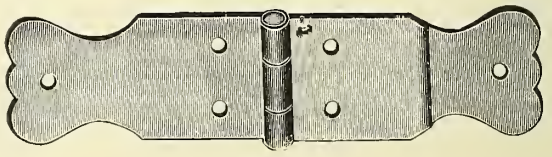


No. 59

Length Inches	Width Open Inches	Size Screw Number	Dozen Pairs
⅞	2 9/16	6	$ .70
1	2⅝	6	.75
1⅛	2¾	7	.80
1¼	2⅞	7	.90
1⅜	2 13/16	7	1.00
1½	3⅛	8	1.05
1⅝	3⅛	8	1.20
1¾	3⅛	9	1.30
2	3 13/16	9	1.40

Trunk Hinges

Half Size Cut



No. 1039

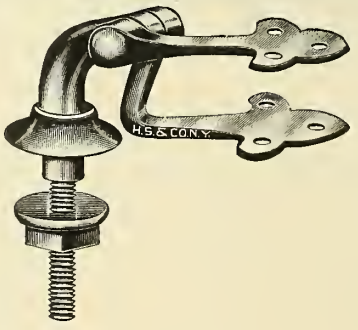
Wrought Steel Japanned

5¾ inches wide when open

Dozen pairs ..... $ .90

Offset Double Seat Flaps

Half Size Cut



No. 1199

Cast Brass Nickel-Plated

Packed with screws

Pair $4.00

Fancy Hinges

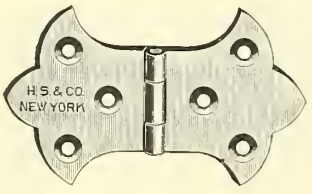
Half Size Cuts



No. 76 Wrought Brass

Per Dozen Pairs

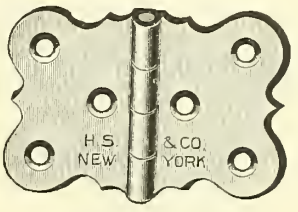
Dipped	$ .80
Polished	1.10
Nickel-plated	1.10



No. 75 Wrought Brass

Per Dozen Pairs

Dipped	$1.00
Polished	1.20
Nickel-plated	1.20



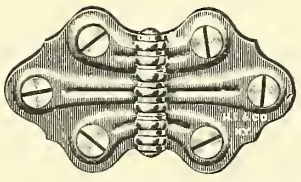
No. 50 Wrought Brass

Per Dozen Pairs

Polished	$2.90
Nickel-plated	2.90



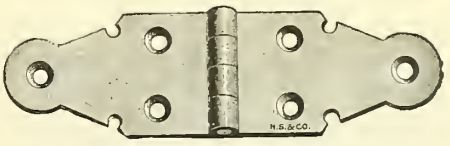
No. 02128¼ Wrought brass, polished, per dozen pairs..... $2.40



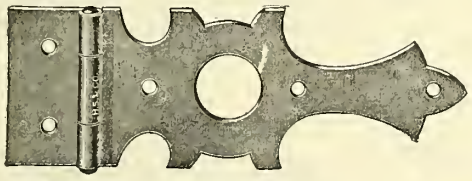
No. 1430 Wrought Brass

Per Dozen Pairs, Packed with Screws

Polished	$2.70
Nickel-plated	4.15



No. 79 Wrought brass, polished, per dozen pairs..... $2.10

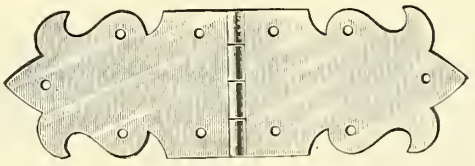


No. 1400A Wrought Steel, Planished and Bronzed

Packed with screws

Length of ornamental strap 4 inches; length of joint 1¾ inches; dozen pairs..... $3.00

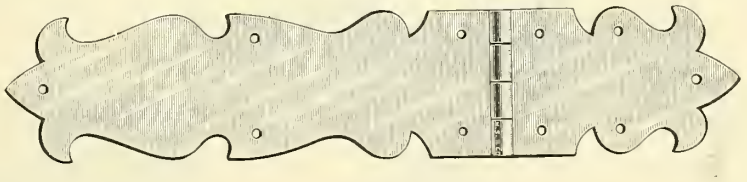
Length of ornamental strap 4¾ inches; length of joint 1¾ inches; dozen pairs..... 3.30



No. 1070 Sheet brass, polished, dozen pairs..... $2.80

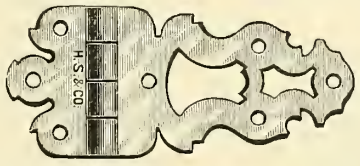
This style can be supplied brass-plated. Prices on receipt of quantity specifications.

No. 1080 Sheet brass, polished, dozen pairs.. $3.60

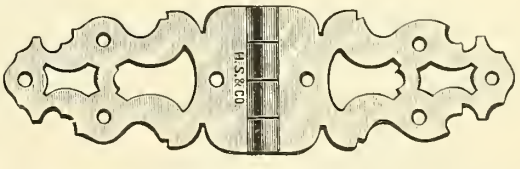


This style can be supplied brass-plated. Prices on receipt of quantity specifications.

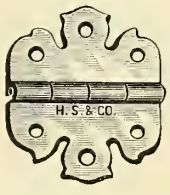
Two-thirds Size Cuts



No. 1348 Wrought brass, polished, gross pairs..... $12.60

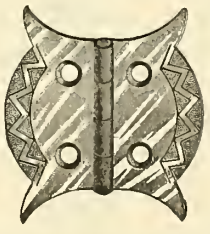


No. 1349 Wrought brass, polished, gross pairs..... $15.00



No. 1350 Wrought brass, polished, gross pairs..... $16.00

No. 1350N Wrought brass, nickel-plated, gross pairs..... 16.00



No. 3 Stamped brass, dipped, gross pairs..... $8.40

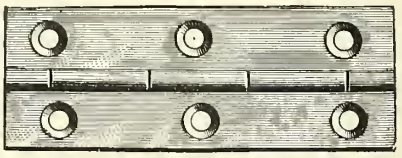
No. 3N Stamped brass, nickel-plated, gross pairs..... 10.50

Fancy Hinges

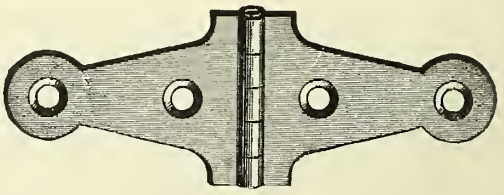
Full Size Cuts



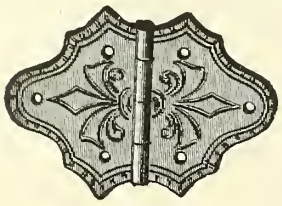
No. 10



No. 933



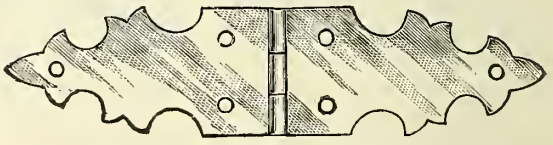
No. 4



No. 905



No. 918



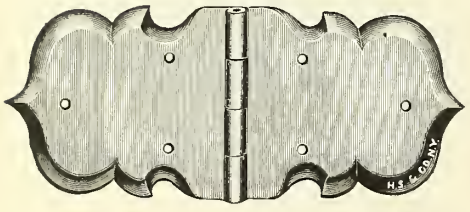
No. 5



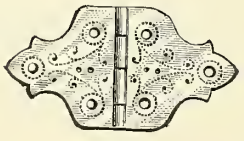
No. 915



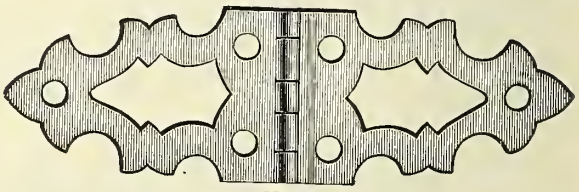
No. 946, $\frac{3}{16}$ x 3 inches. No. 947, $\frac{3}{16}$ x 4⅞ inches



No. 7



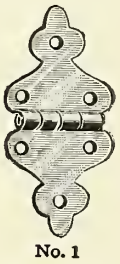
No. 2



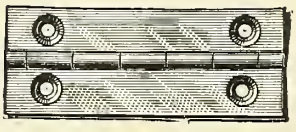
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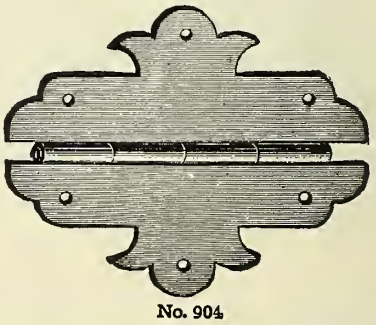
No. 919



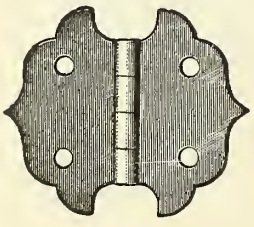
No. 1



No. 936



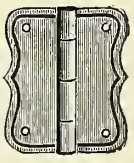
No. 904



No. 8



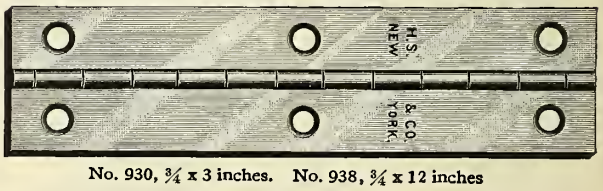
No. 11



No. 12



No. 1X



No. 930, ¾ x 3 inches. No. 938, ¾ x 12 inches

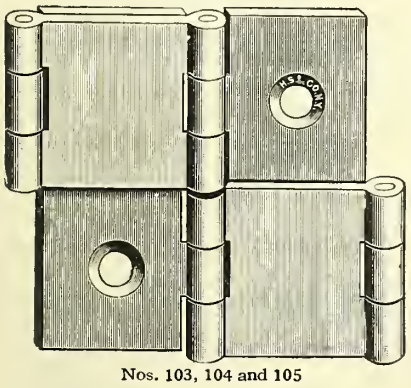
Double Metal

Number	Material	Finish	Gross Pairs Without Screws or Pins
1	Stamped brass	Dipped	$ .90
1X	Stamped brass	Dipped	.72
2	Stamped brass	Dipped	2.10
4	Wrought brass	Dipped	5.50
5	Stamped brass	Dipped	4.50
6	Wrought brass	Dipped	5.40
7	Stamped brass	Polished	6.10
7N	Stamped brass	Nickel-plated	6.10
8	Stamped brass	Dipped	3.00
8N	Stamped brass	Nickel-plated	4.45
10	Wrought brass	Dipped	6.50
11	Stamped brass	Dipped	1.50
12	Stamped brass	Dipped	1.50
12N	Stamped brass	Nickel-plated	1.50
904	Stamped brass	Nickel-plated	6.60
905	Stamped brass	Dipped	$3.00
905N	Stamped brass	Nickel-plated	3.00
915	Wrought brass	Polished	3.90
915N	Wrought brass	Nickel-plated	3.90
918	Wrought brass	Polished	4.50
918N	Wrought brass	Nickel-plated	4.50
919	Wrought brass	Dipped	2.10
930	Wrought brass	Polished	12.00
933	Wrought brass	Nickel-plated	8.40
933N	Wrought brass	Polished	8.40
936	Wrought brass	Nickel-plated	6.90
938	Wrought brass	Polished	48.00
946	Wrought brass	Polished	14.10
946N	Wrought brass	Nickel-plated	14.10
947	Wrought brass	Polished	15.60

SEE DISCOUNT SHEET

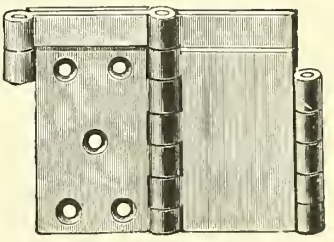
Screen Hinges

Per Dozen Pairs



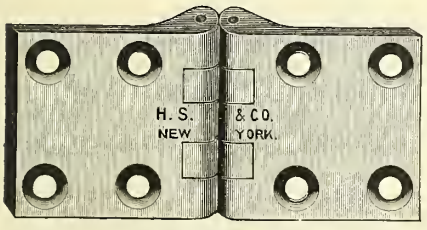
Nos. 103, 104 and 105

For Thickness Wood Inches	Size Overall Closed Inches	No. 103 Wrought Steel Bower Barff	No. 104 Wrought Steel Brass-plated	No. 105 Wrought Brass Polished	No. 106 Cast Brass Polished
7/8	1¾ x 1⅛	$5.65	$5.65	$7.50	
1	1¾ x 1¼	....	6.40	8.00	
1⅛	1¾ x 1⅜	....	7.25	8.50	
1¼	2 x 1⅝	....	8.00	10.00	
1½	2¼ x 1¾	....	....	....	$20.00
2	.....	....	....	....	26.60



No. 106

Counter Hinges

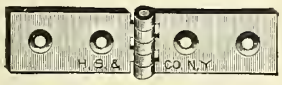


No. 1325

Cast Bronze, Polished
Packed with screws

1x2½ inches, dozen pairs..... $10.80
1½x3¼ inches, dozen pairs..... 20.30
1¾x4 inches, dozen pairs..... 22.20

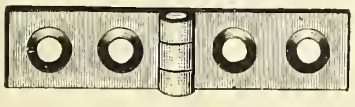
Flaps



No. 7501

Cast Brass, Polished

½x2⅜ inches, dozen pairs..... $2.70
⅝x2¾ inches, dozen pairs..... 3.00

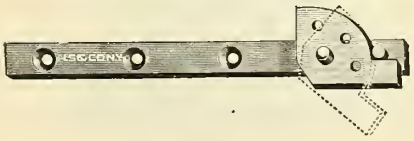


No. 7506

Cast Brass, Polished

1x3 inches, dozen pairs..... $4.00
1x4 inches, dozen pairs..... 5.20
1x5 inches, dozen pairs..... 6.00

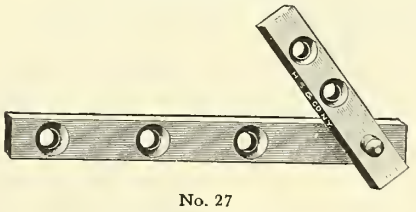
Secretary Hinges



No. 26

Wrought iron, 6 inches long, dozen pair $3.00

Pin or Center Hinges

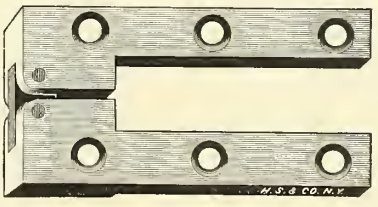


No. 27

Wrought Iron

Size closed, ins..	2	2½	3	3½	4½
Dozen pairs....	$ .55	.60	.70	.90	1.50

Card-Table Hinges

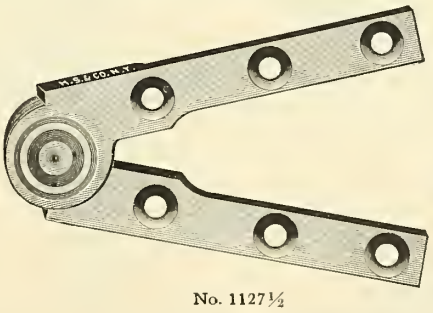


No. 24

Cast Brass, Polished

Size closed, inches.....	2	2¼	2½
Dozen pairs.....	$3.50	4.20	4.90

Dolphin Hinges



No. 1127½

Cast Brass, Polished
Packed with screws

Size closed, inches.....	3	4
Dozen pairs.....	$8.25	12.00

Patent Desk Hinges

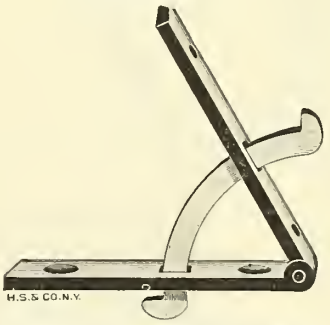
Half Size Cut



No. 1 Wrought brass, polished. Packed with screws. 1⅜x3⅜ inches open, dozen pairs..... $8.75

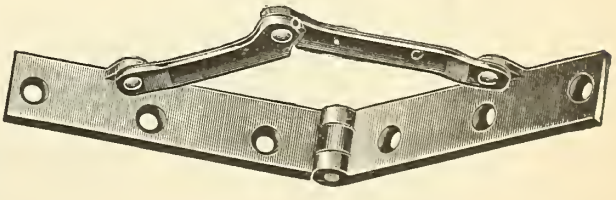
Stay Hinges

Full Size Cut



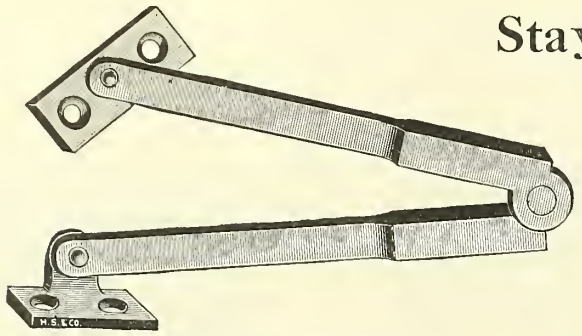
No. 232 Brass, nickel-plated. Made right or left, specify which wanted. Gross pairs..... $35.00

Desk Hinge and Stop Combined

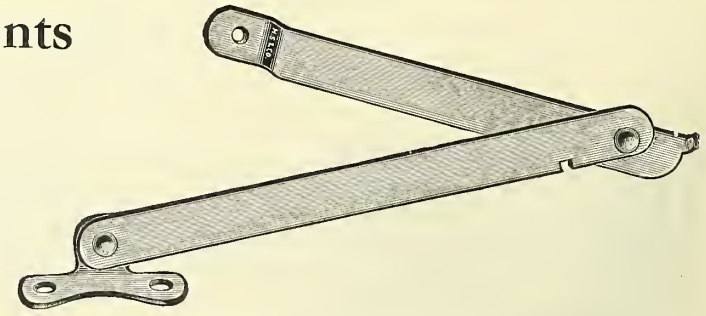


No. 2 Wrought steel, brass-plated, ¾ inch wide, 7 inches long open, dozen pairs..... $2.40

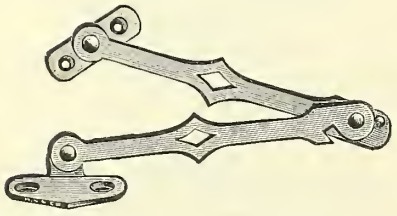
Stay Joints



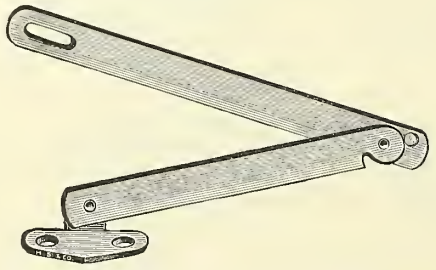
No. 3 Cast brass, polished, 8 inches, dozen pair..... $10.65
No. 3 Cast brass, polished, 10 inches, dozen pair..... 12.15
No. 3 Cast brass, polished, 14 inches, dozen pair..... 14.55



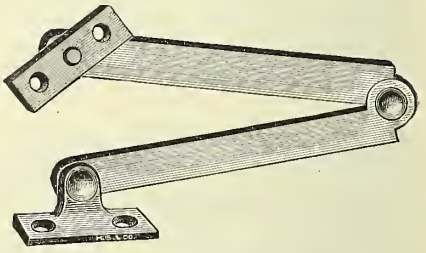
No. 039 Wrought steel, brass plated, 10 inches, dozen pair... $1.68



No. 1238 Wrought brass, dipped, 6 inches, dozen pair..... $2.50

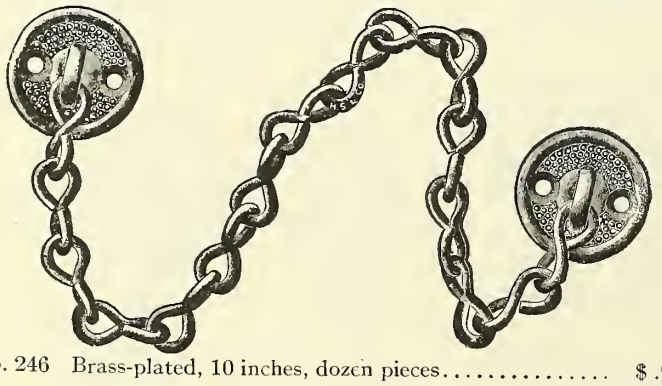


No. 1751 Wrought steel, brass-plated, 8 inches, dozen pair $1.80

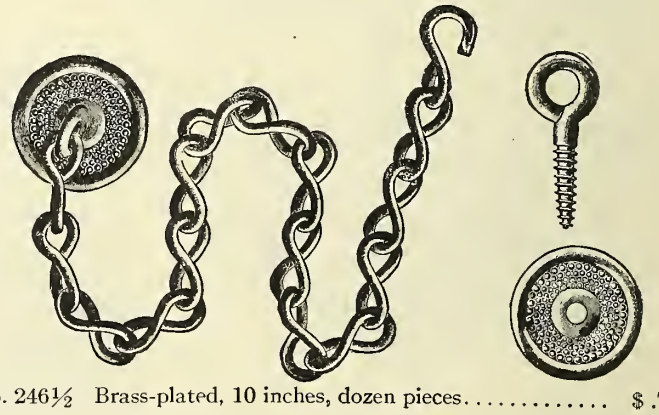


No. 1750 Wrought bronze, polished, 7 inches, packed with screws, dozen pairs..... $11.00

Desk Chains

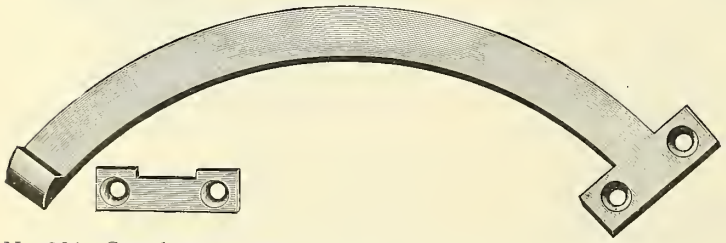


No. 246 Brass-plated, 10 inches, dozen pieces..... $ .90



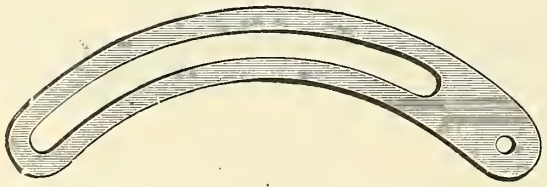
No. 246½ Brass-plated, 10 inches, dozen pieces..... $ .75

Desk Quadrants



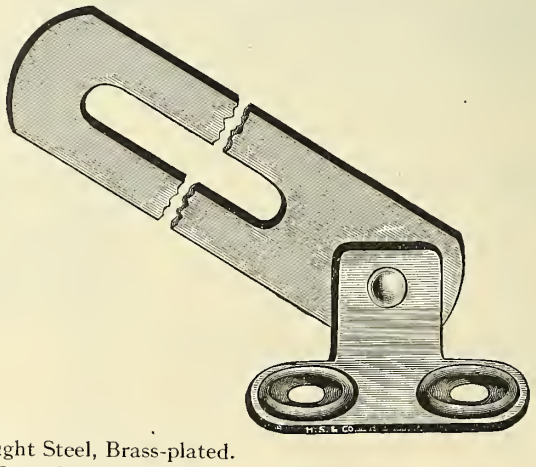
No. 364 Cast brass, polished, 6 inches, packed with screws, dozen pair $10.80

Box Slides



No. 3322 Wrought brass, ⅜ x 2½ inches, polished or nickel-plated, gross pieces..... $4.00

Desk Slides



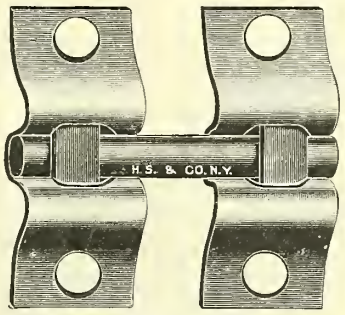
Wrought Steel, Brass-plated.

No. 133 Length 6½ inches, width ¾ inch, dozen pieces..... $ .95
No. 133 Length 10 inches: width ¾ inch, dozen pieces..... 1.10
No. 1721 Length 4½ inches, width ⅜ inch, dozen pieces ..... .60

SEE DISCOUNT SHEET

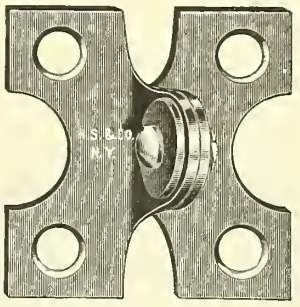
Friction Hinges

Full Size Cuts



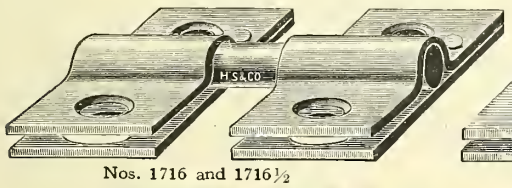
Wrought Steel, Bright

Number	Size, Inches	Gross Pair
150	1⅝ x 1½	$4.80
200	1⅞ x 1⅝	5.40

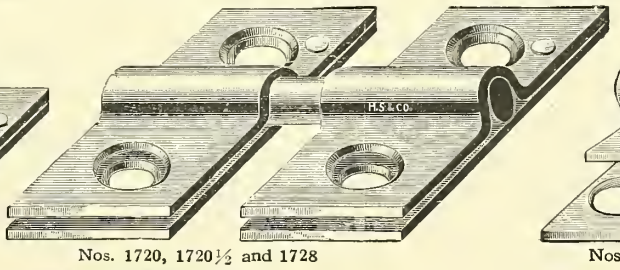


Wrought Steel, Bright

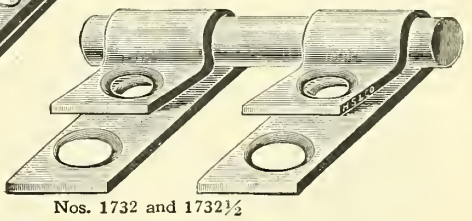
Number	Size, Inches	Gross Pair
10½	1½ x 1½	$5.25
10	1⅞ x 1⅝	6.75
16	2⅛ x 1⅞	8.40



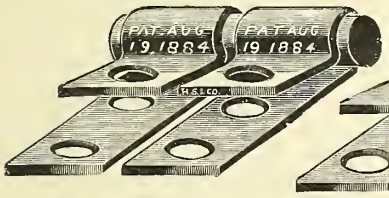
Nos. 1716 and 1716½



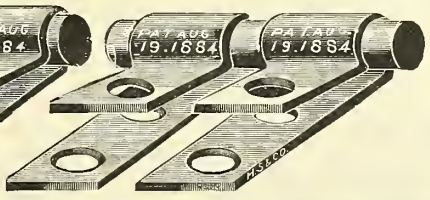
Nos. 1720, 1720½ and 1728



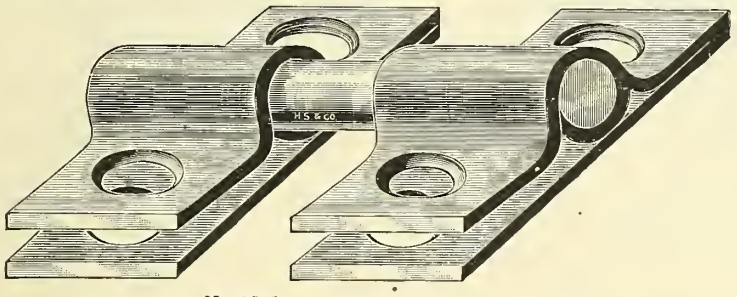
Nos. 1732 and 1732½



No. 1737



No. 1738



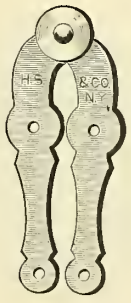
No. 1745

Heavy Wrought Steel

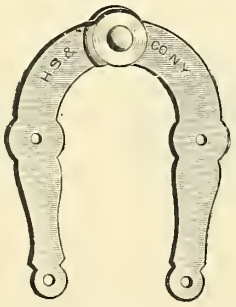
Number	Size, Inches	Finish	Gross Pair
1716	2	Coppered	$5.80
1716½	2	Bright	5.40
1720	2¼	Coppered	9.60
1720½	2¼	Bright	9.20
1728	3	Brass-plated	24.00
1732	1¾	Coppered	4.80
1732½	1¾	Bright	4.40
1737	1¼	Coppered	4.80
1738	1½	Coppered	4.80
1745	2⅜	Coppered	24.00

Triple Mirror Hinges

Three-Quarter Size Cuts



No. 880

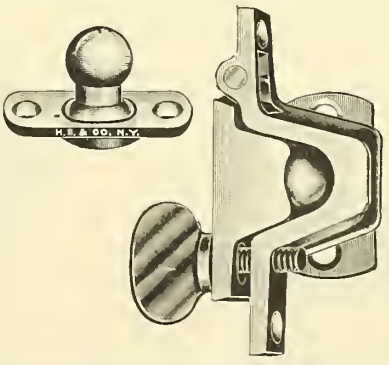


No. 881

Struck Brass, Nickel-plated

No. 880 Gross pieces..... $4.50
No. 881 Gross pieces..... 5.25

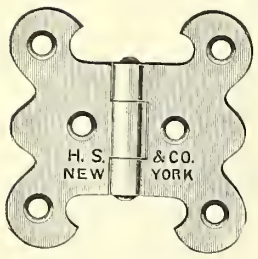
Mirror Movements



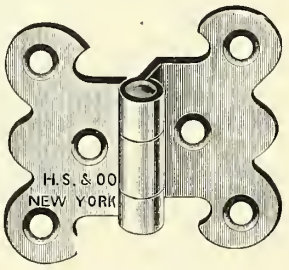
Cast brass, with steel ball pin. Friction can be quickly adjusted.

Number	Size Inches	Dozen Pair
769	⅜ x 2 1/16	$11.00
771	7/16 x 2⅜	14.70

Refrigerator Hinges



Nos. 1040 and 1140



Nos. 1041 and 1141
⅜ Inch Offset

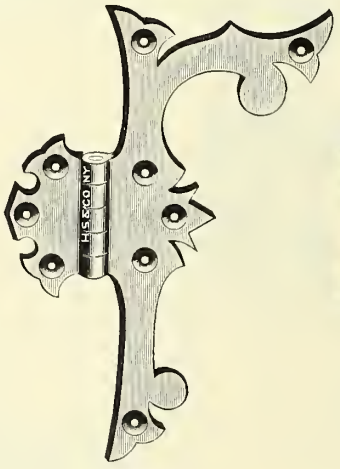
Packed with screws

No. 1040 Wrought steel, planished and bronzed, size 2½x2½ inches, dozen pairs $2.20

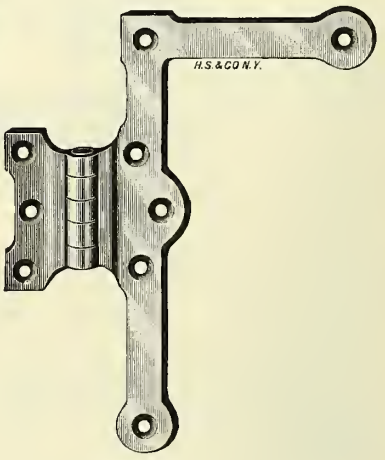
No. 1140 Wrought brass, dipped, with brass screws, size 2½x2½ inches, dozen pairs 4.50

No. 1041 Wrought steel, planished and bronzed, size 3x3 inches, dozen pairs 3.00

No. 1141 Wrought brass, dipped, with brass screws, size 3x3 inches, dozen pairs 6.70



No. 4



No. S777

Polished Brass

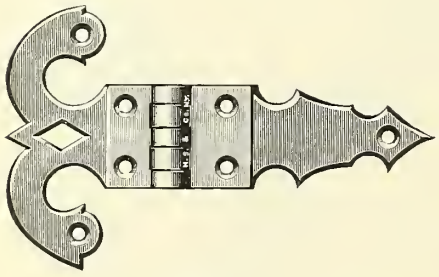
No. 4 Small, 2½x5 inches, dozen pairs $6.10

No. 4 Medium, 3x7 inches, dozen pairs 10.00

No. 4 Large, 4x9½ inches, dozen pairs 19.20

Polished Bronze

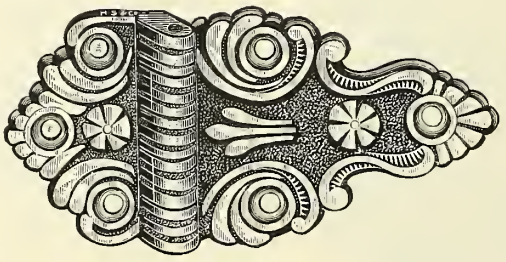
No. S777 2¾x6¾ inches, dozen pairs 15.00



No. 1

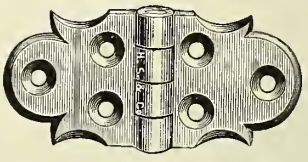
Heavy cast brass, polished. With brass pins. Packed with screws.

Length of Long Flap Inches	Length Overall Inches	Dozen Pairs
3	5	$4.80
3½	5¾	6.40
4	6¼	8.25
5	7½	10.65
6	8½	13.35
8	11¼	21.35



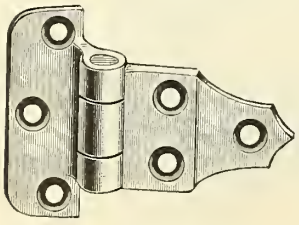
No. 336

No. 336 Cast brass, packed with screws. Length of long flap 2½ inches; ⅜-inch offset, dozen pairs. $6.20



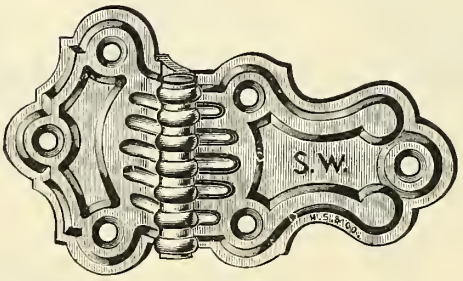
No. 3

No. 8 Cast brass, polished, with brass pins, 1½x3 inches, dozen pairs... $4.70



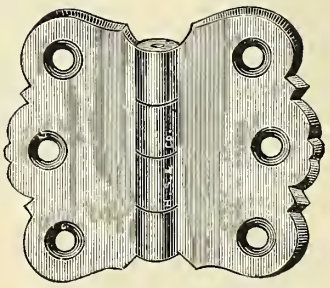
No. 501

No. 501 Cast brass, polished, with brass pins. Length of long flap 2 inches; ⅜-inch offset, dozen pairs. $4.80



No. 1408

No. 1408 Wrought brass, polished, with brass pins. Packed with screws. Length of long flap 3 inches, width of offset ⅜ inch, dozen pairs $6.20



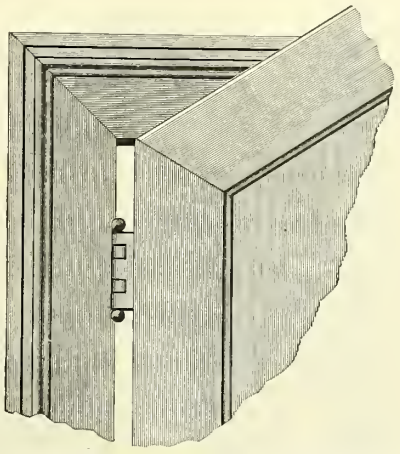
No. 10

No. 10 Cast brass, polished, with brass pins, 3x3¼ inches, dozen pairs $7.40

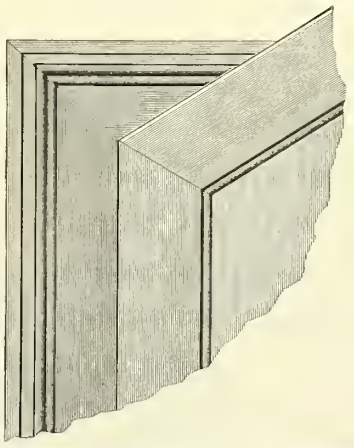
Invisible Hinges

Soss

As their name implies, Soss Invisible Hinges are actually invisible when the door is closed, and practically so at all times. They are therefore particularly desirable for use where nature's beautiful and delicate patterns in fine woods, brought out by proper finishing, require no metal nor hardware, nor "trim" of any kind to emphasize their elegance.



Door in Operation Mounted with Butt Hinges



Door in Operation Mounted with Soss Hinges

Construction

Soss Invisible Hinges are accurately manufactured from the highest grade of material.

Working parts are of frictionless metal—no oil, no noise, no wear.

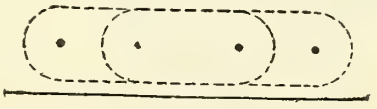
The cases are made by the die casting method and the leaves are made of stamped steel.

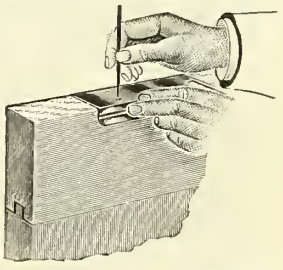
All hinges have roller bearings working as easily as ball-bearing butt hinges.

Plates are accurate up to one thousandth part of an inch. This is a feature of prime importance, particularly in automobile manufacture, as it permits the machining of pillars and the hanging of doors to be done with considerable saving of time and labor.

Installation

Simplicity of Installation—Any carpenter or any one who can bore a hole can install Soss Invisible Hinges. They are applied to the same part of the door and jamb as an ordinary butt, and require no special arrangement of the work. A templet, for convenience in mounting, is enclosed in each box and full directions are given for its use.





Economy—Manufacturers can do all mortising by machine.

Small Sizes

Universally used on player pianos and in furniture factories throughout the country on small cabinet work, such as

China Closets	Tables
Filing Cabinets	Music Cabinets
Sideboards and Buffets	Desks
Book Cases	Medicine Cabinets
Dressing Tables	Caskets
Folding Screens	Folding Chairs

and for many other uses. On such work hinges have always been made as inconspicuous as possible. Soss Hinges are invisible.

Intermediate Sizes

For all doors where ordinary butt hinges are used. There are places for Soss Hinges in every home that is planned. The architect and builder will find these sizes right for partition, closet and inside doors of every description.

Large Sizes for Heavy Duty

No stronger hinges made.

These hinges are adapted for doors of any size.

Styles of Finish

Soss Invisible Hinges are made in two styles, Blunt and Polished.

Blunt finished hinges are simply assembled and plated.

Polished hinges have the center section highly ground and polished, adding to their appearance.

There is no difference in the relative strength. Hinges of either finish are equally strong.

It is difficult to say that a certain size hinge will carry a door of a certain thickness and size, as doors vary greatly in weight. The following table is intended as a general guide for the installation of Soss Hinges, but applies only to doors of average weight and size. Where the doors are unusually large or heavy three hinges should be installed.

Size Number	Minimum Thickness Wood Inches	Maximum Thickness Wood Inches	Purpose
100	9/16	...	For use on key slips of piano players, pianos and light cabinet work.
101	9/16	...	For use on pianos, piano players, furniture and cabinet work.
102	9/16	...	Same use and carrying capacity as No. 101, but plates have square corners.
103	3/4	...	Same use as above smaller sizes, but has increased clearance between the plates.
104	3/4	7/8	For doors 5x2 feet.
108	1	1 1/8	For doors 5x2 feet.
112	1 1/8	1 3/4	For doors 6x2 feet 6 inches.
116	1 3/8	1 1/2	For doors 6x2 feet 6 inches.
118	1 3/8	1 1/2	For doors 6x2 feet 6 inches.
120R	1 3/4	2 1/2	For doors 7x3 feet.
120J	1 3/4	...	For metal and fireproof doors.

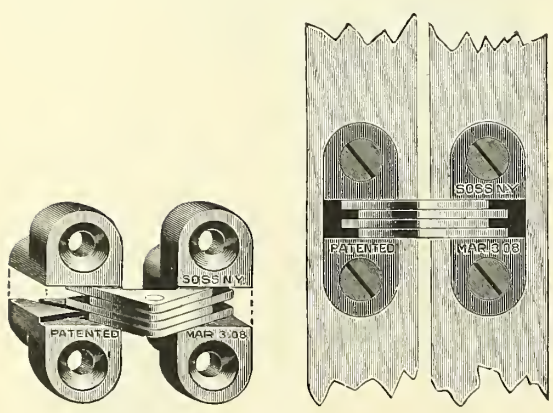
For listings of Soss Invisible Hinges, see next five pages

Invisible Hinges

Soss

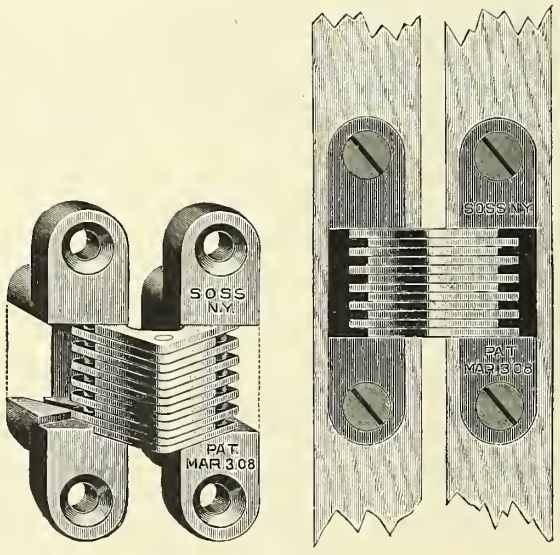
Full Size Illustrations

All hinges on this page are packed with screws and are finished in brass, nickel, bronze or antique copper. In ordering be sure to state which finish is wanted



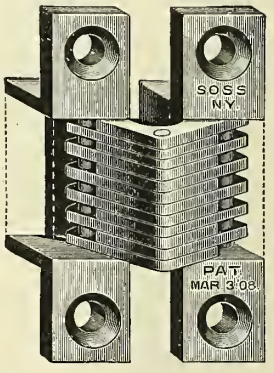
No. 100

For very light work. Round end plates



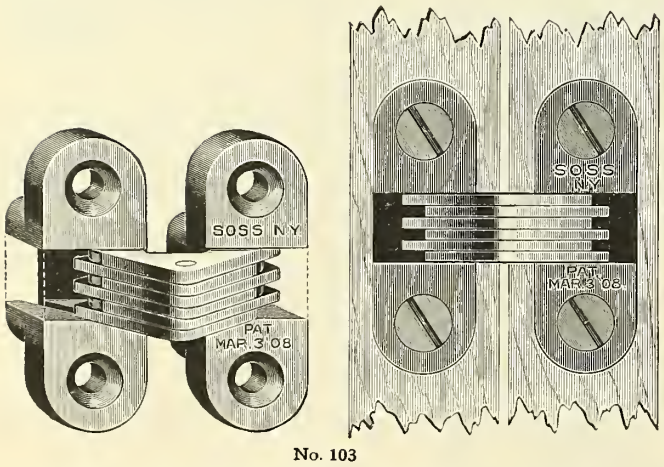
No. 101

For ordinary light work. Round end plates



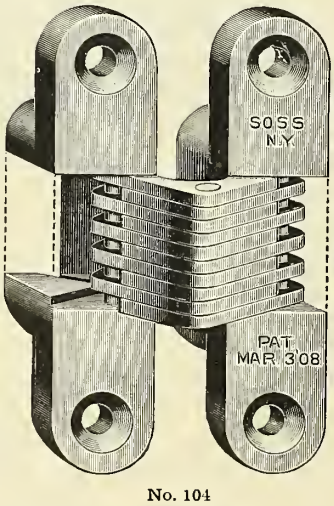
No. 102

Same as No. 101, except has square end plates



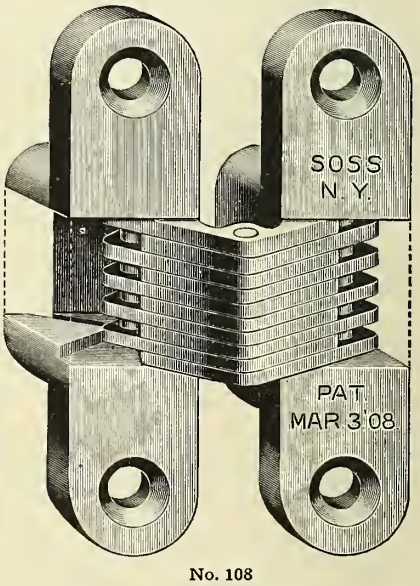
No. 103

For light work. Increased clearance permits the mortise to be made farther from the edge of the wood, thereby avoiding the danger of splitting or raising the veneer, or, when set close to edge a clearance of $\frac{3}{32}$ inch projection may be obtained.



No. 104

For light doors. Counter flaps, lockers, radiator seats, hall seats, small closets, secret panels, various kinds of furniture.



No. 108

Used for similar purposes as No. 104, but in cases where greater strength is required.

Number	100	101	102	103	104	108
Length of plates, inches	1	$1\frac{11}{16}$	$1\frac{13}{16}$	$1\frac{1}{2}$	$2\frac{3}{8}$	$2\frac{3}{4}$
Width of plates, inch	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$
Depth of mortise, inch	$\frac{15}{32}$	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{3}{4}$
Minimum thickness of wood required, inch	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	1
Clearance between plates, inch	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$
Pair, blunt finish	$ .28	.40	.40	.32	.75	1.10
Pair, polished	...	.50	.50	.42	1.00	1.50

For detailed description of construction, installation, uses, styles of finish, etc., see preceding page

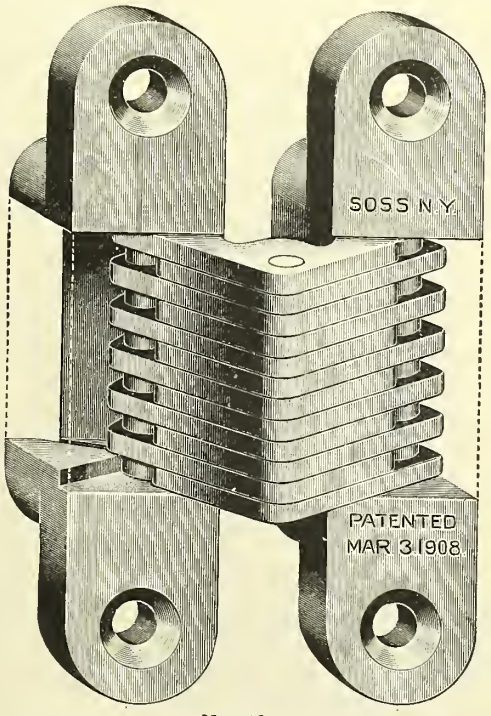
See page 977 for Hinge Routing Machine

Invisible Hinges

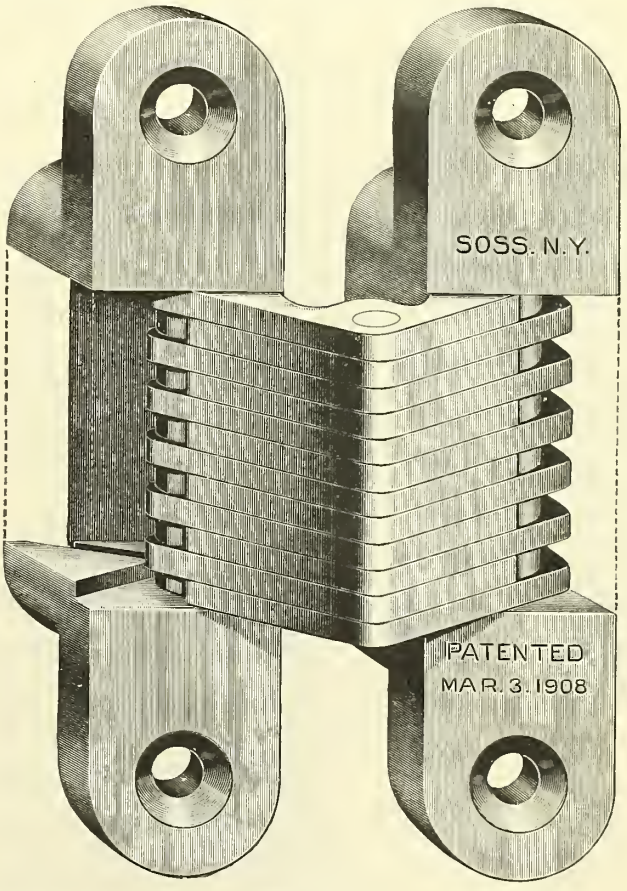
Soss

Full Size Illustrations

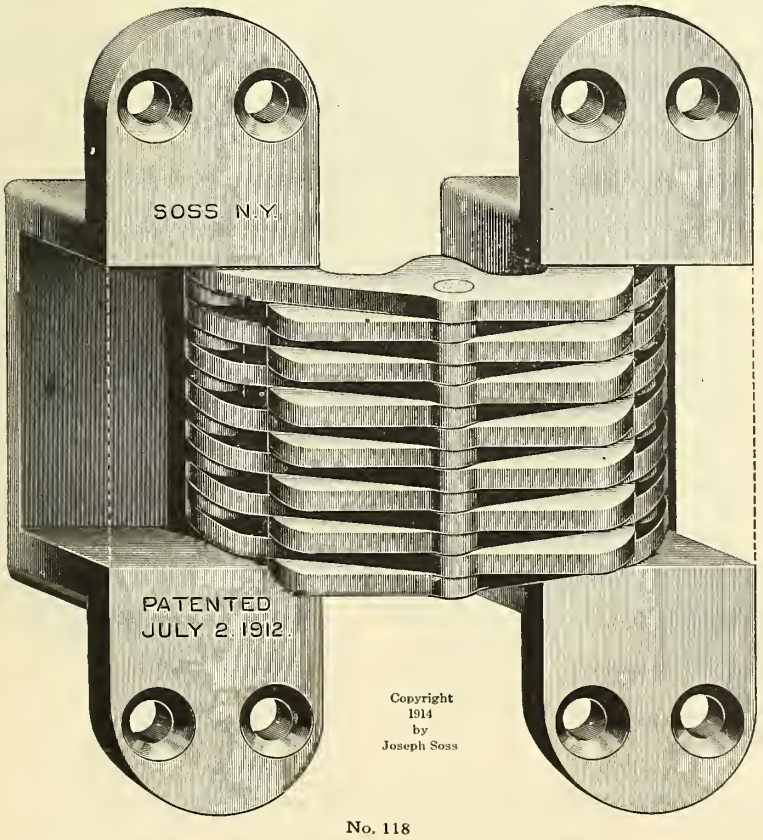
All hinges on this page are packed with screws and are finished in brass, nickel, bronze or antique copper. In ordering be sure to state which finish is wanted.



No. 112
For Standard House Doors, Normal Clearance



No. 116
For Standard House Doors, Heavier and Larger than usual, Normal Clearance



No. 118
For Standard House Doors where Extra Clearance is Required. Heavy

Number	112	116	118
Length of plates, inches	3½	4⅜	4¼
Width of plates, inches	¾	1	1⅛
Depth of mortise, inches	15/16	1 3/16	1 9/16
Minimum thickness of wood required, inches	1⅛	1⅜	1⅜
Clearance between plates, inches	9/16	11/16	1 5/32
Pair, blunt finish	$1.90	2.60	2.60
Pair, polished	2.50	3.60	

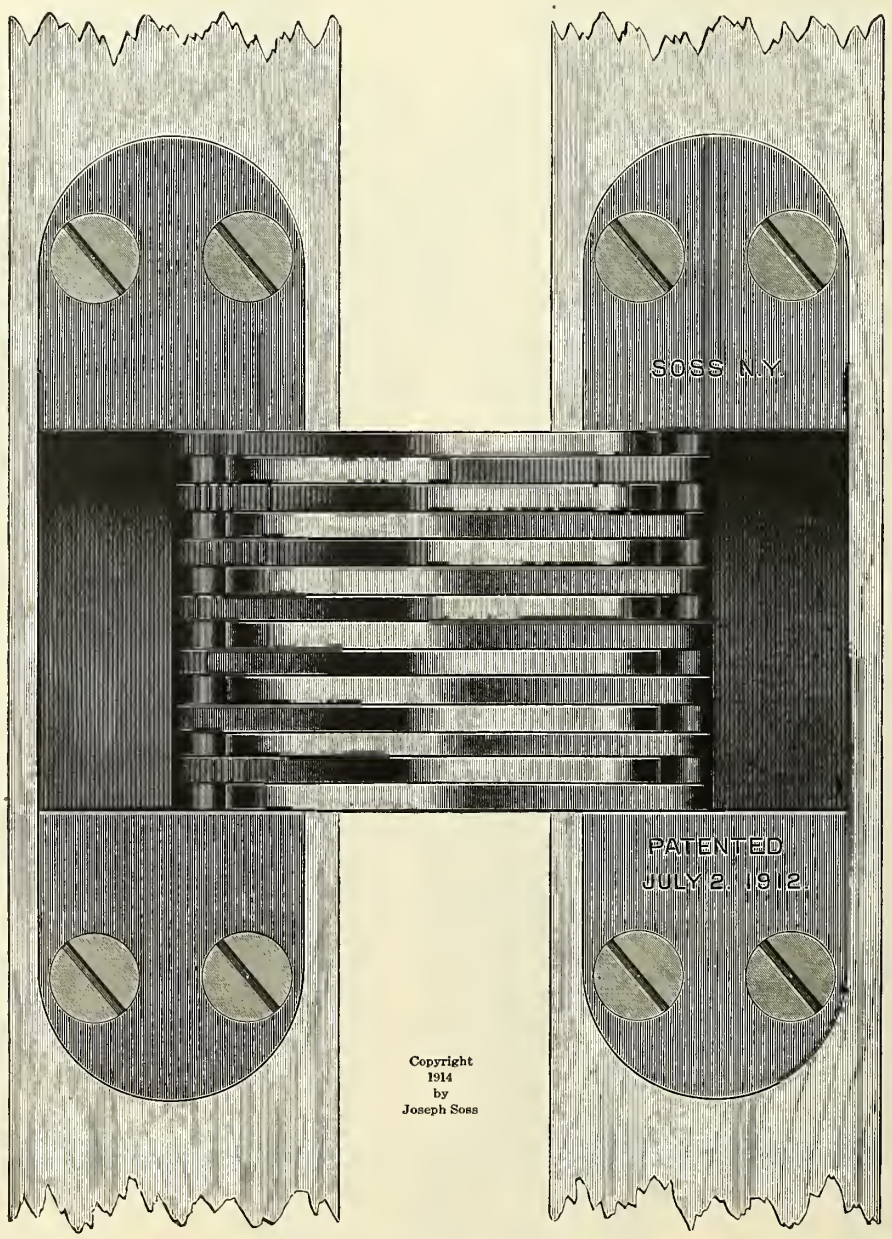
For detailed description of construction, installation, uses, styles of finish, etc., see page 971 See page 977 for Hinge Routing Machine

Invisible Hinges

Soss

The Soss Hinges on this page are large and powerfully made, being specially designed for heavy house doors, and are able to carry up to 1000 pounds. Packed with screws and are finished in brass, nickel, bronze or antique copper. In ordering be sure to state which finish is desired.

Full Size Illustration of No. 120-R



Above is full size illustration of No. 120-R (listed and described on right of cut), carrying a heavy wooden door. Note width of clearance, which is of special value where there is a projecting trim

No. 120-J

These hinges are practically the same as 120-R (illustrated), except that they have square cornered plates, specially designed for metal and fireproof doors. The square cornered plates have $\frac{1}{16}$-inch taper to allow for graduated bevel at edge of door.

Length of plates, inches ..... $4\frac{7}{8}$
Width of plates, inches ..... $1\frac{5}{16}$
Depth of mortise, inches ..... $1\frac{9}{16}$
Minimum thickness required, inches... $1\frac{3}{4}$
Clearance between plates, inches..... $1\frac{7}{16}$
Pair, blunt finish.. $3.00

No. 120-R

These hinges are illustrated, full size, on this page. They are made with round cornered plates of equal thickness throughout, for mounting heavy wooden house doors. They are the strongest hinges made for this purpose.

Length of plates, inches 5
Width of plates, inches ..... $1\frac{5}{16}$
Depth of mortise, inches ..... $1\frac{9}{16}$
Minimum thickness of wood required, inches ..... $1\frac{3}{4}$
Clearance between plates, inches..... $1\frac{7}{16}$
Pair, blunt finish.. $3.00

For detailed description of construction, installation, uses, styles of finish, etc., see page 971

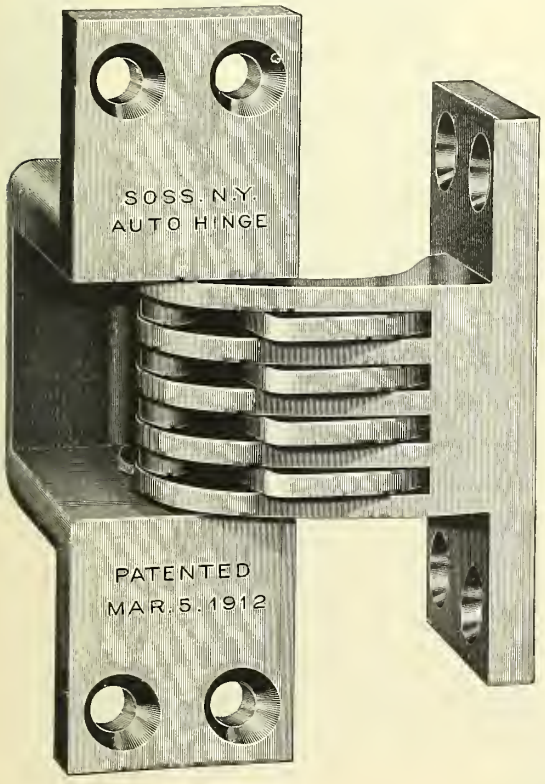
See page 977 for Hinge Routing Machines

Invisible Automobile Door Hinges

Soss

Flush Doors. Clean Lines. No Projections. Full Size Illustrations

The trouble avoided and time gained when hanging doors with Soss Hinges are features of prime importance. They can be installed flush with outside of the pillar allowing steel or aluminum panel to be turned over on face of hinge and fastened in rabbet or slot to receive it, thus permitting of more than ordinary clearance. These Hinges are mechanically accurate, an important feature, as they permit machining of the pillars before assembling in the body.

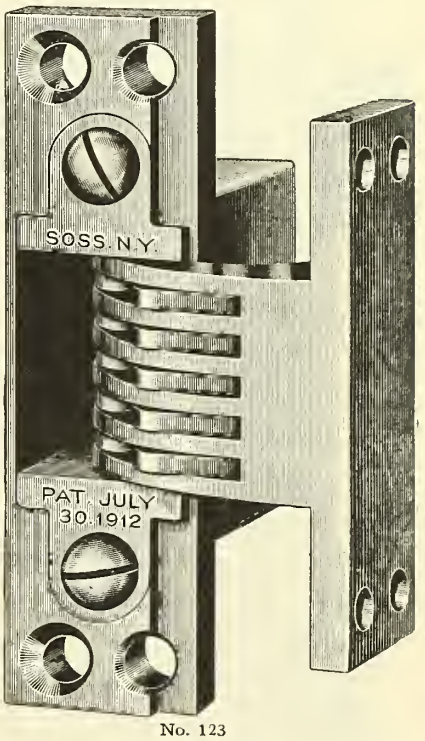


No. 117

This hinge is quite as strong as No. 123, but is not detachable and also lacks the non-corrosive waterproof case. Furnished without rabbet only.

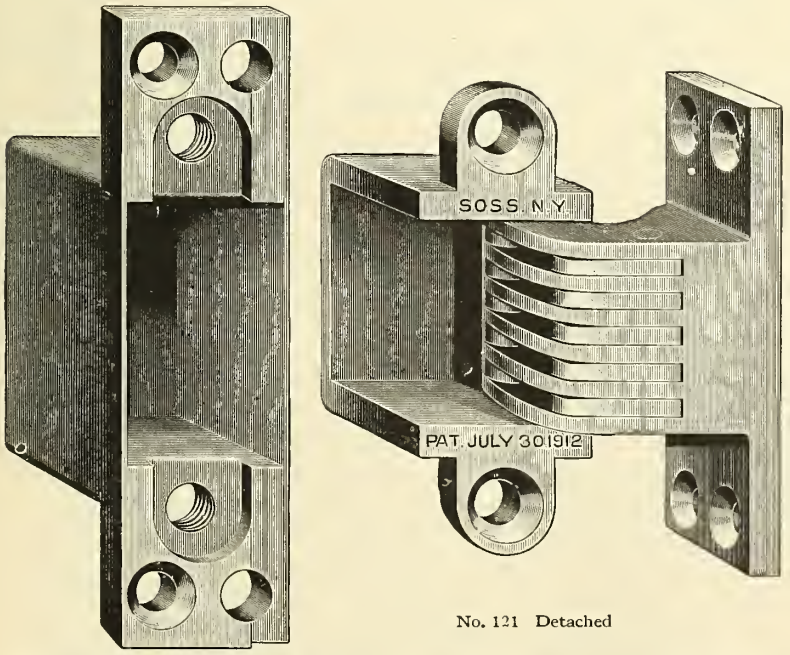
Packed one Set of Eight Hinges in a Box

Style	117 Non-detachable	121 Detachable	123 Detachable
Face of hinge on pillar, inches	4x1 3/16	3 1/4 x 7/8	3 3/4 x 1 5/16
Face of hinge on door, inches	3x1 1/4	2 1/2 x 7/8	3x1 1/4
Mortises into pillar, inches	1 3/16 x 2 x 1 3/4	1 1/4 x 1 5/8 x 7/8	1 3/4 x 1 5/16 x 2
Clearance in opening, inch	1	11/16	1
Weight of set of eight, pounds,	9	5	11
Pair.....	$ 1.50	1.00	2.00

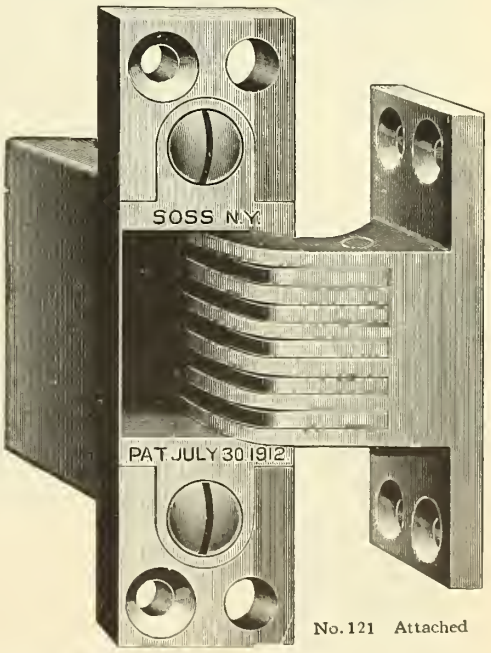


No. 123

An exceptionally strong hinge, made for limousine, coupe, landaulet, coach and touring car doors. Easily and quickly detached by removing two machine screws shown in illustration; does not interfere with attachment to pillar or door. Made with non-corrosive water-proof case, which prevents the water from entering and causing rot in the pillar.
Furnished with or without rabbet.



No. 121 Detached



No. 121 Attached

Made for roadster and touring car doors. The left hand illustration shows how easily the door may be removed without marring the pillars. It is necessary only to remove the two machine screws shown in right illustration. The non-corrosive waterproof case attached to the body section of the hinge prevents water from entering and causing rot in the pillar. Furnished with or without rabbet.

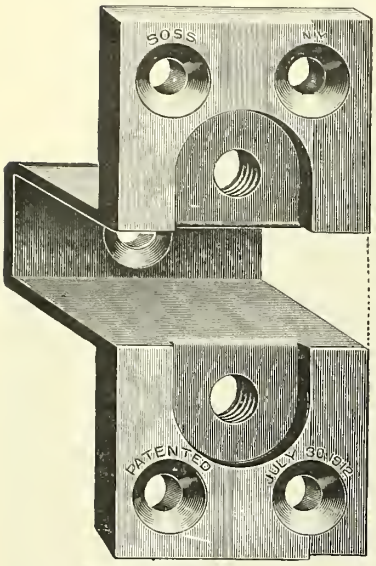
See page 971 for detailed description of construction, installation uses, styles of finish, etc. See page 977 for Hinge Routing Machines

Invisible Automobile Door Hinges

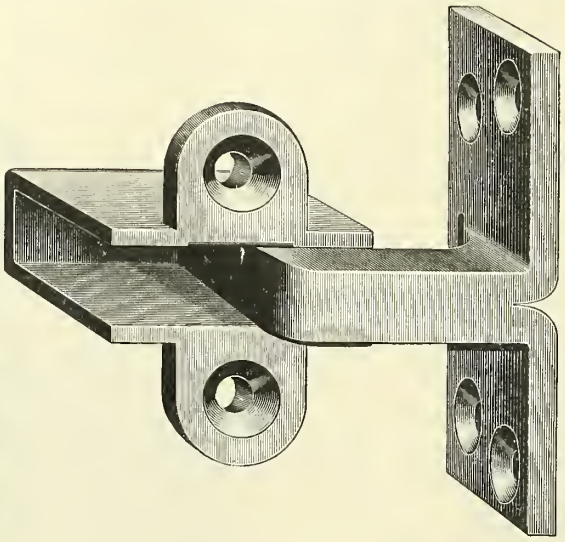
Soss

Flush Doors. Clean Lines. No Projections

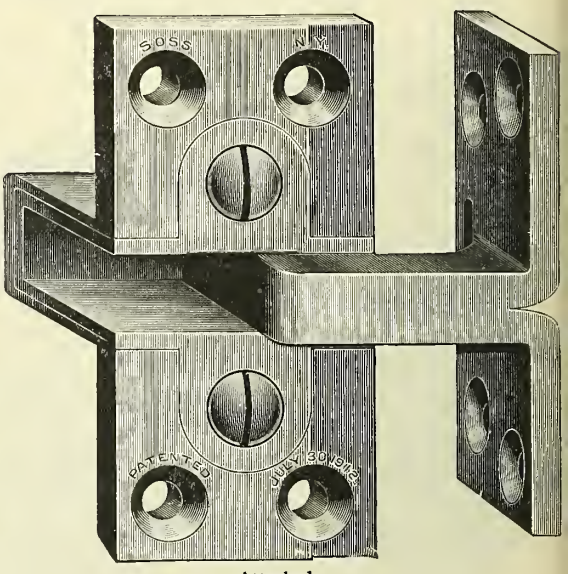
(Full Size Illustrations)



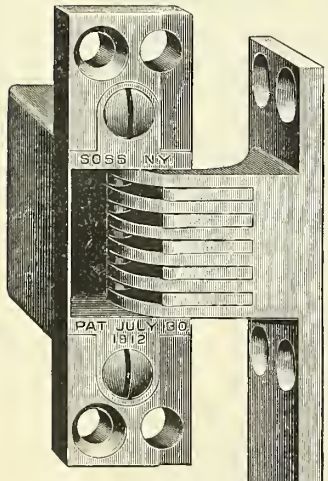
Detached

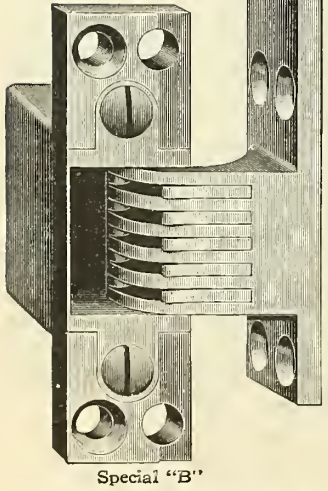


No. 111



Attached





Special "B"
Illustration is Two-Thirds Actual Size
of 121 Mounted on Plate

Made for medium priced cars. Hinges are sturdily constructed and have a neat and well finished appearance. The left hand illustration shows how quickly they may be detached without marring the wood. Simply remove the two machine screws shown in right hand illustration. Furnished with rabbet only. Packed a set of eight in a box. Weight, six pounds.

Face of hinge on pillar, $1\frac{3}{8} \times 2\frac{3}{4}$ inches
Face of hinge on door, $1\frac{1}{4} \times 2\frac{1}{2}$ inches
Mortises into pillar $\frac{7}{8} \times 1\frac{3}{8} \times 1\frac{1}{2}$ inches deep
Clearance in opening, $\frac{3}{4}$ inch full

Pair, $ .50

Special "B"

(Illustration on the left)

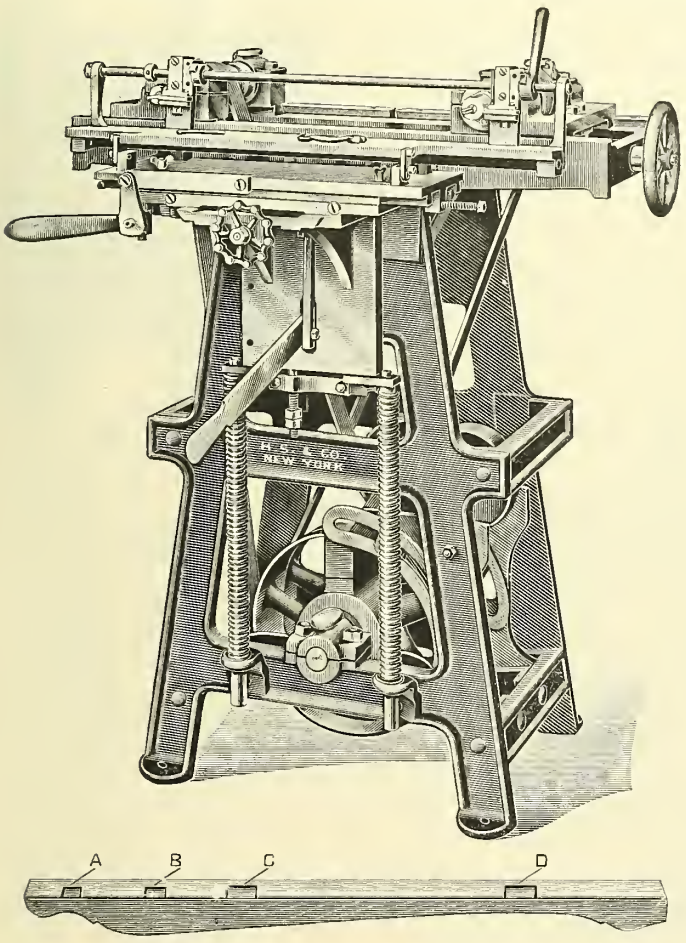
These hinges are made to order only with door plate, any desired length. They permit very rapid work in hanging the doors, as both hinges are held in perfect alignment. Any of the hinges shown on preceding page (Nos. 117, 121 and 123) may be mounted in this manner, and we will be pleased to quote prices on application. When corresponding be sure to state exact length of plate, together with quantity to be ordered, which naturally will decide the price.

See page 971 for detailed description of construction, installation, uses, styles of finish.

See next page for Hinge Routing Machines.

The H. S. & Co. Hinge Routing Machine

Especially designed for cutting large quantities of similar sized hinge mortises or recesses



This is a two-spindle machine, spindles adjustable from 4 to 22 inch sweep, center to center.

Machine has self-contained counter shaft with tight and loose pulleys 7 inches in diameter and for a 2½-inch belt. (The counter should run 1,000 revolutions per minute.)

The routing is done with a ¼-inch router, which leaves a very small corner to be removed by hand. The belts, which preferably should be endless, run over idlers, thus maintaining proper tension whether the spindles are close together or wide apart. The spindles are adjusted by means of a hand wheel at right of the machine.

The table of the machine is adjustable to permit a little deeper cut on the pin side of the hinge where the hinge is thickest. This is an important and particularly commendable feature.

The spindles are driven by 2-inch belts, and the illustration shows the corner post of a Victrola, the two cuts marked A and B being cut at one time, while the mortises C and D are made at a subsequent operation, and by thus handling this corner post twice, 800 complete pieces were finished in ten hours, making 1,600 operations for a hinge recess 1⅞ x ¾ inches.

Weight of machine, approximately 600 pounds, and occupies a space of about 3 x 3 feet.

If the H. S. & Co. Machine does not seem to exactly meet requirements and you will submit your hinge problem, we can possibly arrange modifications accordingly.

Each, net..... $400.00

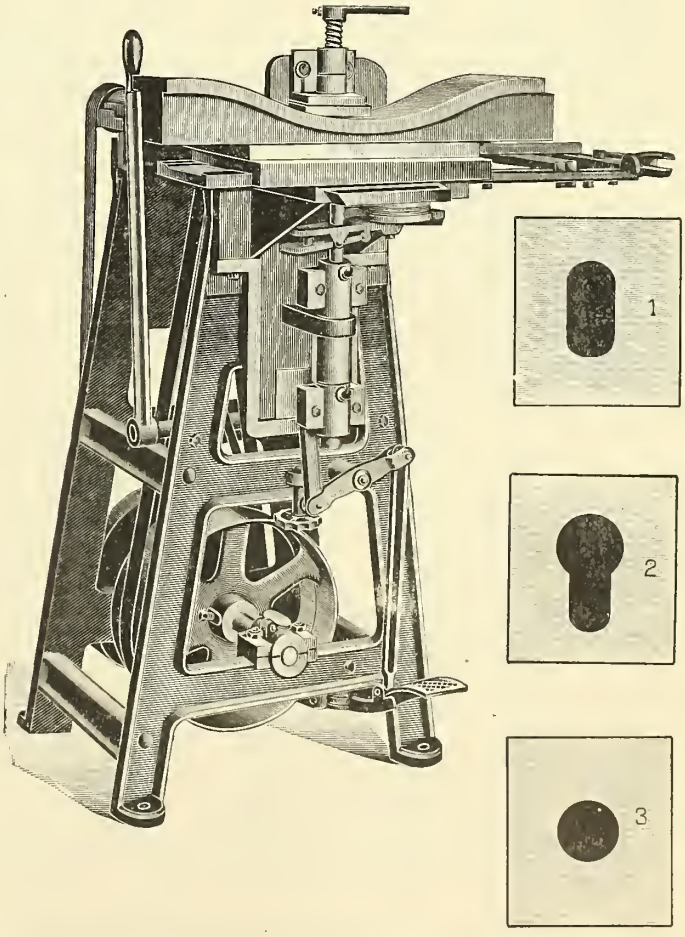
The H. S. & Co. Lock Mortising and High Speed Drilling and Routing Machine

This also is a two-spindle machine, and will mortise and keyhole with one handling for the entire line of cabinet mortise locks in either drawer fronts or door stiles. The right-hand spindle cutting for the body of the lock and the left-hand for the selvage.

For use as a high-speed drilling or routing machine the main spindle has a motion of 4½ inches, has ½-inch hole to take the regular wood boring bits, or by means of a chuck straight shank bits from $\frac{1}{16}$ to ½ inch could be used. By disconnecting the upper slide the plate holding the clamping device can be removed for special routing, the slide having a lateral motion of 7½ inches. Drilling can be done 2½ inches to the center from the table which has an adjustment of 1¾ inches. The tight and loose pulleys are 7 inches in diameter for 2½-inch belt, and should run 1,000 revolutions. The main spindle requires a 2-inch belt. The selvage spindle requires a 1½-inch belt. The keyhole spindle requires a 1-inch belt.

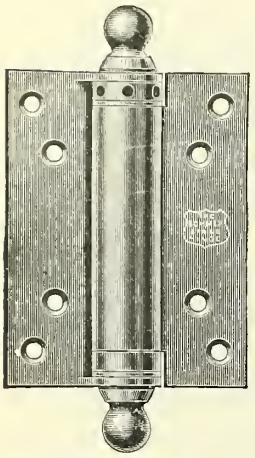
The routing for mortises for body of lock can be done either with the ordinary routing bit, working it out gradually as the size of the bit will stand, or by the use of the short length twist drills with ½-inch shank made for blacksmith's drill presses, by grinding a long taper point, as shown in cut, drilling a hole at each end of intended mortise and as many intermediate ones as necessary, the remaining wood being removed by lateral movements to the extent of taper point of drill. For deep mortises this seems to be the most expeditious. In ordering router bits specify depth of mortise to be cut, and style and size of keyhole bits.

Each, net..... $150.00



Spring Butt Hinges

Bommer



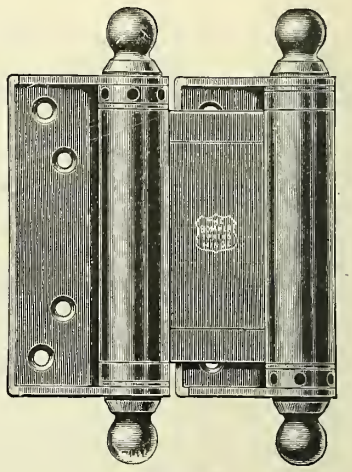
Double Acting

See next page for listing

Size of Hinge Required Inches	Requirements For Doors not Exceeding the Following Dimensions: Thickness Inches	Width Inches		Thickness Inches	Width Inches	Thickness Hanging Strip Inches
3	3/4	27	or	1	24	1/2
4	7/8	30	or	1 1/4	24	5/8
5	1 1/8	30	or	1 1/2	27	5/8
6	1 1/4	33	or	1 3/4	27	3/4
7	1 3/8	33	or	2	30	7/8
8	1 1/2	36	or	2 1/4	30	1
10	1 3/4	36	or	2 1/2	33	1 1/8
12	2 1/4	39	or	3	36	1 1/4

For hardwood or plate glass doors always use the largest size hinge which the thickness of the door will permit.

Packed one pair in a box with screws to match.



Single Acting

Single Acting

Planished Steel

Length of Flanges Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper, Statuary Finish or Dull Brass Finish Imitation Bower-Barff		Dull Brass, Antique Brass Light or Antique Brass Mottled		Sand Blast, Antique Copper or Antique Brass Also Nickel-plated	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	0	$ .80	450	$1.00	300	$1.20	600	$1.20	250	$1.60
4	1	1.00	451	1.20	301	1.40	601	1.40	251	1.90
5	5	1.30	455	1.60	305	1.80	605	1.80	255	2.40
6	9	1.80	459	2.20	309	2.50	609	2.50	259	3.20
7	13	2.30	463	2.80	313	3.20	613	3.20	263	4.00
8	17	3.30	467	4.00	317	4.50	617	4.50	267	5.60
10	21	4.50	471	5.50	321	6.20	521	6.20	271	7.70
12	25	6.00	475	7.30	325	8.30	625	8.30	275	9.90
	For office gates, 1 1/4 to 2 1/2 inches thick, 2 1/2 feet wide with handrail not over 4 inches.									
5	7	$2.00	457	$2.50	307	$2.70	607	$2.70	257	$3.50

Polished Steel

Length of Flanges Inches	Bronze, Brass or Nickel-plated Also Genuine Bower-Barff		Antique Copper, or Statuary Finish		Dull Brass, Antique Brass, Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	50	$2.30	350	$2.50	650	$2.50	550	$2.60	150	$3.30
4	51	2.50	351	2.80	651	2.80	551	2.90	151	3.60
5	55	3.00	355	3.30	655	3.30	555	3.50	155	4.50
6	59	3.80	359	4.10	659	4.10	559	4.30	159	5.80
7	63	4.50	363	4.90	663	4.90	563	5.20	163	7.20
8	67	5.70	367	6.30	667	6.30	567	6.70	167	9.30
10	71	8.30	371	9.20	671	9.20	571	9.70	171	12.40
12	75	11.30	375	12.30	675	12.30	575	13.00	175	16.00
	For office gates, 1 1/4 to 2 1/2 inches thick, 2 1/2 feet wide, with handrail not over 4 inches.									
5	57	$4.00	357	$4.30	657	$4.30	557	$4.60	157	6.20

Bronze or Brass

Length of Flanges Inches	Highly Polished		Antique Copper, or Statuary Bronze Also Nickel-plated		Dull Brass, Antique Brass Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	100	$4.00	400	$4.50	700	$4.05	500	$4.60	200	$5.20
4	101	4.50	401	5.00	701	5.00	501	5.10	201	5.80
5	105	5.50	405	6.00	705	6.00	505	6.20	205	7.10
6	109	6.80	409	7.40	709	7.40	509	7.60	209	8.60
7	113	8.50	413	9.30	713	9.30	513	9.60	213	10.80
8	117	10.90	417	12.10	717	12.10	517	12.50	217	14.30
10	121	14.70	421	16.10	721	16.10	521	16.60	221	18.60
12	125	19.80	425	21.50	725	21.50	525	22.20	225	24.70
	For office gates, 1 1/4 to 2 1/2 inches thick, 2 1/2 feet wide, with handrail not over 4 inches.									
5	107	$8.00	407	$8.50	707	$8.50	507	$8.80	207	$10.00

It will be noted that most of the above numbers are supplied in several finishes. In all such cases the finish should be specified as well as the number.

Spring Butt Hinges

Bommer

Continued from preceding page, which see for Single acting Hinges in this style, also for table giving size hinges to use on various weight doors

Double Acting

See preceding page for illustration

Planished Steel

Length of Flanges Inches	Japanned, Dead Black		Bronze or Brass-plated		Antique Copper, Statuary Finish Dull Brass, also Imitation Bower-Barff		Dull Brass, Antique Brass Light or Antique Brass Mottled		Sand Blast Antique Copper or Antique Brass, also Nickel-plated	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	29	$1.60	479	$2.00	329	$2.20	629	$2.20	279	$3.00
4	30	2.00	480	2.40	330	2.80	630	2.80	280	3.80
5	33	2.50	483	3.10	333	3.50	633	3.50	283	4.80
6	36	3.50	486	4.30	336	4.90	636	4.90	286	6.30
7	39	4.50	489	5.50	339	6.30	639	6.30	289	8.10
8	42	6.50	492	8.00	342	9.00	642	9.00	292	11.20
10	45	9.00	495	11.00	345	12.40	645	12.40	295	15.30
12	48	12.00	498	14.50	348	16.50	648	16.50	298	19.80
	For office gates, 1¼ to 2½ inches thick, 2½ feet wide, with hand rail not over 3¼ inches.									
6	38	$4.50	488	$5.50	338	$6.30	638	6.30	288	8.00

Polished Steel

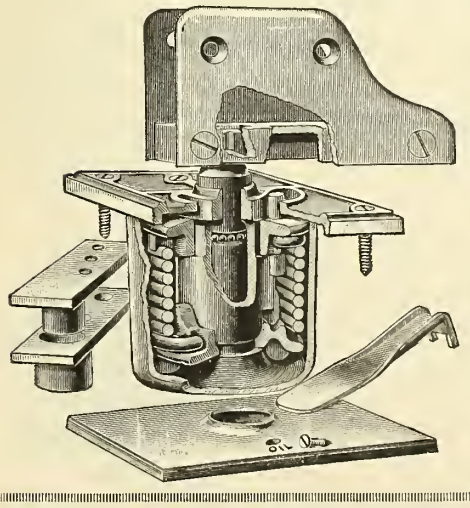
Length of Flanges Inches	Bronze, Brass or Nickel-plated Also Genuine Bower-Barff Finish		Antique Copper or Statuary Finish		Dull Brass, Antique Brass Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	79	$4.50	379	$5.00	679	$5.00	579	$5.20	179	$6.30
4	80	5.00	380	5.50	680	5.50	580	5.80	180	7.00
5	83	6.00	383	6.50	683	6.50	583	7.00	183	8.40
6	86	7.50	386	8.30	686	8.30	586	8.80	186	10.30
7	89	9.00	389	9.90	689	9.90	589	10.50	189	12.50
8	92	11.40	392	12.70	692	12.70	592	13.50	192	16.00
10	95	15.50	395	17.10	695	17.10	595	18.20	195	21.50
12	98	21.00	398	23.00	698	23.00	598	24.40	198	29.00
	For office gates, 1¼ to 2½ inches thick, 2½ feet wide, with handrail not over 3¼ inches.									
6	88	$8.50	388	$9.40	688	9.40	588	10.00	188	11.50

Bronze or Brass

Length of Flanges Inches	Highly Polished		Antique Copper, Statuary Finish also Nickel-plated		Dull Brass, Antique Brass Light or Antique Brass Mottled		Verde Antique Finish		Silver-plated Either Bright or Oxidized	
	Number	Pair	Number	Pair	Number	Pair	Number	Pair	Number	Pair
3	129	$7.40	429	$8.10	729	$8.10	529	$8.30	229	$9.40
4	130	8.50	430	9.40	730	9.40	530	9.70	230	10.80
5	133	10.20	433	11.20	733	11.20	533	11.60	233	12.90
6	136	12.50	436	13.70	736	13.70	536	14.20	236	15.60
7	139	15.90	439	17.50	739	17.50	539	18.10	239	19.80
8	142	20.40	442	22.50	742	22.50	542	23.30	242	25.50
10	145	27.20	445	30.00	745	30.00	545	31.00	245	34.00
12	148	36.80	448	40.20	748	40.20	548	41.50	248	45.90
	For office gates, 1¼ to 2½ inches thick, 2½ feet wide, with handrail not over 3¼ inches.									
6	138	$15.30	438	$16.80	738	16.80	538	$17.50	238	18.70

It will be noted that most of the above numbers are supplied in several finishes. In all such cases the finish should be specified as well as the number

Mortise Floor Spring Hinges



Bommer Ball Bearing

These hinges swing doors double action, but by using a stop bead on the casing they work equally well single action. They are easily fitted to doors of any thickness, as the shoe is adjustable. The tension of the spring is also adjustable, and the weight of the door is supported on tool steel ball-bearings set upon a raised centerpost. The ball bearings are covered by a hollow spindle which allows no water, dirt, or grit to reach them, making them wear years longer.

Only the best oil-tempered springs are used. All parts are interchangeable. No hanging strip is required, the back edge of the door being slightly rounded.

These hinges impart an easy movement to the door.

If wanted without side plates, a top pivot with movable plunger is furnished in connection with the invisible socket bar shown on lower part of next page, without extra charge. Where two finishes are required in combination, send diagram locating each. The more expensive of the two finishes will govern the price. Sent out correctly set up for doors specified, but the tension may be reduced or increased as desired.

See next page for listing

Mortise Floor Spring Hinges

Bommer Ball Bearing

See preceding page for illustration and description. Packed one set in a box, complete with wrench and screws to match.

Planished Steel

Thickness of Door Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper Statuary Finish Imitation Bower-Barff		Dull Brass or Antique Brass		Sand Blast Antique Copper or Antique Brass Finish		Dimensions of Top Plate Inches	Depth of Cup Inches	Distance from Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set			
7/8 to 1 1/2	*2	$2.35	452	$2.90	302	$3.15	602	$3.15	252	$3.75	3 3/4 x 5 1/8	3	1 5/8
1 3/8 to 2	*4	2.90	454	3.50	304	3.80	604	3.80	254	3.90	3 7/8 x 5 5/8	3 1/2	1 3/4
2 to 2 1/2	*6	3.50	456	4.10	306	4.55	606	4.55	256	4.60	4 1/2 x 6 1/2	3 3/4	2
2 1/2 to 3 1/2	*8	6.70	458	7.25	308	7.70	608	7.70	258	7.75	4 1/2 x 6 1/2	3 3/4	2

*See bottom of page for cast metal boxes for setting hinges Nos. 2, 4, 6 and 8 into cement or tile floors

Polished Steel

Thickness of Door Inches	Bronze, Brass or Nickel-plated, also Genuine Bower-Barff		Antique Copper or Statuary Bronze		Dull Brass or Antique Brass		Verde Antique Finish		Silver-plated, either Bright or Oxidized		Dimensions of Top Plate Inches	Depth of Cup Inches	Distance from Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set			
7/8 to 1 1/2	52	$3.80	352	$4.00	652	$4.00	552	$4.40	152	$7.00	3 3/4 x 5 1/8	3	1 5/8
1 3/8 to 2	54	4.10	354	4.35	654	4.35	554	4.75	154	7.50	3 7/8 x 5 5/8	3 1/2	1 3/4
2 to 2 1/2	56	4.70	356	5.00	656	5.00	556	5.40	156	8.25	4 1/2 x 6 1/2	3 3/4	2
2 1/2 to 3 1/2	58	7.80	358	8.30	658	8.30	558	8.70	158	11.50	4 1/2 x 6 1/2	3 3/4	2

Bronze or Brass

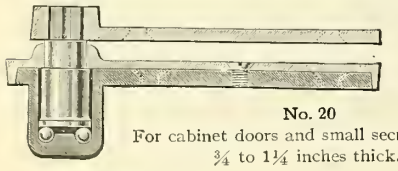
Thickness of Door Inches	Highly Polished		Antique Copper or Statuary Finish Nickel-plated		Dull Brass or Antique Bronze		Verde Antique Finish		Silver-plated, either Bright or Oxidized		Dimensions of Top Plate Inches	Depth of Cup Inches	Distance from Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set			
7/8 to 1 1/2	102	$5.85	402	$6.45	702	$6.45	502	$7.00	202	$9.35	3 3/4 x 5 1/8	3	1 5/8
1 3/8 to 2	104	7.00	404	7.60	704	7.60	504	8.20	204	10.50	3 7/8 x 5 5/8	3 1/2	1 3/4
2 to 2 1/2	106	8.15	406	8.75	706	8.70	506	9.40	206	11.70	4 1/2 x 6 1/2	3 3/4	2
2 1/2 to 3 1/2	108	11.10	408	11.70	708	11.70	508	12.40	208	15.20	4 1/2 x 6 1/2	3 3/4	2

It will be noted that most of the above numbers are supplied in several finishes. In all such cases the finish should be specified as well as the number.

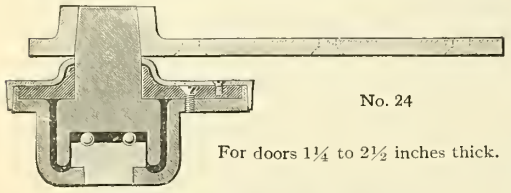
Pivot Hinges

Bommer Ball-Bearing, Without Springs

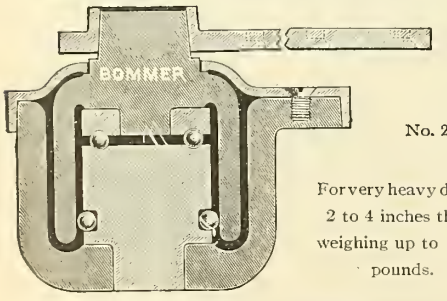
These hinges may be used to hang doors either single or double action. They are durable and noiseless, work smoothly and will swing the heaviest doors with slight exertion.



No. 20
For cabinet doors and small secret doors 3/4 to 1 1/4 inches thick.

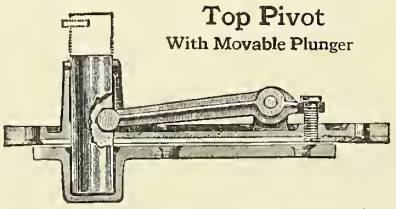


No. 24
For doors 1 1/4 to 2 1/2 inches thick.



No. 28
For very heavy doors 2 to 4 inches thick weighing up to 2,000 pounds.

Top Pivot
With Movable Plunger



Invisible Socket Bar



The Top Pivot with movable plunger is furnished in connection with the invisible socket bar for all pivot hinges illustrated on this page. The movable plunger can be raised out of its cup, clear of the top of the door by means of the set-screw.

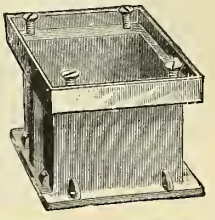
Per Set, Complete, Including Top Pivot, Invisible Socket Bar and Screws to Match

Cast Iron (Polished) Japanned		Cast Iron (Polished) Bronze-plated		Cast Iron (Polished) Antique Copper-plated		Bronze Highly Polished		Dimensions of Top Plate Inches	Depth of Cup Inches	From Center of Pivot to Casing Inches	From Bottom of Socket Bar to Floor Inch
No.	Set	No.	Set	No.	Set	No.	Set				
20	$2.50	470	$3.30	320	$3.70	120	$4.60	1 x 4	1 1/8	5/8	1/4
*24	2.90	474	4.10	324	4.60	124	5.80	4 x 3 1/4	1 5/8	1 1/2	3/8
*28	8.40	478	10.00	328	10.90	128	12.50	5 1/2 x 5 1/4	3 1/4	2 1/4	1/2

Cast Metal Boxes for Setting Floor Spring Hinges and Pivot Hinges into Cement or Tile Floors

	Each
For No. 2 Mortise Floor Spring Hinge	$1.20
For No. 4 Mortise Floor Spring Hinge	1.80
For No. 6 Mortise Floor Spring Hinge	2.40
For No. 8 Mortise Floor Spring Hinge	2.40
For No. 24 Pivot Hinge	.90
For No. 28 Pivot Hinge	2.40

Prices include screws



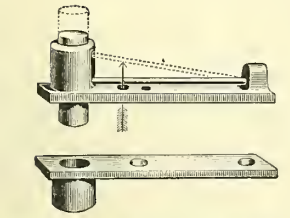
SEE DISCOUNT SHEET

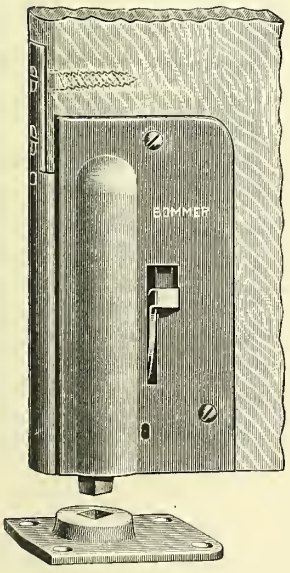
Floor Surface Spring Hinge

Bommer Double Release

Vertical Type—Ball Bearing

Suitable for Both Double Acting and Single Acting Doors





This hinge has two release movements. First, the spring-action is temporarily released on either side of the door through an angle of 90 degrees by pressing either side-pedal with the foot when opening the door, and is automatically re-engaged when the door is closed.

Second, the spring-action is held permanently released on both sides of the door through an angle of 180 degrees by inserting a wire nail, when the door is open, in a hole provided in hinge-frame and side plates, permitting the door to swing freely without spring-action in either direction until the nail is withdrawn and the spring-action automatically re-engaged by closing the door.

The entire mechanism is contained in the hinge-frame and completely enclosed by the side plates; there are no delicate parts near the floor to rust away; the pintle of the hinge has a squared shank fitted into a correspondingly squared socket of the floor-plate and cannot jump out.

The ball-bearings are of hardened tool steel and move in an enclosed steel ball-race near the top of hinge, away from water, dust and dirt.

This hinge is easy to apply, no hanging strip is required, no holes to cut in the floor. It is the strongest and most durable hinge of its type, the springs are made of the best oil-tempered steel wire, have great resilience and power and never go lame.

These hinges as sent out have the spring correctly set up for the doors specified, but the spring power can be adjusted to suit all requirements at any time after hinge is fixed to the door.

The top pivot furnished with the hinge has a spring-actuated plunger, which permits the door to be taken down quickly and easily without any unscrewing. The workmanship, finish and elegance of appearance are unrivalled.

A special right-angle jamb socket plate for cement or tile floors will be furnished instead of the regular floor plate if so ordered (without charge).

Packed one set in a box, with screws to match.

Planished Steel

Thickness of Door Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper, Statuary Finish, or Imitation Bower-Barff		Dull Brass or Antique Brass		Sand Blast, Antique Copper, Antique Brass, also Planished Nickel-plated		From Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1⅛ to 1½	20	$2.80	470	$3.75	320	$4.10	620	$4.10	270	$4.90	1¼
1½ to 2	22	4.20	472	5.60	322	6.15	622	6.15	272	7.35	1½
1¾ to 2¾	24	8.40	474	11.20	324	12.30	624	12.30	274	14.70	2

Polished Steel

Thickness of Door Inches	Bronze, Brass, Nickel-plated, also Genuine Bower-Barff		Antique Copper or Statuary Finish		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1⅛ to 1½	70	$5.00	370	$5.50	670	$5.50	570	$6.60	170	$7.25	1¼
1½ to 2	72	7.50	372	8.25	672	8.25	572	9.90	172	10.90	1½
1¾ to 2¾	74	15.00	374	16.50	674	16.50	574	19.80	174	21.80	2

Bronze or Brass

Thickness of Door Inches	Bronze or Brass		Antique Copper or Statuary Finish Nickel-plated		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Door Casing Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1⅛ to 1½	120	$7.00	420	$7.70	720	$7.70	520	$9.30	220	$10.20	1¼
1½ to 2	122	10.50	422	11.55	722	11.55	522	13.95	222	15.30	1½
1¾ to 2¾	124	21.00	424	23.10	724	23.10	524	27.90	224	30.60	2

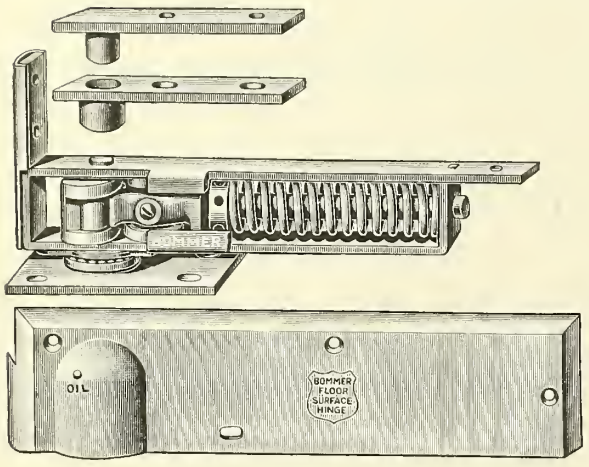
It will be noted that most of above numbers are supplied in several finishes; in all such cases the finish should be specified as well as the number

Floor Surface Spring Hinge

Bommer—Release and Hold Back

Has Efficient Alignment Device, Horizontal Compression Type, Ball Bearing

Suitable for Both Double-Acting and Single-Acting Doors



This is the most durable hinge of its type. It holds the door open when swung beyond 90 degrees at either side. When desired the spring-action can be entirely released so that the door will swing free, without spring-action, through an arc of 180 degrees in either direction by inserting a wire nail (when the door is open) into a hole provided in the side plates for that purpose.

The spring is of the compression type, made of the best oil-tempered steel wire. These hinges as sent out have the spring correctly set for the doors specified, but the tension of the spring can be adjusted to suit all requirements after the hinge is fixed to the door. The weight of the door is carried on hardened tool-steel ball-bearings contained in an enclosed steel ball-race.

The alignment can be adjusted to a nicety through an unusually large radius after the hinge is in place and can then be permanently locked by the aid of a screwdriver.

The lubricating system of this hinge permits all bearings and friction surfaces to be lubricated from one oil-hole at either side of the hinge; both hinge-frame and floor-plate are reinforced by a method which secures longer bearings for the spindle. The spring-actuated plunger is centrally guided in the side-extensions of the hinge-frame. A suitable top pivot is furnished with the hinge. This hinge is easy to apply, being screwed fast directly to the door and to the surface of the floor, which is the most reliable method. Back edge of door is slightly rounded.

If special right-angle jamb plate for cement or tile floors is required state so on order and add 25 cents per set to list price.

Packed one set in a box, with screws to match

Planished Steel

Thickness of Door Inches	Japanned Dead Black		Bronze or Brass-plated		Antique Copper Statuary Finish also Imitation Bower-Barff		Dull Brass or Antique Brass		Sand Blast Antique Copper Antique Brass also Planished Nickel-plated		From Center of Spindle to Back Edge of Door Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1⅛ to 1¾	18	$3.40	468	$4.20	318	$4.50	618	$4.50	268	$5.40	1½
2 to 2½	19	4.20	469	5.10	319	5.50	619	5.50	269	5.70	2⅛

Polished Steel

Thickness of door Inches	Bronze, Brass or Nickel-plated also Genuine Bower-Barff		Antique Copper or Statuary Finish		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Back Edge of Door Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1⅛ to 1¾	68	$5.50	368	$5.80	668	$5.80	568	$6.40	168	$9.70	1½
2 to 2½	69	6.00	369	6.30	669	6.30	569	6.90	169	10.20	2⅛

Bronze or Brass

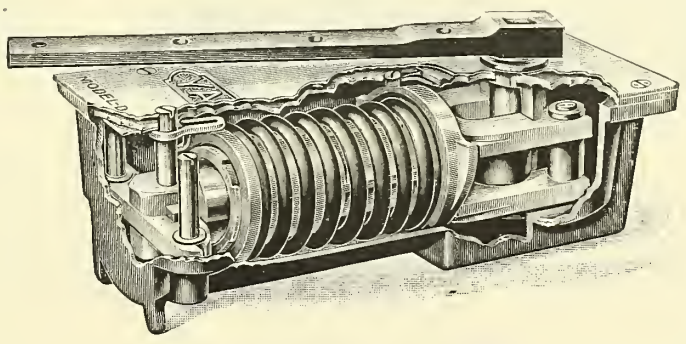
Thickness of Door Inches	Bronze or Brass		Antique Copper Statuary Finish or Nickel-plated		Dull Brass or Antique Brass		Verde Antique Finish		Bright or Oxidized Silver-plated		From Center of Spindle to Back Edge of Door Inches
	Number	Set	Number	Set	Number	Set	Number	Set	Number	Set	
1⅛ to 1¾	118	$8.40	418	$9.30	718	$9.30	518	$10.10	218	$13.40	1½
2 to 2½	119	10.10	419	10.90	719	10.90	519	11.80	219	15.10	2⅛

It will be noted that most of the above numbers are supplied in several finishes; in all such cases the finish should be specified as well as the number

Double-Acting Door Closing Floor Hinge

Yale Model D (Bardsley Type)

This is a combined spring and door closer, and is placed in the floor under the door. It also takes the place of the butts ordinarily used to hang the door, as the bottom of the door is hung on the pintle provided with the hinge, thus forming pivots on which the door swings in either direction.



Furnished regularly in polished bronze. Polished brass at regular prices. Nickel, dull brass, antique copper, statuary bronze, or Bower-Barff finishes, at an additional price. Other special finishes to order. When floor hinges are to be set in tile, cement or concrete floors, a cast iron box should be used to permit easy removal of the hinge. In ordering, give size of floor hinge. Each set in a box, complete with screws to match.

No. 31 For light butlers pantry and other similar interior doors in dwellings. Length, 9 inches; width, 4 inches; depth, $3\frac{1}{8}$ inches; center of pintle to end of hinge, $1\frac{9}{16}$ inches; set including pivot shown below ..... $ 9.65

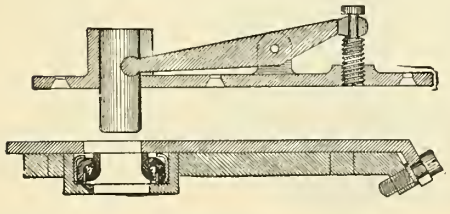
No. 32 For medium interior doors in dwellings, offices and public buildings, or for small vestibule doors up to 2 feet 6 inches wide. Length, $9\frac{3}{8}$ inches; width, $4\frac{1}{2}$ inches; depth, $3\frac{1}{4}$ inches; center of pintle to end of hinge, $1\frac{13}{16}$ inches; set including pivot shown below 11.00

No. 33 For outside doors up to 2 feet 9 inches wide, or heavy interior doors. Length, $10\frac{1}{2}$ inches; width, 5 inches; depth, $3\frac{5}{8}$ inches; center of pintle to end of hinge, 2 inches; set including pivot shown below..... 14.85

No. 34 For outside doors up to 3 feet wide. Length, $11\frac{1}{2}$ inches; width, $5\frac{1}{2}$ inches; depth, $3\frac{7}{8}$ inches; center of pintle to end of hinge, $2\frac{1}{4}$ inches; set including pivot shown below $17.60

No. 35 For outside doors up to 3 feet 6 inches wide. Length, $12\frac{1}{2}$ inches; width, 6 inches; depth, $4\frac{3}{8}$ inches; center of pintle to end of hinge, $2\frac{1}{2}$ inches; set including pivot shown below..... 20.35

No. 36 For outside doors up to 4 feet wide. Length, $13\frac{1}{2}$ inches; width $6\frac{3}{8}$ inches; depth, $4\frac{3}{4}$ inches; center of pintle to end of hinge, 3 inches; set including pivot shown below..... 23.10



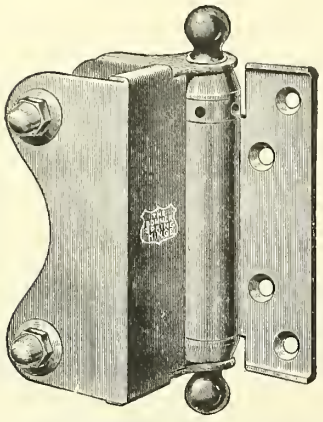
Adjustable Ball-Bearing Top Pivot

This pivot is supplied with above hinges. It requires no lubrication. By turning the end screw, the top of the door may be brought nearer to, or removed farther from the jamb.

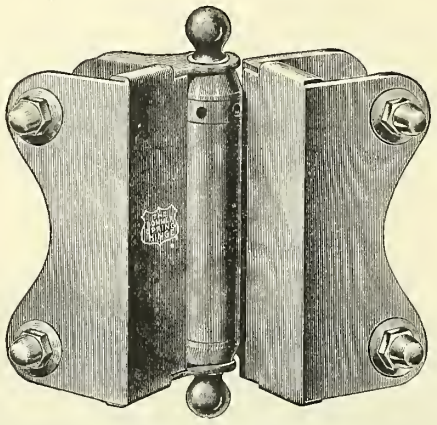
Box-Flanged Spring Hinges

Bommer

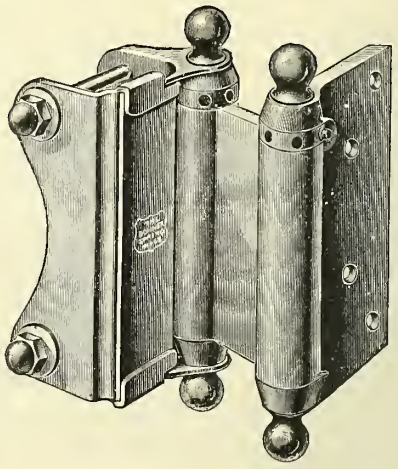
For Lavatory Doors on Marble or Slate Partitions



No. 1000 Single Action
For partitions with hanging stile. One box flange

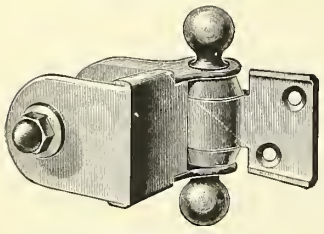


No. 1001 Single Action
For partitions with hanging stile. Two box flanges



No. 1005 Double Action
For partitions with hanging stile. One box flange

Can be used for either right or left hand doors opening in or out. These hinges are suitable for marble or slate partitions of the following thicknesses: 1 inch, 1¼ inches, 1½ inches, 1¾ inches, 2 inches. The box flange for the marble is adjustable ⅛ inch over and under above sizes to allow for variations in thickness. They are made to close the door, but if so specified in single action hinges the springs can be made reverse action, to hold the door open, without extra charge. The length of the flanges is 4 inches. The exact thickness of both the marble and the door must be stated.



No. 01000 Blank

Made of brass, nickel-plated or bronze, highly polished. Specify which is desired. For statuary, dull brass or antique finishes add 10 per cent.

No. 1000	Pair	$6.60
No. 1001	Pair	8.70
No. 1005	Pair	9.90

For extra light and narrow doors one hinge, No. 1000, and one blank, No. 01000, may be used.

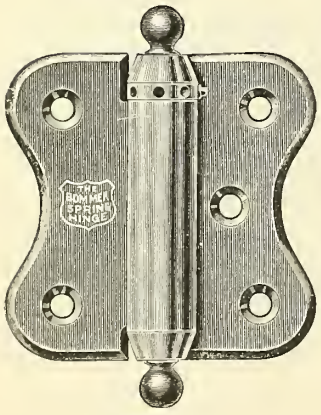
Set		$5.40

Packed with necessary bolts and screws to match.

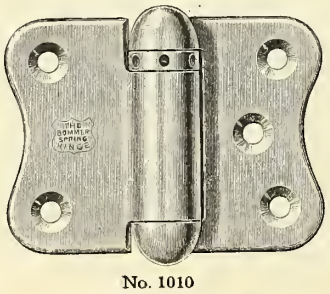
Surface Spring Hinges

Bommer

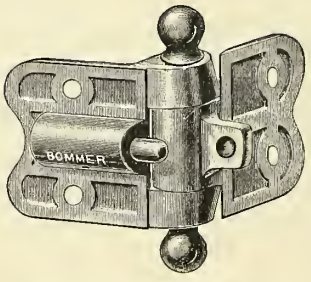
Single Acting, for Lavatory Doors



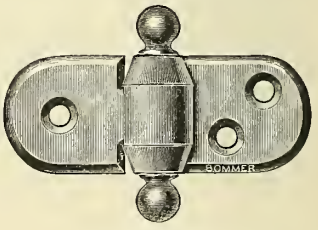
No. 1011
Length of flange 4 inches



No. 1010
Length of flange 3 inches



No. 1020 Rear View
Checking blank for use with Hinge No. 1011



No. 01011
For use with Hinge No. 1011

These hinges, as regularly made, close the door, but if so ordered can be made with reverse springs to hold it open without extra charge. State if wanted for marble or wood partitions; if for marble, state its thickness.

Packed with bolts and screws to match.

Made in brass, nickel-plated, or bronze, highly polished. Specify which desired.

No. 1011	Pair	$6.40
No. 1010	Pair	5.00

For extra light and narrow single action lavatory doors, one hinge, No. 1011, and one blank, No. 01011, may be used. Set, $5.20.

Checking Blank

Holds the door partly open while closet is unoccupied.

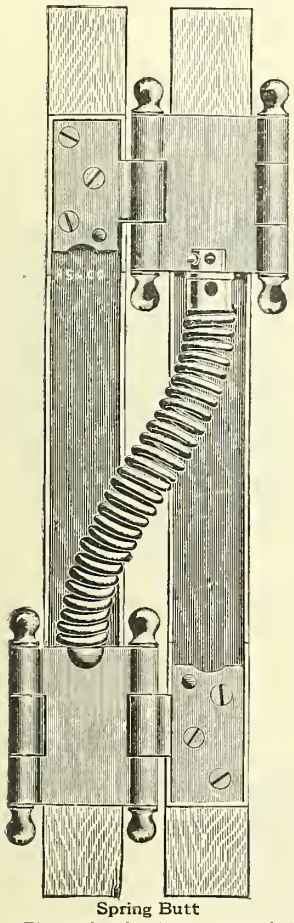
Used in connection with 4-inch surface spring hinges, one hinge, No. 1011, and one checking blank, No. 1020, constitute one set. (Dispenses with use of indicator bolt.)

If wanted for marble, state thickness.

Set		$6.40

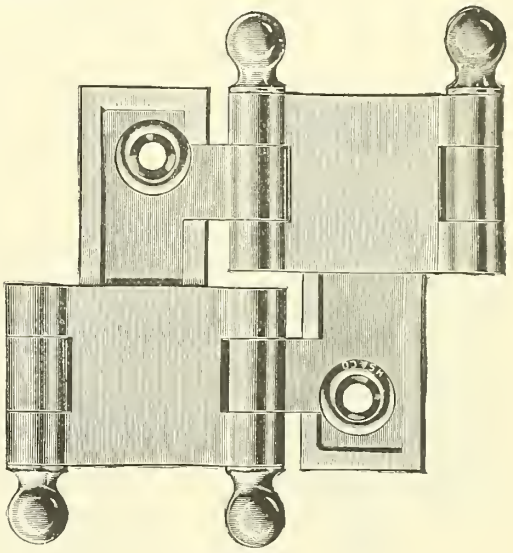
Spring and Blank Butts

Chicago Double Acting



Spring Butt
The spring is always concealed when the door is closed.

A pair of spring butts are intended for each door, but when doors are light, one spring butt at the top and one blank butt at the bottom will work very well. Never put the blank butt at the top of the door. Be particular to hang them in perpendicular line.



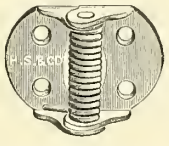
Blank Butt

Planished Wrought Steel. Prices per pair, packed with screws to match

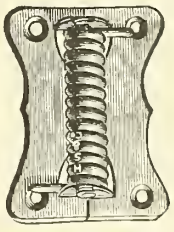
For Doors, Thickness Inches	Spring Butts		Blank Butts	
	No. 1½ Japanned	No. 131½ Bronze-plated	No. 3½ Japanned	No. 133½ Bronze-plated
⅞ to 1	$1.30	$1.60	$ .65	$ .80
1⅛ to 1¼	1.60	1.95	.80	1.00
1⅜ to 1½	2.60	3.20	1.30	1.60

Show Case Spring Hinges

Half Size Cuts



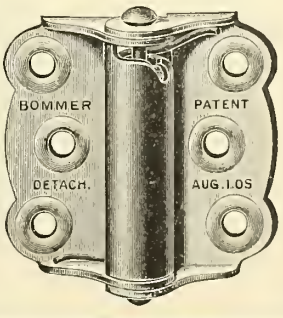
No. 422 Wrought steel, brass-plated, with brass spring, 1½ inches long, gross pair $10.00



No. 23 Wrought steel, copper bronzed, with brass-plated spring, 2¼ inches long, dozen pairs $1.50

Screen Door Spring Hinges

Bommer Detachable



Made of wrought steel, 2¾ x 2¾ inches.

An easily detachable screen door hinge is often very convenient.

To detach this hinge, simply push the end of the spring down into the hook on the barrel and withdraw the pintle; then take the door down without unscrewing.

This hinge has enclosed oil-tempered steel coil-spring, is well made and will give good service.

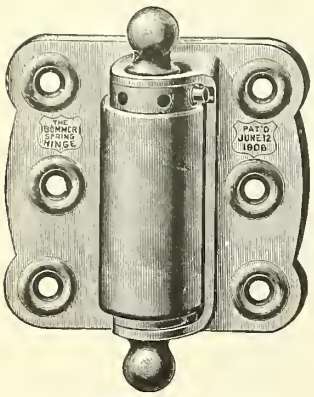
Packed with screws to match.

No. 960½ Japanned, dozen pairs $1.90
No. 961 Bronze-plated, dozen pairs 2.80
No. 963 Dull brass finish, dozen pairs 3.20

Screen Door Spring Hinges

Bommer Adjustable Tension

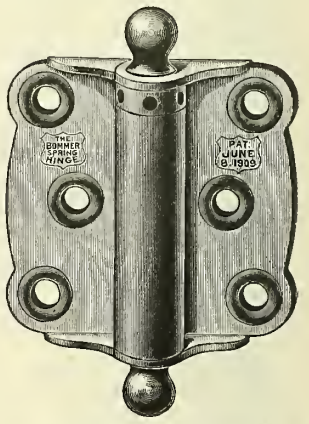
The coil spring is entirely enclosed and is made of best oil-tempered steel wire. These hinges are of excellent workmanship and finish and are made of heavy metal. The tension of the spring can be regulated after the hinge is applied to the door.



Nos. 2001, 2010 and 2012
Extra Heavy, 3x3 Inches

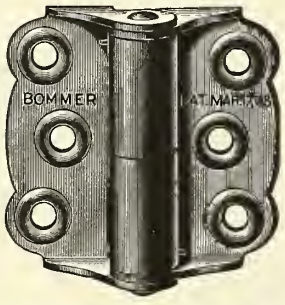
Packed one pair in a box, with screws to match

Number	Material	Finish	Pair
2001	Planished Steel	Bronze-plated	$1.10
2010	Bronze	Highly polished	2.30
2012	Brass	Dull Brass	2.60
2100	Planished Steel	Japanned.	.60
2101	Planished Steel	Bronze-plated	.75
2102	Planished Steel	Antique Copper	.90
2110	Bronze	Highly polished	1.60
2112	Brass	Dull Brass	1.80



Nos. 2100, 2101, 2102, 2110 and 2112
Heavy, 3x3 Inches

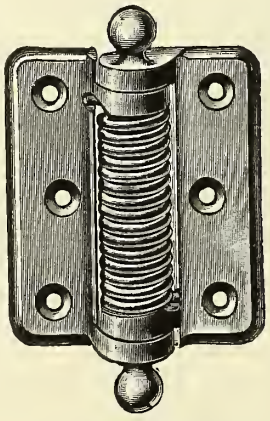
Bommer Wrought Steel



These hinges have two bearing joints, no matter which end is uppermost, thereby greatly increasing its strength and durability. Has enclosed oil-tempered spiral coil spring. 2¾ x 2¾ inches.

Number	Finish	Packed	Dozen Pair
900	Japanned	Without screws	$1.50
900½	Japanned	With screws	1.90
901	Bronze-plated	With screws to match	2.80
903	Dull Brass	With screws to match	3.20

H. S. & Co.

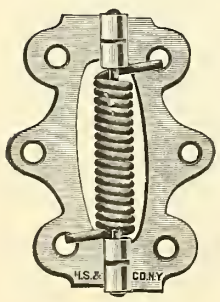


No. 2715 Cast bronze, polished, 3x3 inches. Packed with screws to match. Dozen pair..... $25.60

Anti-Friction Spring Hinges

Single Acting

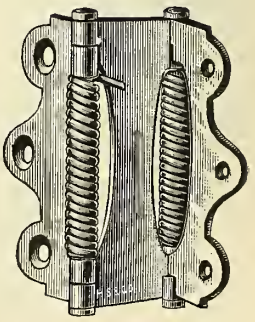
Number	Length Inches	Material	Finish	Dozen Pair
1	2⅜	Wrought Brass	Dipped	$3.00
3	3	Wrought Brass	Dipped	4.50
5	5	Wrought Brass	Dipped	7.50
13	3	Wrought Iron	Brass-plated	3.00



Single Acting

Double Acting

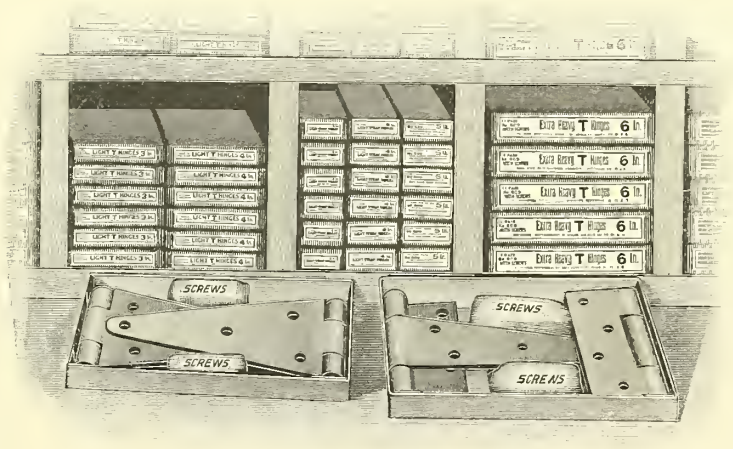
Number	Length Inches	Material	Finish	Dozen Pairs
9	3	Wrought Brass	Dipped	$8.30
11	5	Wrought Brass	Dipped	16.50



Double Acting

Strap and Tee Hinges

Packed One Pair in a Box with Screws



This style of packing is most economical, convenient and time-saving in railroad shops and factories generally. The slight extra cost of packing is more than balanced by the great saving in the store room, eliminating all waste of materials and having hinges and proper screws ready for instant use. The hinges are illustrated and described in detail on the next page.

Prices are Per Hundred Pairs

Wrought Steel, Plain

Size, inches	3	4	5	6	8	10	12
Style Light Strap	$7.50	$9.00	$11.00	$13.00	$16.50	$22.75	$32.50
Heavy Strap	.....	10.00	13.75	16.50	23.75	38.50	57.00
Corrugated Heavy Strap	.....	10.60	14.35	17.00	25.00	40.00	57.50
Light Tee	6.80	7.25	9.40	10.60	12.50	18.75	24.40
Heavy Tee	.....	13.75	15.85	19.25	25.00	35.75	47.50
Extra Heavy Tee	.....	15.00	19.35	23.35	35.75	50.50	71.50
Corrugated Extra Heavy Tee	.....	15.00	19.35	24.10	37.10	52.50	73.10

Wrought Steel, Japanned

Size, inches	3	4	5	6	8	10	12
Style Light Strap	$8.15	$9.65	$12.00	$14.25	$18.25	$25.00	$36.00
Heavy Strap	.....	10.50	14.50	17.50	25.50	41.00	61.00
Corrugated Heavy Strap	.....	11.10	15.25	18.00	27.00	42.50	62.50
Light Tee	7.35	7.75	9.90	11.25	13.25	20.00	26.00
Heavy Tee	.....	14.50	16.75	20.00	26.25	37.50	50.00
Extra Heavy Tee	.....	15.65	20.25	24.25	37.25	53.00	75.00
Corrugated Extra Heavy Tee	.....	15.65	20.25	25.25	38.75	55.00	77.00

Hinge Hasps

Packed one in a box, with screws, in same manner as hinges described and illustrated above

Prices Per Hundred Hasps

Wrought Steel, Plain

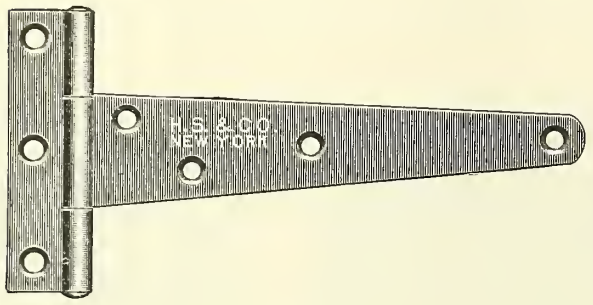
Size, inches	3	4½	6	8	10	12
Hundred	$7.00	8.75	11.65	15.15	21.20	30.30

Wrought Steel, Japanned

Size, inches	3	4½	6	8	10	12
Hundred	$6.75	9.50	12.50	16.15	22.75	32.50

Wrought Steel Tee Hinges

Prices Per Dozen Pairs



Light

Length of Strap Inches	Width of Strap at Joint Inches	Length of Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
3	1 1/16	2 1/2	6	$ .75	$1.20	$1.50
4	1 1/16	2 3/4	7	.80	1.35	1.70
5	1 3/16	3	8	1.00	1.70	2.10
6	1 1/4	3 1/2	8	1.20	2.10	2.50
7	1 1/2	3 1/2	9	1.35	2.35	2.90
8	1 9/16	4	9	1.50	2.55	3.25
10	1 3/4	4 1/2	10	2.20	3.70	4.60
12	2 1/8	4 3/4	11	3.00	5.50	6.70

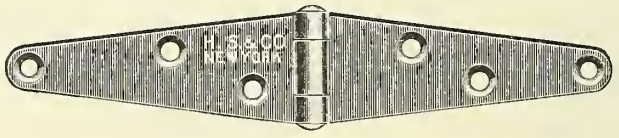
Heavy

Length of Strap Inches	Width of Strap at Joint Inches	Length of Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
4	1 5/16	3	8	$ .90	$1.50	$1.85
5	1 3/8	3 1/2	8	1.05	1.95	2.50
6	1 9/16	3 1/2	9	1.25	2.30	2.90
8	1 3/4	4	10	1.55	2.80	3.50
10	2	4 1/2	11	2.30	4.20	5.15
12	2 7/16	5 1/2	12	3.20	6.20	7.75

Extra Heavy

Length of Strap Inches	Width of Strap at Joint Inches	Length of Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
6	2 5/16	4 1/2	11	$3.00	$6.00	$8.50
8	2 5/8	5 1/2	13	5.00	10.00	13.50
10	3 1/8	7	14	7.40	14.25	19.00
12	3 3/8	7 3/4	14	10.70	21.20	28.00
14	3 3/8	7 3/4	16	11.80	23.00	30.00
16	3 3/8	7 3/4	16	12.60	24.50	31.50

Wrought Steel Strap Hinges



Prices Per Dozen Pairs

Light

Length of Each Strap Inches	Width at Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
3	1 1/8	6	$ .85	$1.30	$1.45
4	1 1/8	7	1.10	1.75	2.00
5	1 5/16	8	1.35	2.35	2.80
6	1 9/16	9	1.70	3.15	3.75
8	1 7/8	10	2.40	4.30	5.00
10	2 1/16	10	3.30	5.90	6.90
12	2 3/4	11	4.90	9.20	10.80

Heavy

Length of Each Strap Inches	Width at Joint Inches	Size of Screw Number	Plain Steel	Galvanized	Galvanized with Brass Pins
4	1 9/16	9	$1.60	$2.85	$3.30
5	1 13/16	9	2.15	4.25	5.00
6	2 1/2	11	2.80	6.40	7.80
8	3	12	4.50	10.25	12.35
10	3 7/16	13	6.80	15.50	19.00
12	4	14	10.40	23.50	27.50
14	4 1/2	16	12.20	25.70	30.40

Wrought Brass Strap and Tee Hinges

Polished, Packed With Brass Screws

Tee

Length of Strap Inches	Width of Strap at Joint, Inches	Length of Joint Inches	Dozen Pairs
3	1 1/16	2 1/2	$3.40
4	1 1/16	2 3/4	4.30
5	1 3/16	3	5.60

Strap

Length of Each Strap Inches	Width at Joint Inches	Dozen Pairs
3	1 1/8	$4.50
4	1 1/8	6.00
5	1 5/16	8.00

SEE DISCOUNT SHEET

Hook Hinges

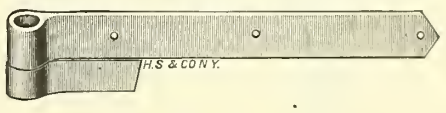
For Wood



No. 78 Wrought Iron

Size, inches	14	18
Dozen pairs	$7.60	10.25

For Stone



No. 80 Wrought Iron

Size, inches	14	18
Dozen pairs	$6.00	7.50

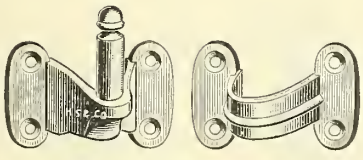
Plate Hinges



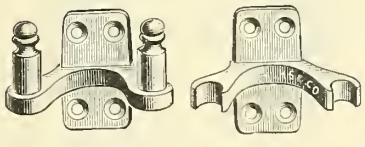
No. 162 Fast Joint, Wrought Iron, Japanned

Size, inches	12	14	16
Dozen pairs	$6.00	8.00	9.00

Gate Hinges

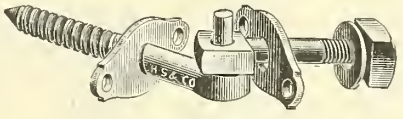


Upper Hinge

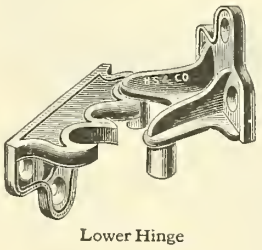


Lower Hinge

No. 224 Self-shutting. To swing both ways. Cast iron, japanned. Dozen sets..... $3.25



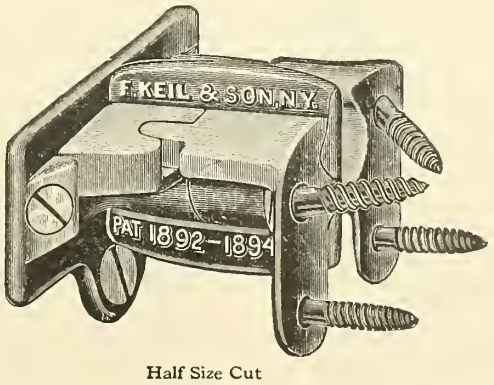
Upper Hinge



Lower Hinge

No. 274 Self-shutting. To swing both ways. Japanned. Upper hinge wrought iron; lower hinge cast iron. Dozen sets.... $7.60

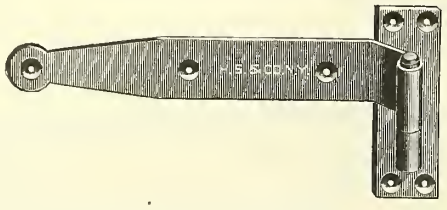
This hinge has a powerful concealed coil spring which keeps the gate closed. Double acting. Space between post and gate. 2⅞ inches.



Half Size Cut

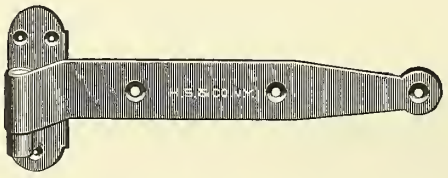
No. 2750 Cast iron, japanned, pairs..... $2.00

Blind Hinges



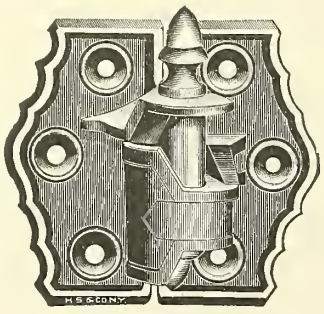
For wood. Wrought steel. Prices per dozen pairs.

Size, inches	10	12
No. 940 Plain	$5.28	6.24
No. 1940 Galvanized	9.60	11.40



For brick. Wrought steel. Prices per dozen pairs.

Size, inches	10	12
No. 54 Plain	$7.44	8.40
No. 1054 Galvanized	12.60	13.80



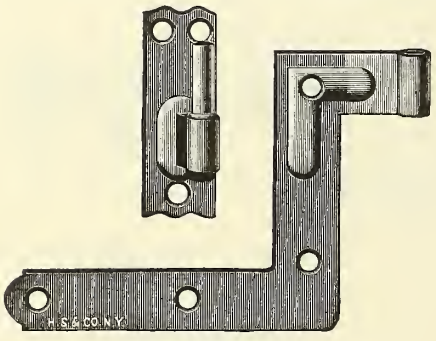
No. 1

Clark No. 1

Cast Iron. For Wood
1¼-inch Throw
Set includes hinges and fasts

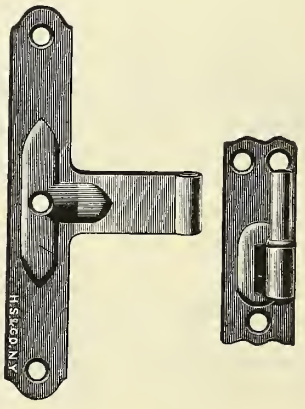
Dozen sets $3.50

Wrought Steel—New York City Style



For Wood

Number	Along Blind Inches	Finish	100 Pair
1640	8	Plain Steel	$12.00
1640	10	Plain Steel	12.50
1360	8	Galvanized	18.00
1360	10	Galvanized	20.00
For Brick			
1644	8	Plain Steel	13.00
1644	10	Plain Steel	13.50
1364	8	Galvanized	22.00
1364	10	Galvanized	24.00



For Wood

No. 1642 6 inches along blind, plain steel, 100 pair $14.50

For Brick

No. 1646 6 inches along blind, plain steel, 100 pair 15.50

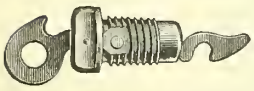
Combination Sets, Blind Hinges and Fasts

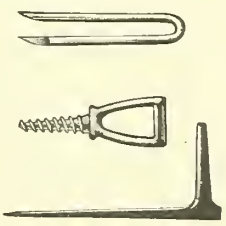
(Fasts are Illustrated and Listed on next page)

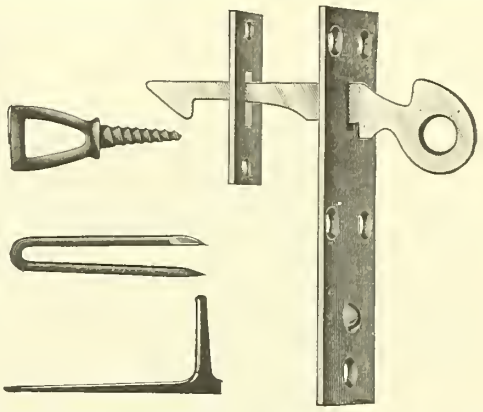
Packed with screws

Set Number	Hinges Number	Fasts Number	Size Inches	100 Sets
1	1640	1680	8	$40.00
2	1640	1680	10	42.00
3	1644	1680½	8	42.00
4	1644	1680½	10	44.00
5	1360	1380	8	$60.00
6	1360	1380	10	64.00
7	1364	1380½	8	64.00
8	1364	1380½	10	68.00

Blind Fasts







Number	Material	Gross Sets
1680	Plain, for wood	$12.00
1380	Galvanized, for wood	20.00
1680½	Plain, for brick	12.00
1380½	Galvanized, for brick	20.00

Number	For	Material	Gross Sets
1684	Wood	Plain Steel	$13.00
1684	Wood	Galvanized Steel	30.00
1684½	Brick	Plain Steel	13.00
1684½	Brick	Galvanized Steel	30.00

Extra Parts for Blind Fasts



Back catch for wood, gross..... $2.80



Back catch for brick, gross..... $2.80



Sill Staple, gross..... $1.30

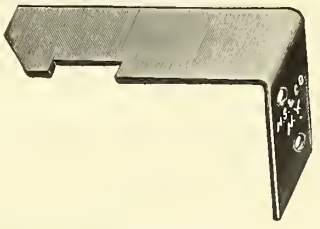
Blind Springs



To go underneath blind

Japanned, gross..... $4.00

Blind Hooks



For wood

Wrought iron, 4 inches, gross..... $3.00

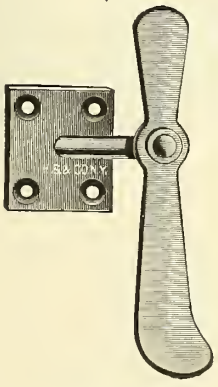


For brick

Wrought Iron

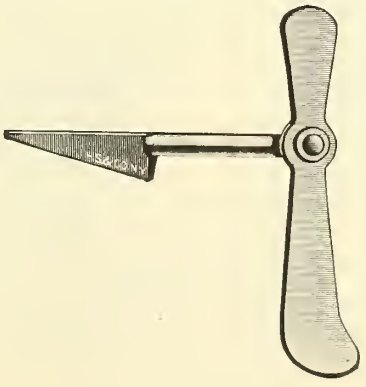
Length, inches.....	4	5	6
Gross.....	$2.29	2.40	2.80

Blind Turnbuckles



For wood

Wrought iron, gross..... $14.00

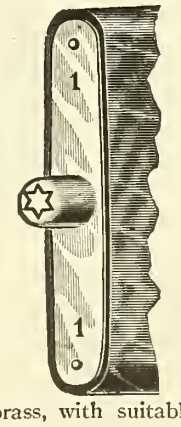


For brick

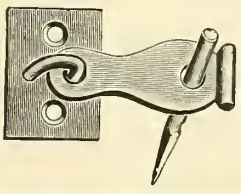
Wrought iron, gross..... $14.00

Blind-Slat Tenons

Star



Planished brass, with suitable nails, gross..... $1.00

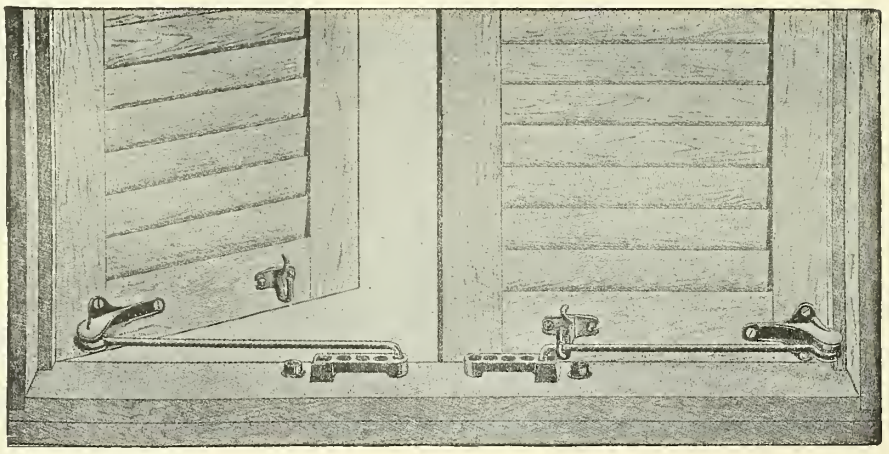


Drops and Pins

No. 10 Japanned, gross..... $5.50

Shutter Fasteners or Adjusters

Superior



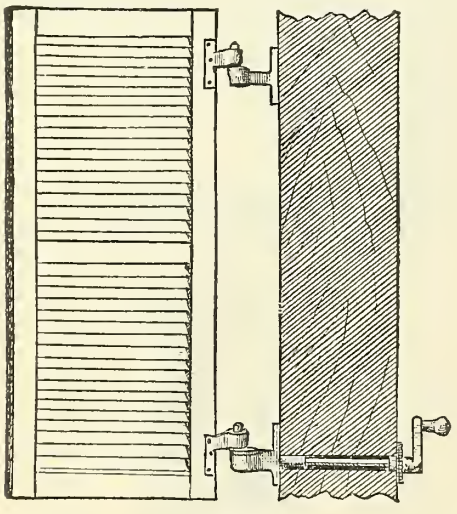
These fasteners do away with the disagreeable features of the old style locking hinges and outside fasts. The Superior Fasteners can be used to lock the shutters closed either from the inside or from the outside. The shutters can be bowed at any angle, or held back against the side of the house. The locking, at the closed position, is automatic, whether operated from the inside or outside. No danger of slamming in a wind. Complete control without leaning over the sill.

The Superior Fastener does away with all the arguments against shutters, and secures to the user their solid advantages.

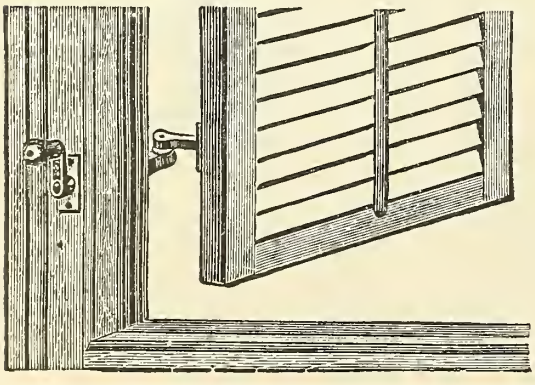
The bar is made of drop-forged steel, practically unbreakable.

Prices Per Dozen Pairs, with Screws to Match

Length, Inches	For Size Shutters Inches	Japanned	Galvanized
9	12 to 13	$4.50	$6.00
10¾	14 to 15	5.00	6.50
12	16 to 17	5.50	7.00
14	18 to 19	6.50	7.75

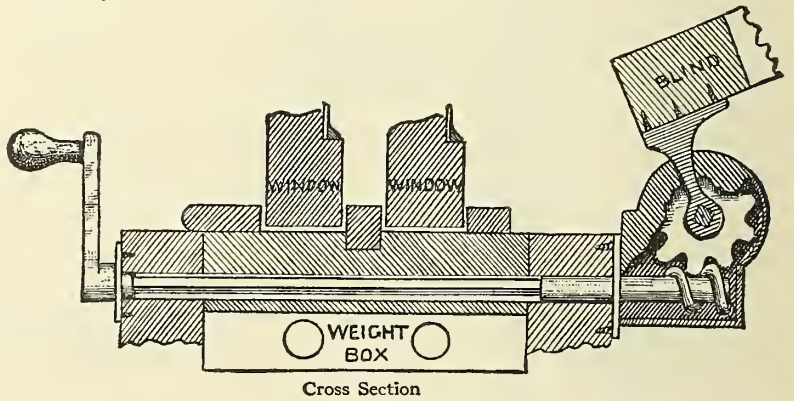


Side View



Shutter Worker

Mallory



Cross Section

Operates the shutter from the inside without raising the sash or screen. Holds the shutter open, locked, in any position. In fact, the shutter is always locked, open or closed, and can be moved only by the handle. Can be operated against any wind. Does not interfere with removing the blinds.

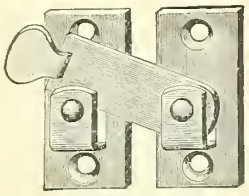
The construction of the Shutter Worker is very simple. The sectional view shows the construction of the Worker and the method of installing. The only cutting required is a half-inch hole bored through the casing. The rod does not interfere with the sash weights and the Worker can be attached to the shutter when it is in any position. (A set means the complete hardware for a window of two blinds, including the upper hinges.)

Per Set

Finish Crank Handles and Plates	For Frame House 2½ Inches Throw	For Brick House 3½ Inches Throw
Japanned	$1.50	$1.75
Nickeled	1.75	2.00
Old Brass	2.00	2.25
Bronze	2.25	2.50

Extra for galvanizing throughout, per set..... $1.00

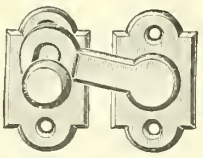
Shutter Bars



Packed with screws
Wrought Steel Size, 2 Inches

No. N937 Bronze plated, dozen.... $1.60
No. R937 Antique copper, dozen... 1.80

Wrought Bronze
No. 937½ Polished, dozen..... 2.80

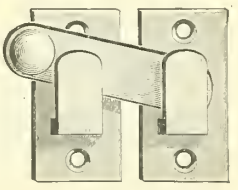


Packed with screws
Cast Brass, Polished
No. 914 Size 2½ inches, dozen..... $3.20
No. 915 Size 3 inches, dozen..... 4.80



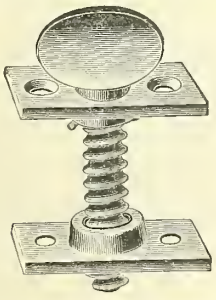
No. T55
Packed with screws
Cast Iron, Tuscan Bronzed

Size, inches	2	2½	3
Dozen	$ .60	.60	.60



Packed with screws Size 2½ inches
No. 2689½ Cast bronze, polished, Dozen..... $8.00
No. K.A.2689½ Cast brass, old brass finish, dozen..... 8.56

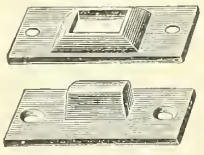
Shutter Screws



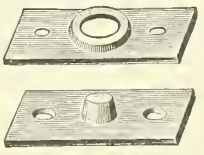
Cast Iron, Heavy, Japanned

Size, inches	2	2½
Gross	$13.20	13.80

Stubs and Plates



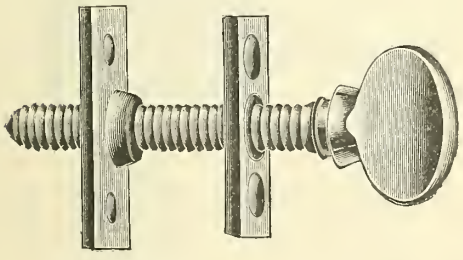
Cast Iron, Japanned
No. 1 ¾ x 2 inches, gross pairs..... $2.88
No. 2 Heavy, 13/16 x 2⅛ inches, gross pairs..... 3.84



Cast Iron, Japanned
No. 11 ¾ x 2 inches, gross pairs.... $2.88
No. 12 Extra heavy, ⅞ x 2¼ inches, gross pairs..... 5.04

Sash Screws

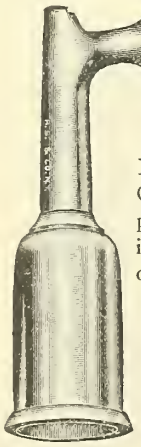
Full Size Cut



No. 100 Cast brass, dozen..... $2.00

Sash Pull Hooks

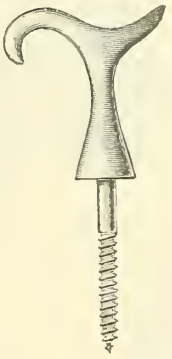
Packed with Screws



No. P1315½ Cast bronze, polished, 4½ inches long, dozen.... $6.25



No. D315 Cast iron, bronzed, 2⅞ inches long, dozen..$ .90



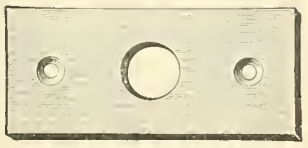
No. 1818 Cast bronze, polished, 1¾ inches above shoulder, dozen..$3.60

Sash Poles for above, 1¼ inches diameter by 7 feet long, made of selected ash, dozen, $8.95

Sash Pull Plates

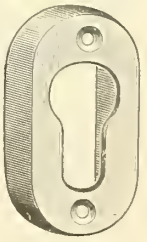


1 Inch in diameter. Packed with screws
No. T400 Wrought steel, amber bronzed, dozen..... $ .40
No. 800P Wrought bronze, polished, dozen..... .90



No. 803P 1⅜ x 3 inches. Packed with screws. Cast bronze polished, dozen..... $2.80

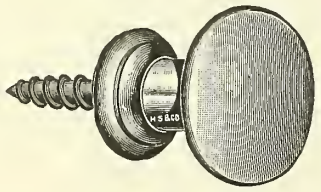
Sash Pole Holders



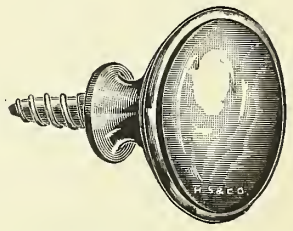
No. 158P 1⅛ x 2⅜ inches. Packed with screws. Dozen..... $3.10

Shutter Knobs

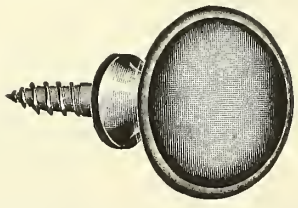
Full Size Cuts



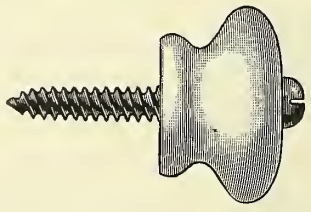
No. 1161½ Cast bronze, polished, ⅞ inch diameter, gross..... $18.00
No. 1161½ Cast bronze, polished, 1⅛ inch diameter, gross.... 19.20



No. 1534¼ Wrought bronze, polished, 1⅛ inches diameter, dozen..... $1.00
No. DA1534¼ Wrought brass, old brass finish, 1⅛ inches diameter, dozen..... 1.40
No. N3534¼ Steel, bronze-plated, 1⅛ inches diameter, dozen.. .84



No. 1534 Cast bronze, polished, 1⅜ inches diameter, dozen..... $4.50

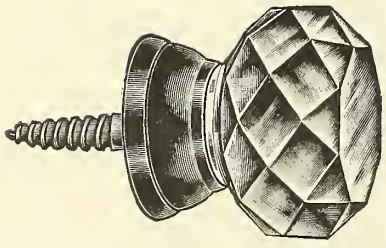


No. 10 Porcelain, with Round Head, Bronzed Screw

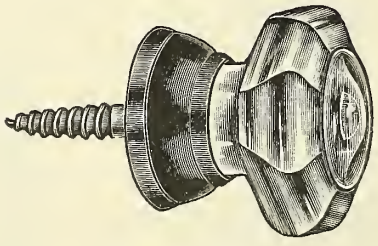
Size, inches	⅝	¾	1	1¼	1½	1¾
Gross	$3.35	3.50	3.75	5.50	6.75	10.00

Glass Shutter Knobs

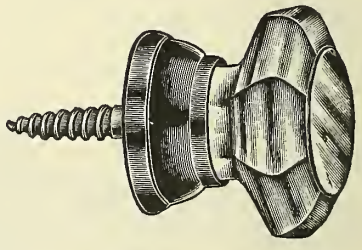
Full Size Cuts



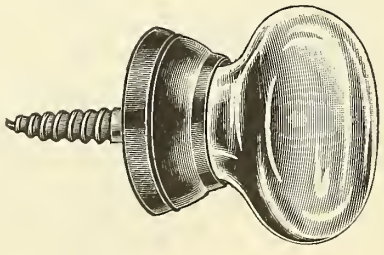
No. OB21S Cut glass, brass mountings, old brass finish, dozen..... $30.00



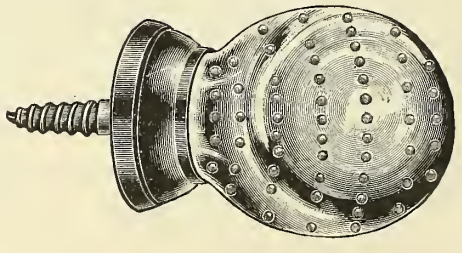
Pressed Glass
No. 16S Polished bronze mountings, dozen..... $10.00
No. OB16 Brass mountings, old brass finish, dozen..... 10.00



No. 4S Pressed glass, polished bronze mountings, dozen..... $7.50



Pressed Glass
No. 1S Polished bronze mountings, dozen..... $7.50
No. OB1S Brass mountings, old brass finish, dozen..... 7.50



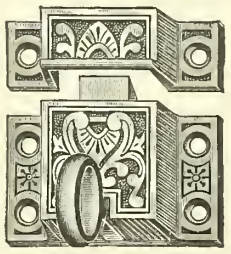
No. SB32S Pressed glass, flecked, bronze mountings, statuary bronze finish, dozen..... $18.75

Transom Catches

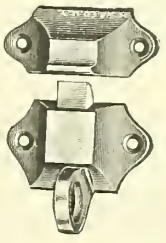
Half Size Cuts



No. 3279 Regular bevel. Packed with screws. Cast iron, amber bronzed, 1¼ x 1⅜ inches, dozen..... $1.58

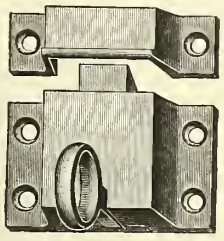


No. 3278 Regular or reverse bevel Packed with screws. Cast iron, amber bronzed, 1¼ x 2⅛ inches, dozen..... $1.68



This catch is made strong and heavy and narrow, for use on narrow iron or wood frames. Regular bevel.

No. 36 Packed with screws. Cast bronze, polished, 1 x 1½ inches, dozen..... $5.00



Regular or reverse bevel. 1¼ x 2¼ inches. Packed with screws.

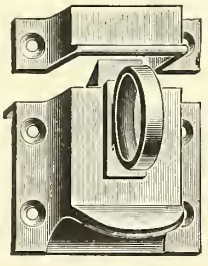
No. 2278½ Cast bronze, polished, dozen..... $7.50

No. KA2278½ Cast brass, old brass finish, dozen..... 8.94

No. N13278 Cast iron, bronze-plated, dozen..... 4.95

No. DA13278 Cast iron, old brass finish, dozen..... 5.54

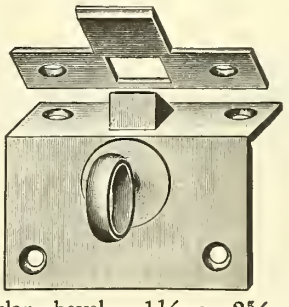
No. LB2278½ Cast bronze, statuary bronze finish, dozen..... 8.94



Regular bevel, 2½ x 1⅞ inches. Packed with screws.

No. 3847P Cast bronze, polished, dozen..... $14.65

No. OB3847 Cast brass, old brass finish, dozen..... 16.15



Regular bevel 1½ x 2⅝ inches. Packed with screws.

No. 2279½ Cast bronze, polished, dozen..... $15.00

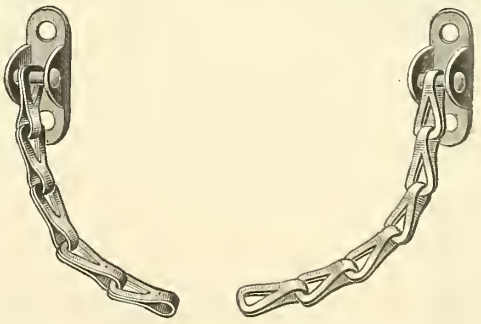
No. KA2279½ Cast brass, old brass finish, dozen..... 16.44

Transom Chains



Packed with screws

Number	Material	Finish	12 inches Dozen	15 inches Dozen
0200½	Wrought Steel	Tuscan Bronzed	$3.36	$3.84
NO200½	Wrought Steel	Bronze-plated	3.84	4.32
200½	Wrought Bronze	Polished	6.24	6.72

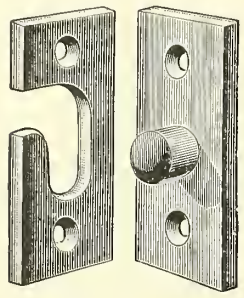


Wrought steel Packed with screws 10 inches long

Number	Finish	Dozen
T31	Amber Bronzed	$2.50
YT31	Bronze-plated	3.00

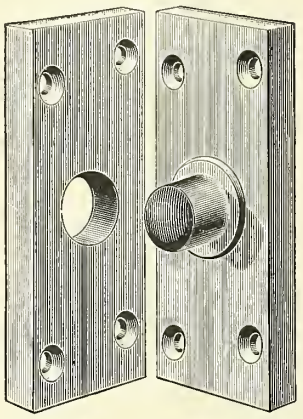
Sash Centers or Transom Plates

Plain

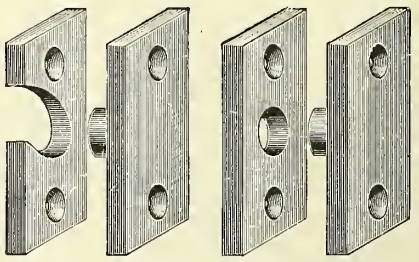


Cast Iron, Japanned

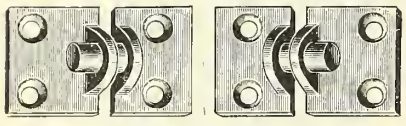
No. 4 1 x 2⅞ inches, dozen sets..... $1.00
No. 22 15/16 x 2¼ inches, dozen sets.... .70
No. 6 1¼ x 3⅝ inches, dozen sets.. 1.80



No. 40 Cast iron, japanned, 1½ x 3⅞ inches, dozen sets..... $4.30

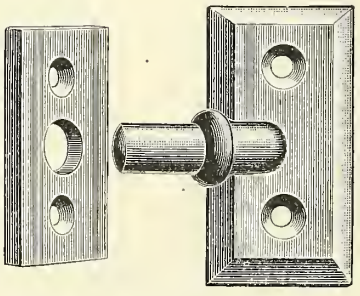


No. 1330½ Cast bronze, polished, ¾ x 2¼ inches. Packed with screws. Dozen sets, as shown... $14.40
No. 1330 Dozen sets, all open..... 14.40
No. 1330¾ Dozen sets, all closed... 14.40

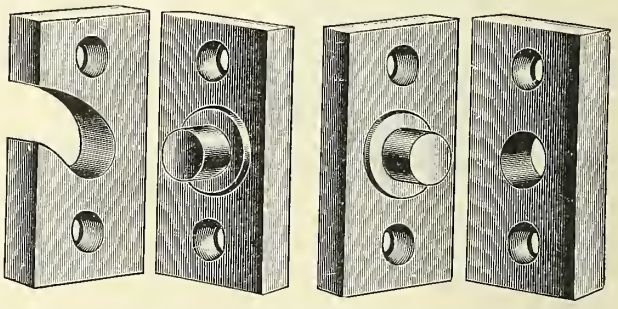


No. 1333½ Cast iron, amber bronzed, ⅞x1⅛ inches. Dozen sets..... $2.64

No. 9750 Cast bronze, polished, ¾ x 1¼ inches. Packed with screws. Dozen sets..... 5.40

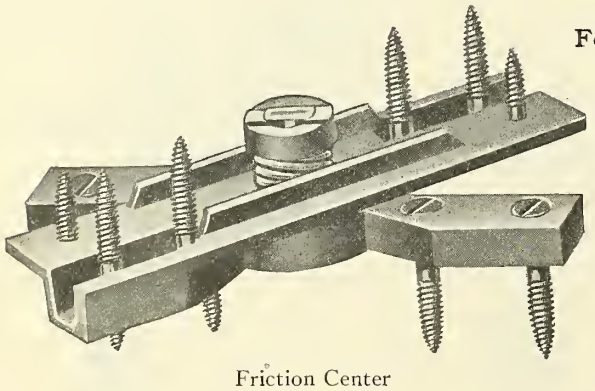


No. 30 Cast iron, 1 x 2 3/16 inches, dozen sets..... $1.20



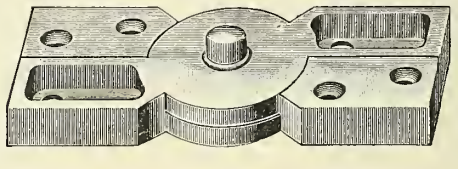
No. 1331 Cast bronze, polished, 1½ x 2¾ inches. Packed with screws. Dozen sets, as shown ... $31.68
No. 1331½ Dozen sets, all open..... 31.68
No. 1331¼ Dozen sets, all closed..... 31.68

Rabbeted
For One-half inch Rabbet



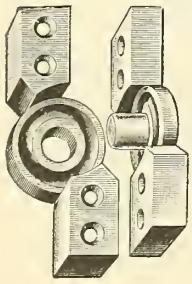
Friction Center

Has automatic adjustment for shrinkage of woodwork, which eliminates all strain on parts. 6 inches long. Coppered iron. Style S, 1¾ inches. Dozen sets.....$9.60



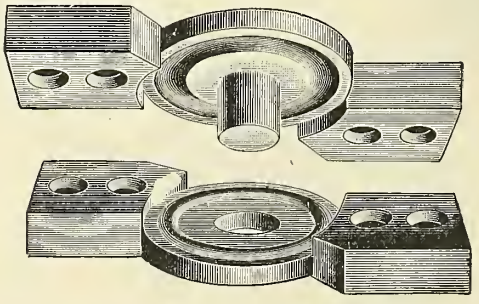
No. 1306
Cast Bronze, Polished, Steel Bushed
Packed with screws

Size, inches	1¾x4½	2x4 11/16	2¼x5	2½x5¼
Set	$4.05	4.50	5.25	6.00



No. P O 1140 Cast Bronze, Polished. Packed with Screws

Size, inches	1½x4	1¾x4	2x4	2¼x4	2⅜x4
Sets	$1.88	2.00	2.38	2.75	3.13



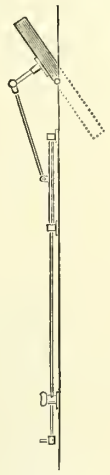
Cast Iron, Coppered. Packed with Screws

Number	42½	43	44	45	46
Size, inches	1½x3½	1¾x3⅞	2x4¼	2¼x4⅞	2½x5⅜
Dozen sets	$7.40	8.90	11.10	13.30	15.60

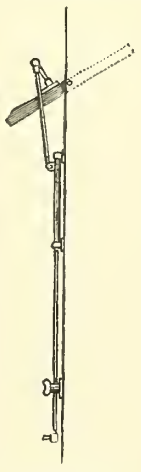
Transom Lifters

Solid Grip

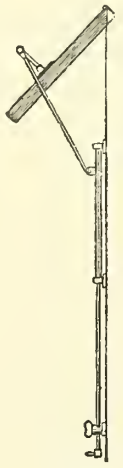




Center Hung
(Pull down to open)

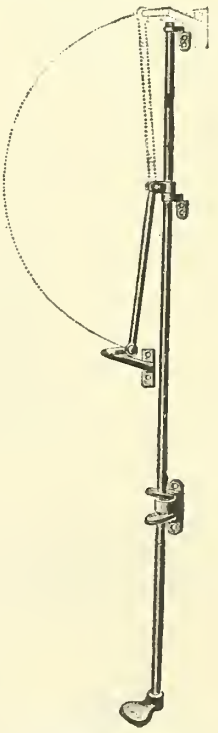


Center Hung
(Push up to open)



Top Hung

Number	Material and Finish	Diameter Inch	Length Feet	Each
643	Iron, coppered	1/4	3	$ .55
644	Iron, coppered	1/4	4	.55
314	Iron, coppered	5/16	4	1.00
315	Iron, coppered	5/16	5	1.15
325	Iron, coppered	3/8	5	1.50
326	Iron, coppered	3/8	6	1.70
338	Iron, coppered	1/2	8	3.70
214	Steel, bronze-plated	5/16	4	1.30
215	Steel, bronze-plated	5/16	5	1.50
214	Steel, old brass finish	5/16	4	1.30
215	Steel, old brass finish	5/16	5	1.50
214	Steel, antique copper	5/16	4	1.30
215	Steel, antique copper	5/16	5	1.50
0314	Solid bronze, polished	5/16	4	5.00
0315	Solid bronze, polished	5/16	5	5.75



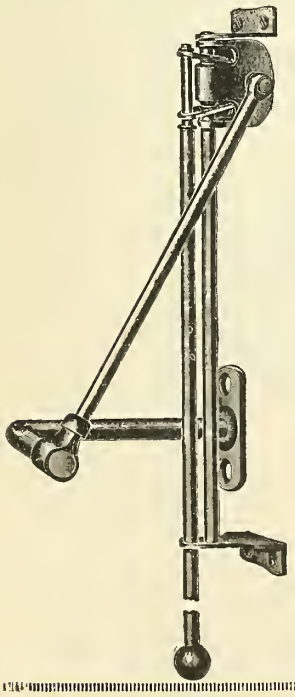
Showing how Lifter is reversed from a Right Hand Bottom Hung to Left Hand Top Hung.

To get size of Lifters wanted, measure from floor to center of transom and deduct 5 feet for a top or center hung transom, or 3½ feet for bottom hung transom.

We recommend:

1/4-inch Rod for transoms not over 12 pounds in weight
5/16-inch Rod for transoms not over 20 pounds in weight
3/8-inch Rod for transoms not over 30 pounds in weight
1/2-inch Rod for transoms not over 75 pounds in weight

Brackets provide for recess as deep as 1 inch.



Simplex

This lifter will operate all styles of transoms, automatically and securely. It is out of the way, as the operation is by a straight push or pull. Does not mar the trim below the transom and is easily installed.

Iron, Coppered

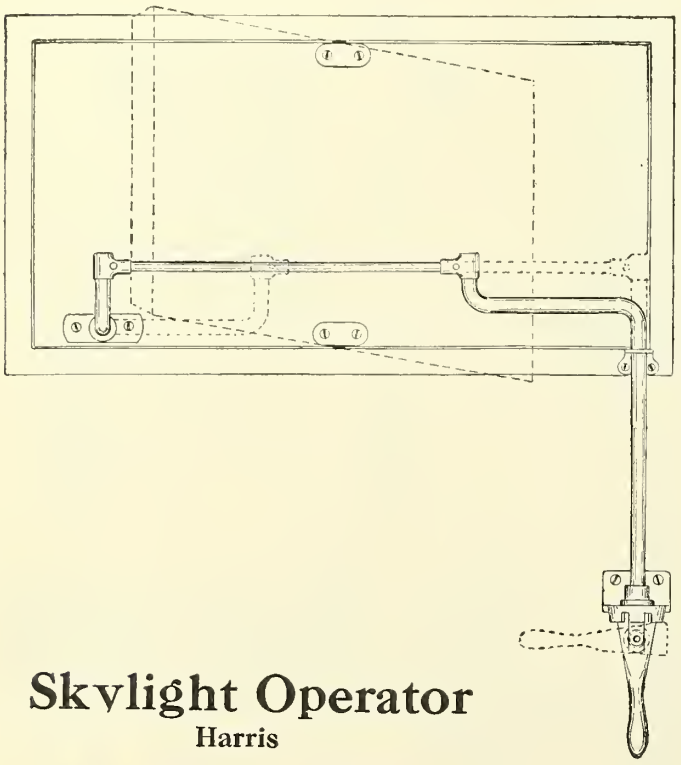
No. 10 3 feet, size of rod 1/4 inch, each ..... $ .65
No. 11 4 feet, size of rod 5/16 inch, each 1.30
No. 12 5 feet, size of rod 3/8 inch, each 2.05

The length measurement indicates length of rod in the old style lifter. The Simplex Lifter to take the place of the old 3-foot lifter would be about 18 inches long. One foot should be added to this for each additional foot.

Example: No. 10–3 would be 1/4 inch rod about 18 inches long, but taking place of regular 3-foot lifter.

Transom Operator

Payson



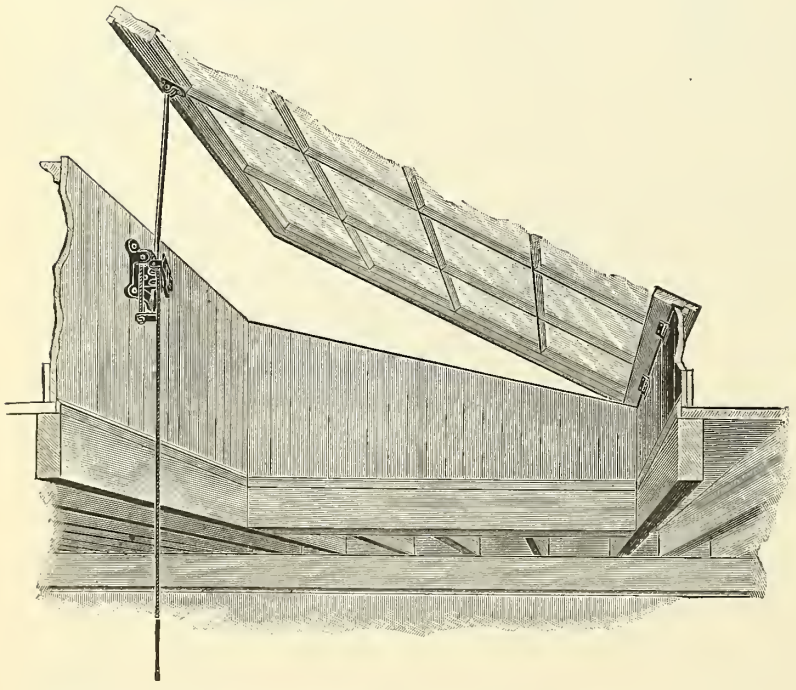
For sash pivoted top and bottom. For sash hinged at ends, opening in or out.

Made only in ⅜-inch, ½-inch or ⅝-inch rod. This operator will handle any sash pivoted top and bottom or hinged on the end. The lock is a rachet device, holding the sash securely locked. In ordering give width and height of transom, width of trim, distance from floor to bottom of transom, projections if any, recess if any, material and finish.

Prices on application.

Skylight Operator

Harris



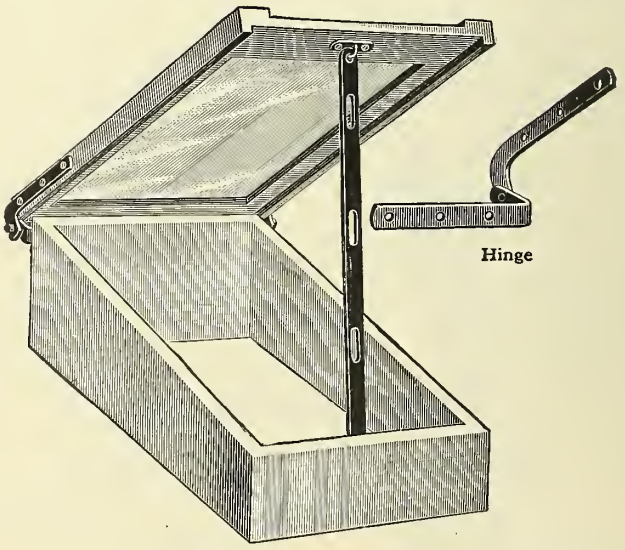
Strong and effective in all positions. Skylights may now be handled as easily as windows have been heretofore. With a single cord perfect control is maintained over any skylight. No breakage of glass—no slamming of sash—no rattle. Firm, strong and "sure grip." Cannot be put on wrong. Let rope hang straight down. No blocking or building up required. Applicable to all skylights.

No. 1 $\frac{5}{16}$-inch rod for sash 3 x 4 feet, rod 18 inches long. Use No. 8 sash cord. Common coppered or bronze, each.... $ 6.40

No. 2 ½-inch rod for sash larger than 3 x 4 feet, rod 24 inches long. Use No. 10 sash cord. Common coppered bronze, each..... 10.40

Scuttle Fasteners and Hinges

Sargent



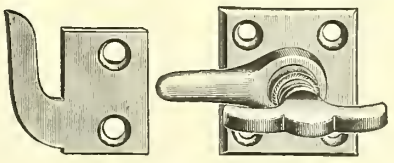
Wrought steel, japanned. Fasteners and hinges complete.

Number	2
Length of rod, inches	26
Dozen sets	$7.50

SEE DISCOUNT SHEET

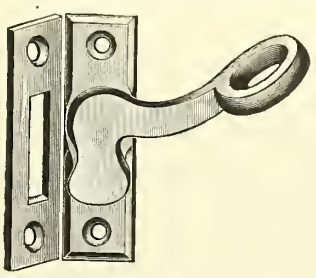
Casement Fasteners

Half Size Cuts



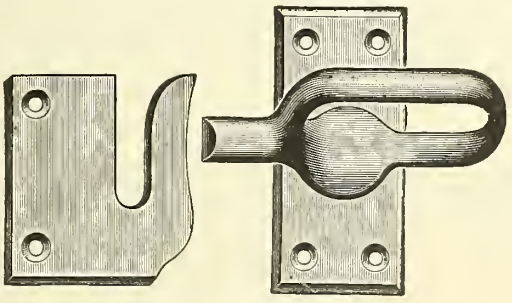
Packed with screws
1⅜ x 1⅜ Inches. Reversible

Number	Material	Finish	Dozen
02160	Cast Bronze	Polished	$8.10
KA02160	Cast Brass	Old Brass	9.18
E02160	Cast Bronze	Nickel-plated	9.18
LB02160	Cast Bronze	Statuary Bronze	9.18



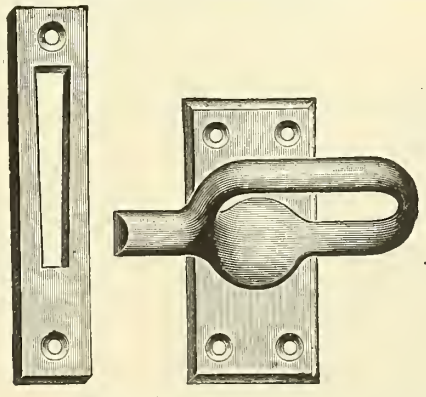
Packed with screws
⅝ x 2½ Inches. Not reversible
Made right and left hand. State which wanted. Illustration shows left hand.

Number	Material	Finish	Dozen
02162	Cast Bronze	Polished	$9.72
KA02162	Cast Brass	Old Brass	10.80
E02162	Cast Bronze	Nickel-plated	10.80
LB02162	Cast Bronze	Statuary Bronze	10.80



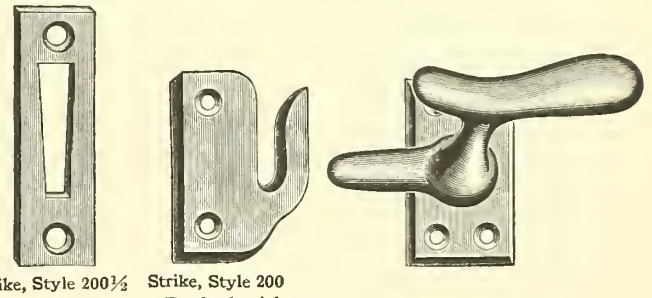
Packed with screws
1⅜ x 3 Inches. Reversible

Number	Material	Finish	Dozen
139P	Cast Bronze	Polished	$17.00
OB139	Cast Brass	Old Brass	18.50



Packed with screws
1⅜ x 3 Inches. Reversible

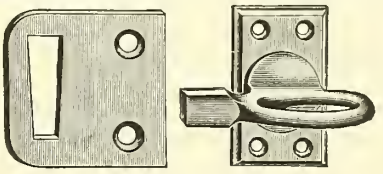
Number	Material	Finish	Dozen
138P	Cast Bronze	Polished	$17.00
OB138	Cast Brass	Old Brass	18.50



Strike, Style 200½ Strike, Style 200

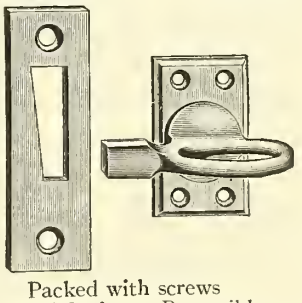
Packed with screws
1⅛ x 2 Inches. Reversible

Number	Material	Finish	Dozen
200	Cast Bronze	Polished	$10.00
OB200	Cast Brass	Old Brass	12.00
200½	Cast Bronze	Polished	10.00
OB200½	Cast Brass	Old Brass	12.00



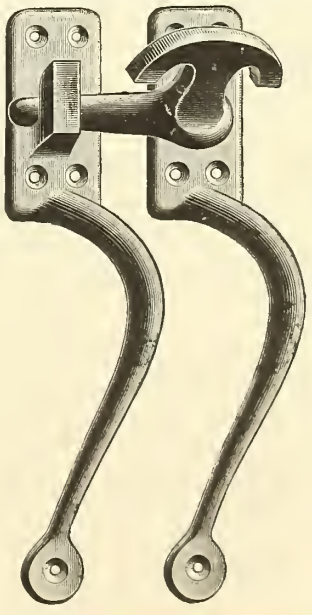
Packed with screws
1 x 1⅝ Inches. Reversible

Number	Material	Finish	Dozen
02161½	Cast Bronze	Polished	$8.10
KA02161½	Cast Brass	Old Brass	9.18



Packed with screws
1 x 1⅝ Inches. Reversible

Number	Material	Finish	Dozen
02161	Cast Bronze	Polished	$8.10
KA02161	Cast Brass	Old Brass	9.18



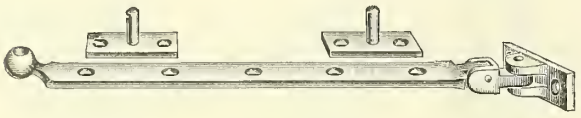
For Double Casements

Packed with screws
1 x 6¼ Inches

No. OB489M Cast Brass, old brass finish, dozen..... $31.90

No. 489M Cast bronze, polished, dozen..... 29.60

Casement Adjusters



No. 043¼ Reversible. Packed with screws. For sash opening out. Cast bronze, polished. Width of bar ¾ inch.

12 inches long, dozen..... $32.40
15 inches long, dozen..... 32.40

Can be furnished to order 18 and 24 inches long.

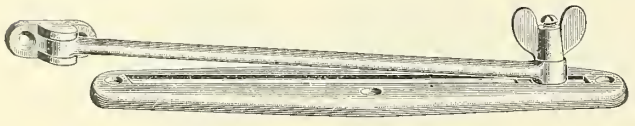


No. 043½ Reversible. Packed with screws. For sash opening out. Diameter of rod ⅜ inch. Cast iron fittings, wrought steel rod, coppered finish.

12 inches long, dozen..... $5.25
16 inches long, dozen..... 5.65

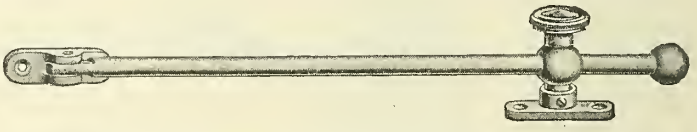
No. 43½ Cast bronze fittings, wrought bronze rod, polished.

12 inches long, dozen..... $16.25
16 inches long, dozen..... 18.75



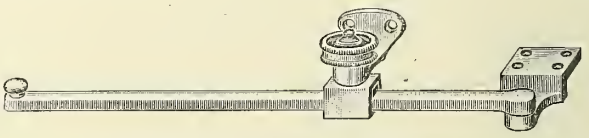
Reversible. Packed with screws. For sash opening out. Plate 1⅜ x 8¾ inches. Rod $\frac{5}{16}$ x 7⅞ inches.

No. Y84 Cast iron fittings, wrought steel rod, bronze-plated finish, dozen..... $11.10
No. OB88 Cast brass fittings, wrought brass rod, old brass finish, dozen..... 18.00
No. 88P Cast bronze fittings, wrought bronze rod, polished, dozen..... 16.20
No. A3B88P Cast bronze fittings, wrought bronze rod, statuary bronze finish, dozen..... 18.00



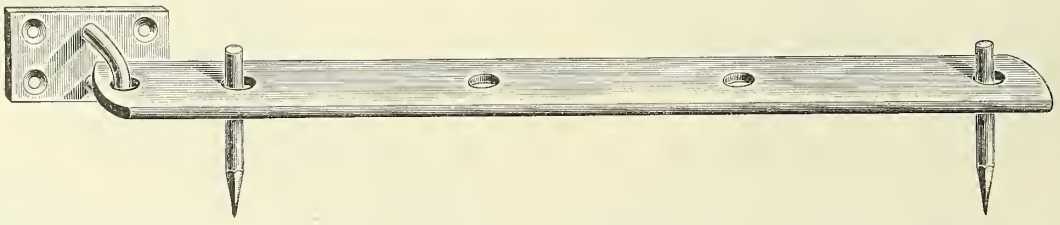
No. OB68 Reversible. Packed with screws. For sash opening out. Cast brass fittings, wrought brass rod, old brass finish.

12 inches long, dozen..... $24.10
15 inches long, dozen..... 25.90



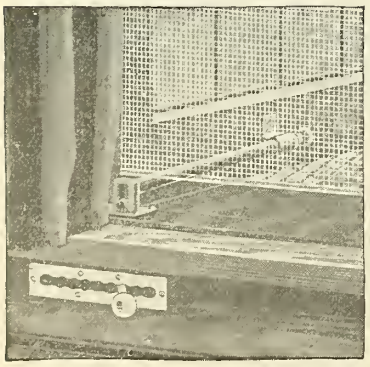
Reversible. Packed with screws. For sash opening in. This adjuster may be applied on the rabbetted sill under the sash. The bar is ¼ x ½ inch, 12 inches long and has clearance of ¾ inch.

No. 46½ Cast bronze, polished, dozen..... $64.80
No. OB46½ Cast brass, old brass finish, dozen..... 73.45



No. P74 Reversible. Packed with screws. For sash opening out. Size of plate, $1\frac{5}{16}$ x $1\frac{5}{16}$ inches. Size of bar, ¾ x 10 inches.. With 2 pins each. Wrought steel, coppered, dozen..... $4.30

Hold Fast



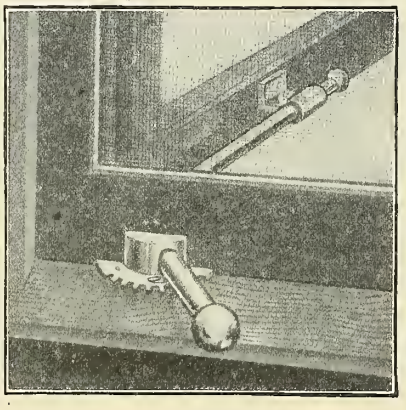
This Adjuster may be operated without opening screens or storm sash. Will lock securely at any desired angle, holding the sash firmly in strong winds. Has no springs, catches, gears or ratchets; requires no special arrangement or alteration of woodwork.

The bearings are machine made and accurately fitted and all parts are of solid brass excepting underpivot and inner rod of operating lever, which are steel and thoroughly protected from the weather.

The adjusters are easily put on by any intelligent carpenter and will last a lifetime.

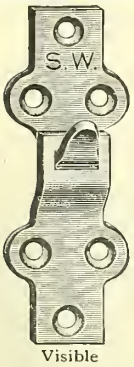
Further information and prices on application.

Bull Dog



Reversible. For sash opening out. Operates the sash and locks it securely at any point without disturbing the screen. Requires very little alteration of the woodwork.

Further information and prices on application.



Visible

Storm Window Hangers

Schroeders—Packed With Screws

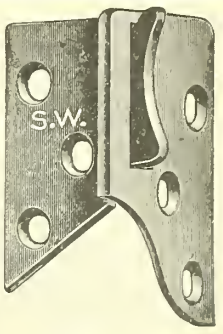
Four pieces (two pairs) to a set

Visible

No. 1716J	Wrought steel, japanned, dozen sets	$1.50
No. 1716Z	Wrought steel, Sherardized, dozen sets	2.00
No. 1716	Wrought brass, dozen sets	6.30

Invisible

No. 1714J	Wrought steel, japanned, dozen sets	$1.50
No. 1714Z	Wrought steel, Sherardized, dozen sets	2.00

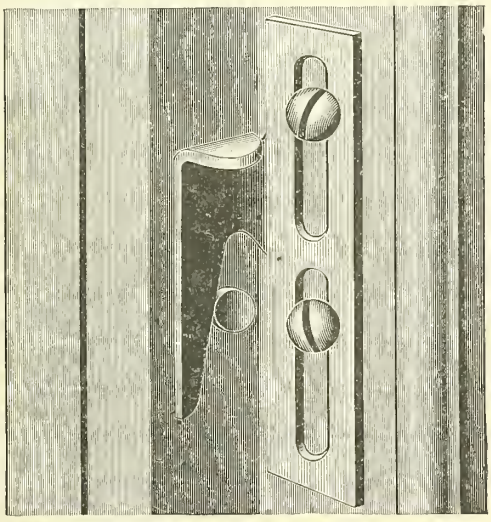


Invisible

Storm Window Fasteners

Moore

Four to a set. Packed with pins and screws

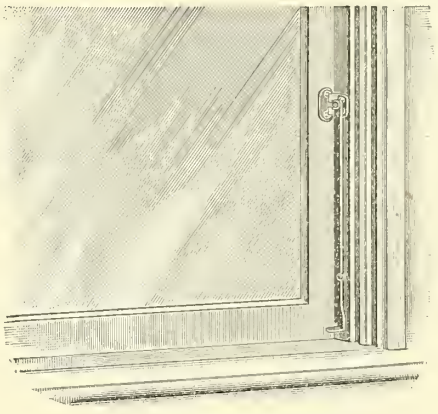


No. 1706J	Wrought steel, japanned, dozen sets	$3.00
No. 1706Z	Wrought steel, Sherardized, dozen sets	4.00
No. 1706	Wrought brass, dozen sets	6.90

Schroeders—For Side Attachment

Two to a set. Packed with screws

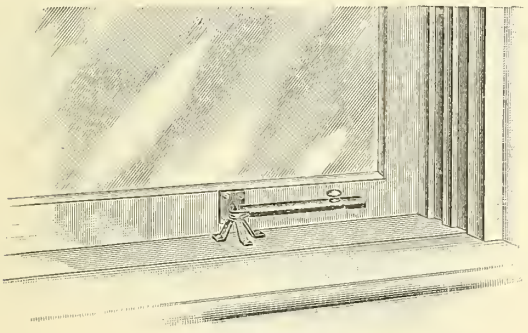




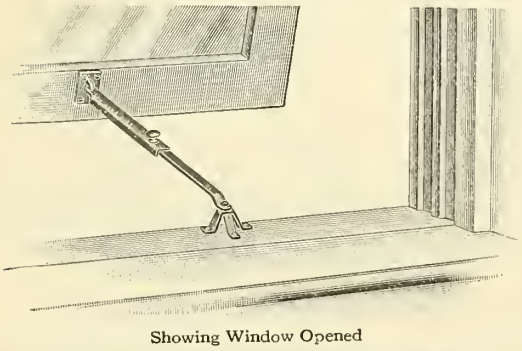
Showing Fastener Applied

No. 1719J	Wrought steel, japanned, dozen sets	$2.00
No. 1719Z	Wrought steel, Sherardized, dozen sets	2.50

Storm Window Sill Fasteners



Showing Window Closed



Showing Window Opened

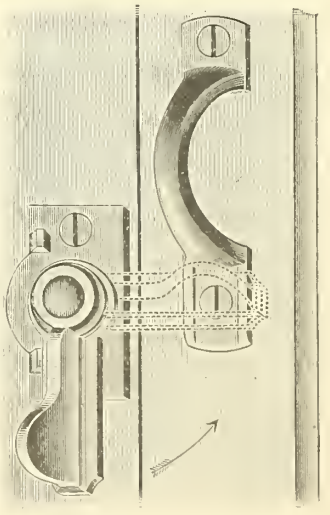
Packed with screws

No. 1722J Wrought steel, japanned, dozen $1.80

No. 1722Z Wrought steel, Sherardized, dozen 2.25

Cellar Window Fasteners

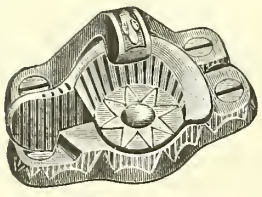
Half Size Cut



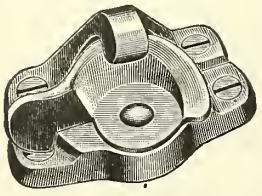
No. 12 Reversible. Packed with screws. Cast iron, Tuscan bronzed finish, dozen $1.40

Sash Fasteners

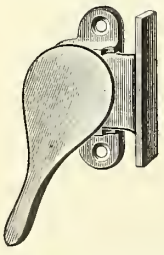
Packed With Screws. Half Size Cuts



No. 70 Cast iron, bronzed, gross.... $6.75

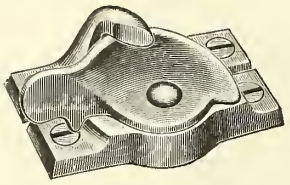


No. 2282 Cast iron, bronze-plated, gross..... $8.30
No. 182 Cast iron, old brass finish, gross..... 8.30
No. 083 Cast iron, antique copper finish, gross..... 8.30
No. 84 Cast bronze, polished, gross.. 44.00
No. 084 Cast bronze, nickel-plated, gross..... 52.00
No. 88 Cast brass, old brass finish, gross..... 50.00

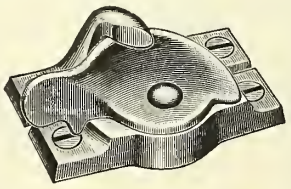


For side of sash

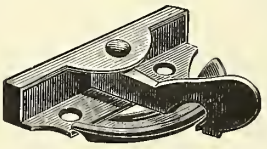
No. T324 Malleable iron, Tuscan bronzed, dozen..... $1.10
No. 328P Cast bronze, polished, dozen..... 3.20



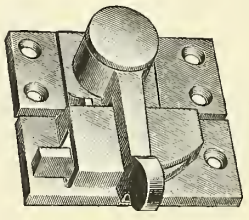
No. 222 Cast iron, old brass finish, dozen..... $6.00
No. 28 Cast brass, old brass finish, dozen..... 11.25
No. 025 Cast bronze, statuary bronze finish, dozen..... 11.25



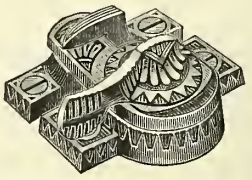
No. 44 Cast bronze, polished, dozen.. $14.00



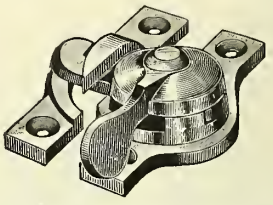
No. 200 Cast iron, japanned, gross.. $7.80



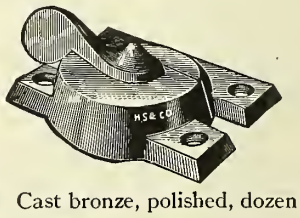
No. 4350 Cast bronze, polished, dozen..... $8.10



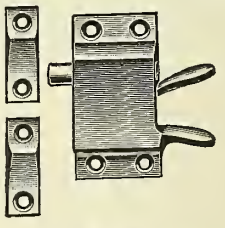
No. 404 Cast iron, bronzed, gross... $6.25



No. 1427 Cast iron, amber bronzed, dozen..... $1.13
No. 1427½ Cast bronze, polished, dozen..... 5.83



No. 103 Cast bronze, polished, dozen..$4.00

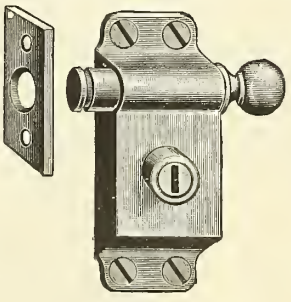


No. 55

Cast Bronze, Polished

No. 53 5/8x1 7/8 inches overall, dozen.. $5.30
No. 55 7/8x1¾ inches overall, dozen.. 6.00

Sash Bolt and Lock



No. 266

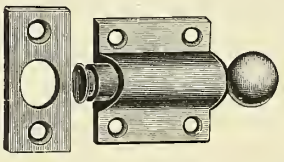
Cast Bronze, Polished

Bolt can be released by handle, except when deadlocked by key, making window secure from attack from outside. Four lever tumblers, twelve changes.

Two strikes and two nickel-plated keys with each lock.

Dozen..... $21.65

Sash Bolt

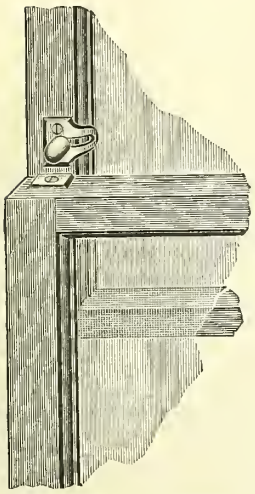


No. 1405 Cast bronze, polished, three strikes with each bolt, dozen..... $5.85

Window Spring Bolt



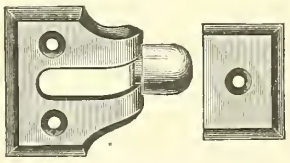
No. 15 3 inches long, iron, coppered, gross..... $2.35


Showing Lock Attached Sash Open

Ventilating Sash Locks

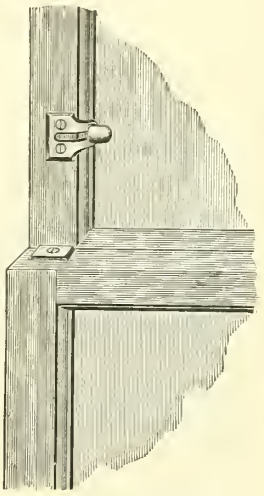
Ives—Packed With Screws

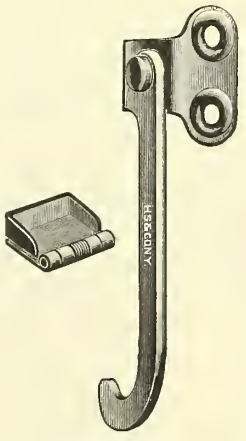
No cutting or mortising of the sash is required


Half Size Cut

This device allows windows to be left open at the top, the bottom or both top and bottom, with entire security against intrusion. Easily applied to either side of upper sash.

No. 033½ Cast iron, bronze-plated, gross $25.75
No. 034 Cast bronze, polished, gross 39.90


Showing Lock Attached Sash Closed

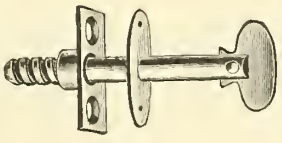


Half Size Cut

Holland—Packed With Screws

Windows may be left open at the top, the bottom, or both, with perfect security. The lock cannot be operated by reaching over or under the sashes, nor can anything between the sashes unlock it. Windows can be opened to the full extent from the inside only. Both sashes must first be closed and the lock bar released by turning back the spring socket on top of lower sash. Made of case-hardened steel.

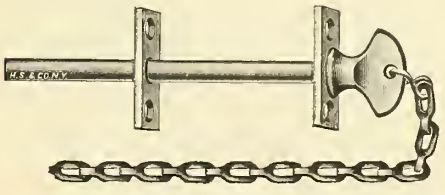
Bronze-plated, dozen $3.00
Antique copper finish, dozen 3.00



Acme

Locks the window securely at any desired position. Drawing the upper and lower sashes together, it prevents the admission of dust or wind and prevents rattling.

Solid brass, polished, dozen $3.75

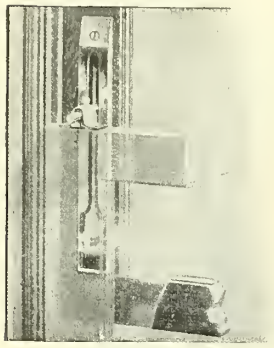


Sash Pins

The pins are steel. Head and plates are polished brass.

No. 30 Brass chain, dozen $3.00

Ventilating Sash Locks



These locks allow windows to be left open for ventilation with no danger from outside intrusion. They also protect against forgetfulness in locking the windows, as they automatically lock the sash.

Illustration shows application to sash.

Fasten the bolt to lug with lower screws first. If the bolt should not fit snug to lug, drive over with hammer and fasten slide as shown.

Made of Steel

No. 21 Bronze-plated, dozen $5.60
No. 25 Old brass finish, dozen 5.60

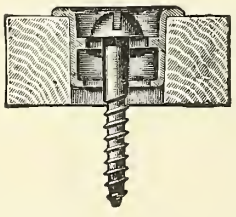
Stop Bead Washers and Screws

For Windows and Doors

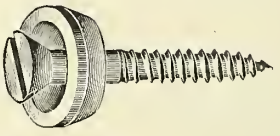
Packed with 1¼-inch screws to match

Full Size Cuts





Taplins Adjustable



No. 185 Wrought bronze, polished, gross $6.00

No. 1 Wrought bronze, polished, gross $3.70



Front View



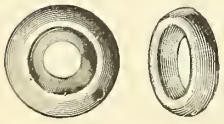
Side View Showing Knurled Edges



Adjustable

No. 16 Wrought bronze, polished, gross $3.85
No. OB16 Wrought brass, old brass finish, gross 4.30
No. N16 Wrought bronze, nickel-plated, gross 4.30

No. 183 Wrought bronze, polished, gross $3.50



No. 6242
Full Size Cuts
Front and Side Views

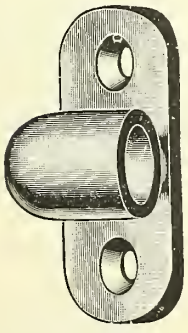
H. S. & Co.

These washers can also be used for all other purposes where a washer is wanted to make a finish to a screw head. Made of wrought brass, dipped.

No. 6199 ½ inch diameter over all, $\frac{3}{16}$-inch hole, per 1000 ..... $1.80
No. 6242 $\frac{9}{16}$ inch diameter over all, ¼-inch hole, per 1000 ..... 2.00

Guard Rail Bracket

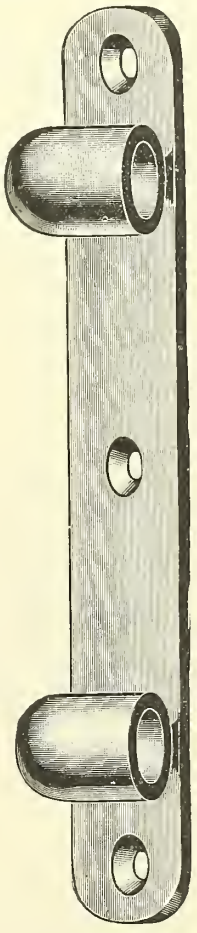
For Windows and Doors



Full Size Cut

No. 5788 Cast brass, polished, for ½-inch rod or tubing, dozen..... $3.60

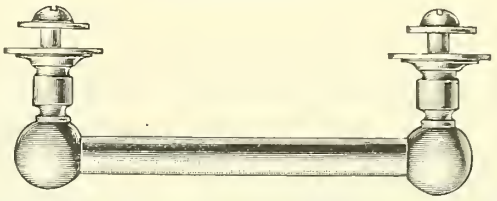
No. 5799 Cast brass, polished, for ½-inch rod or tubing, pair..... 1.00



Full Size Cut
No. 5799

Wall Case Handles

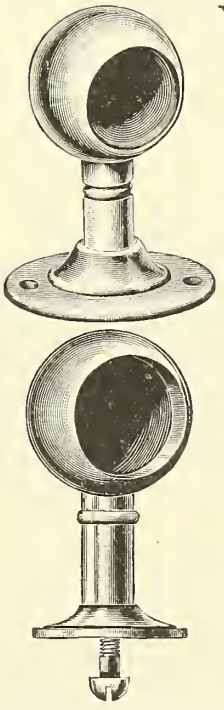
Half Size Cut



No. 443 Cast brass, polished. Packed with screws. Size over all 5½ inches, bar ½ inch thick, opening 1⅛ inches, dozen..... $13.80

Wall Case Sockets

Half Size Cuts



Base to center of hole 2 1/16 inches, size of hole 1 inch. Made of cast brass. Packed with screws

No. 10799½ Polished, dozen.. $4.32
No. OB10799½ Old brass finish, dozen..... 4.32

Base to center of hole 2 1/16 inches, size of hole 1 inch. Packed with screws

No. 10779 Cast brass, polished, dozen..... $3.60
No. N10779 Cast bronze, nickel-plated, dozen..... 3.60
No. OB10779 Cast brass, old brass finish, dozen..... 3.60
No. P10779 Cast bronze, polished, dozen..... 3.60

See index for rods or tubing, for guard rail brackets or wall case sockets, listed above

Bar Sash Lifts

Half Size Cut

Packed with Screws



Nos. 412 and 812

1¼ x 4 Inches



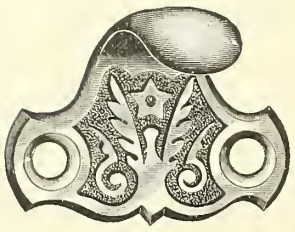
Nos. 410 and 810

1⅜ x 5 Inches

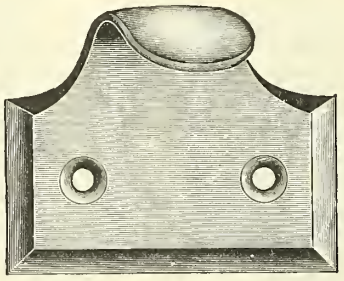
No. T412M	Cast iron, Tuscan bronzed finish, dozen	$ .85
No. YT412M	Cast iron, bronze-plated, unpolished, dozen	.95
No. DA412M	Cast iron, antique copper finish, unpolished, dozen	1.00
No. OB412M	Cast brass, old brass finish, polished, dozen	1.85
No. 812M	Cast bronze, polished, dozen	4.00
No. A3B812M	Cast bronze, statuary bronze finish, dozen	4.60
No. T410M	Cast iron, Tuscan bronzed, dozen	.95
No. YT410M	Cast iron, bronze-plated, unpolished, dozen	1.05
No. DA410M	Cast iron, antique copper finish, unpolished, dozen	1.10
No. OB810M	Cast brass, old brass finish, polished, dozen	5.20
No. 810M	Cast bronze, polished, dozen	4.60
No. A3B810M	Cast bronze, statuary bronze finish, dozen	5.20

Hook Sash Lifts

Full Size Cuts

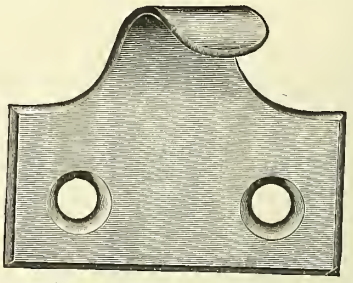


No. 3190 Cast iron, amber bronzed, gross..... $2.00



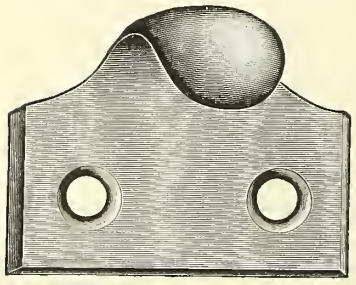
No. N11845 Steel, bronze-plated, gross..... $10.37

No. R11845 Steel, antique copper finish, gross..... 11.45

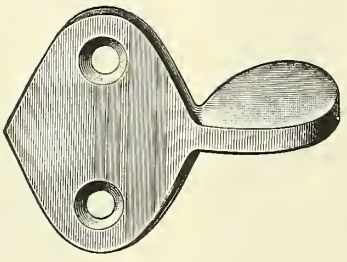


No. 2180½ Wrought bronze, polished, gross..... $11.45

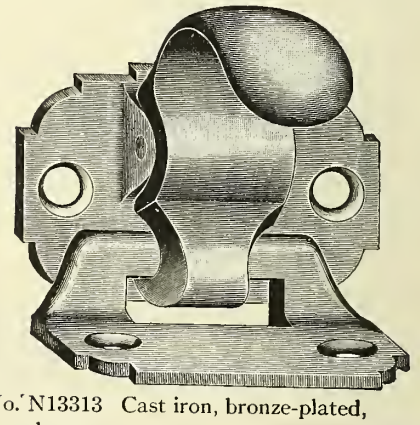
No. DA2180½ Wrought brass, old brass finish, gross..... 14.00



No. 2184 Cast bronze, polished, dozen..$3.00



No. 1804P Cast bronze, polished, dozen..... $1.55



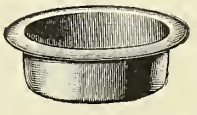
No. N13313 Cast iron, bronze-plated, dozen..... $2.80

Flush Screen Lifts

Full Size Cuts



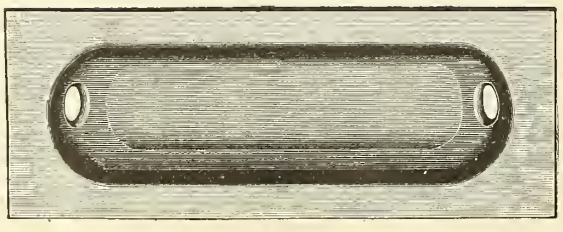
No. 1912 Wrought brass, dipped, gross..... $4.70



No. 1911 Wrought brass, dipped, gross..... $1.00

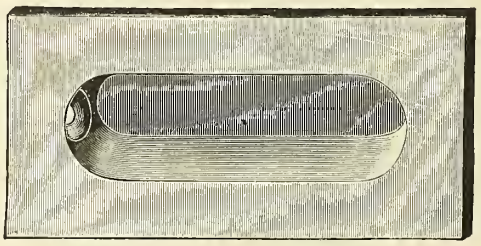
Flush Sash Lifts

Full Size Cuts



No. 2885 Wrought bronze, polished, gross..... $8.00

No. 1104 Cast bronze, polished, gross..... 23.70

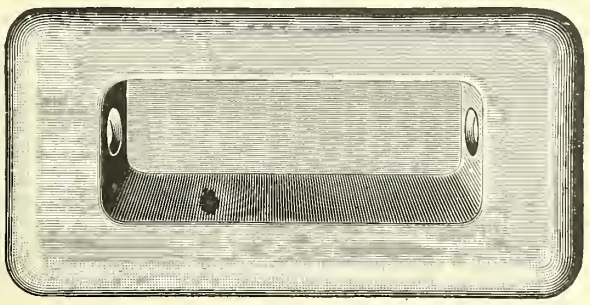


No. 10330 Cast bronze, polished, gross..... $26.00

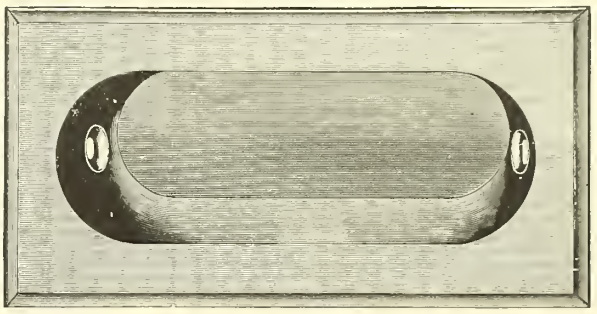
SEE DISCOUNT SHEET

Flush Sash Lifts

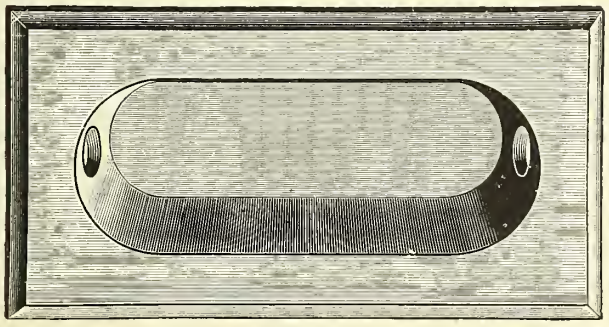
Full Size Cuts



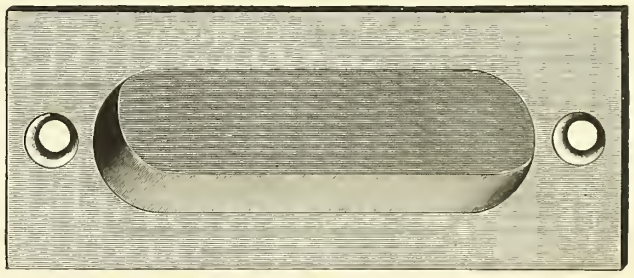
No. 2254 Wrought bronze, polished, gross $8.00
No. 2254½ Wrought steel, bronze-plated, gross 5.30



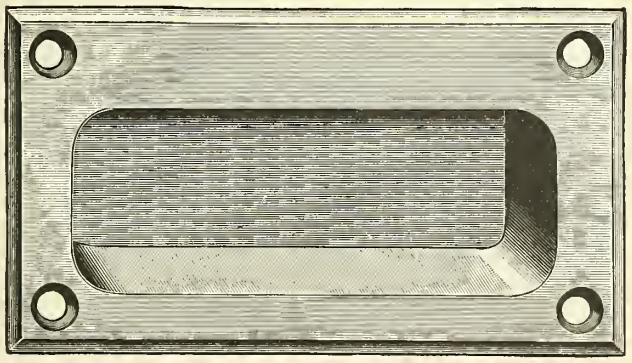
No. 2215 Wrought bronze, polished, gross $12.00
No. DA2215 Wrought brass, old brass finish, gross 12.00
No. R2215 Wrought bronze, antique copper finish, gross 12.00
No. E2215 Wrought bronze, nickel-plated, gross 12.00



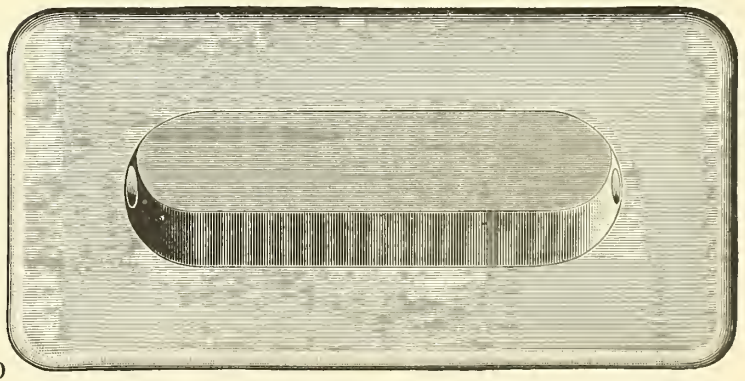
No. 1887 Cast bronze, polished, dozen $4.60



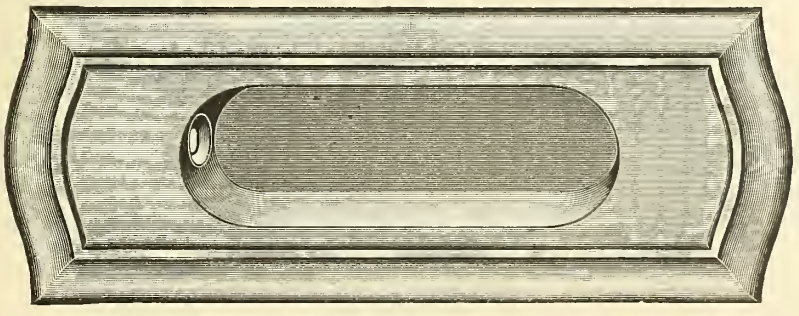
No. 2219 Cast bronze, polished, dozen $3.75
No. KA2219 Cast brass, old brass finish, dozen 4.29
No. LB2219 Cast bronze, statuary bronze finish, dozen 4.29



No. 150 With concealed lip, cast bronze, polished, dozen $4.20



No. 1887½MR Cast bronze, polished, dozen $6.90



Design Wakefield

No. KA 72675 Wrought brass, old brass finish, dozen $2.90

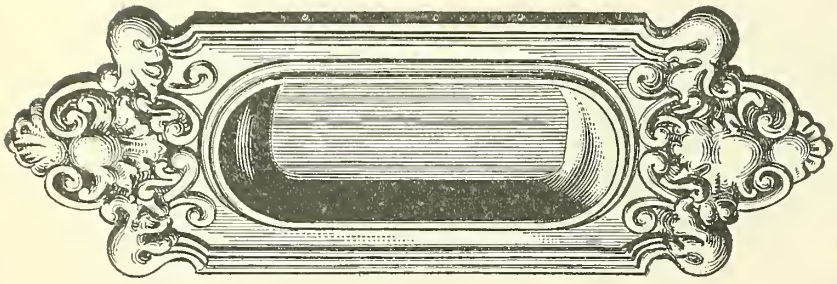


Design Victor

No. KA61875 Wrought steel, old brass finish, dozen $1.50

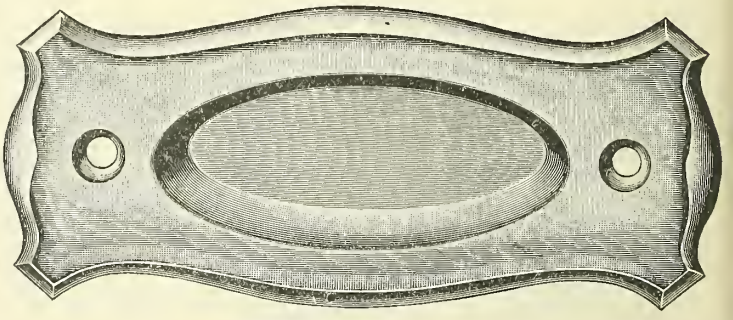
Flush Sash Lifts

Full Size Cuts



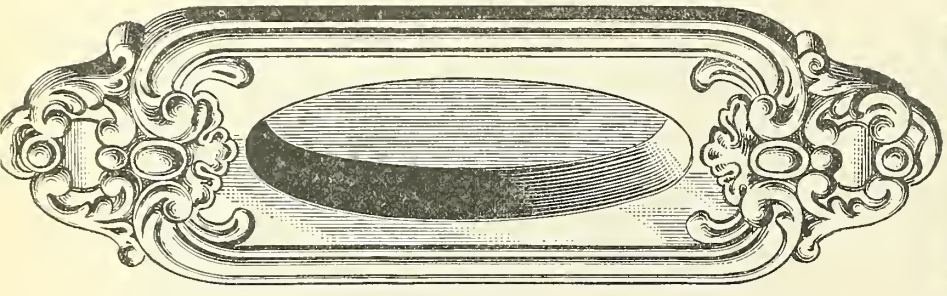
Design Truro

No. AB1487TG Cast iron, antique copper finish, dozen..... $1.20



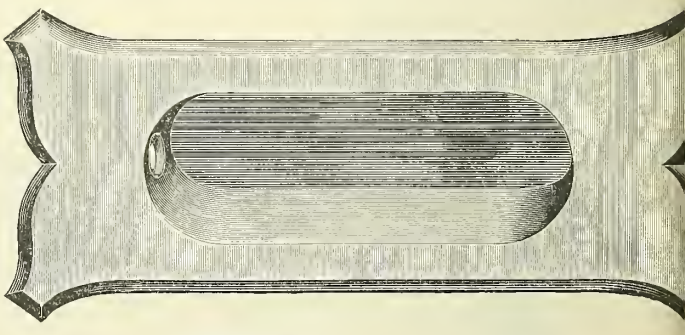
Design Princeton

No. SKA62175 Wrought steel, sand blast, old brass finish, dozen..... $1.50



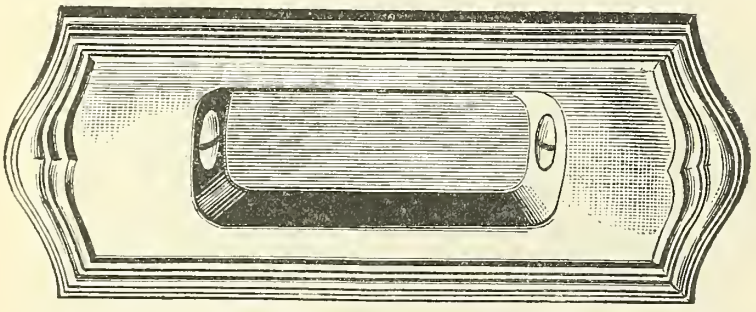
Design Haven

No. OE1487HF Wrought steel, old brass finish, with depressed surface oxidized and relieved, dozen..... $ .96



Design Albany

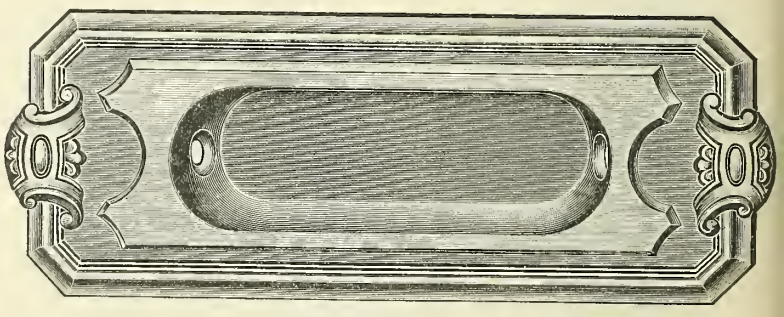
No. LB76475 Cast bronze, statuary bronze finish, dozen..... $11.52



Design Hudson

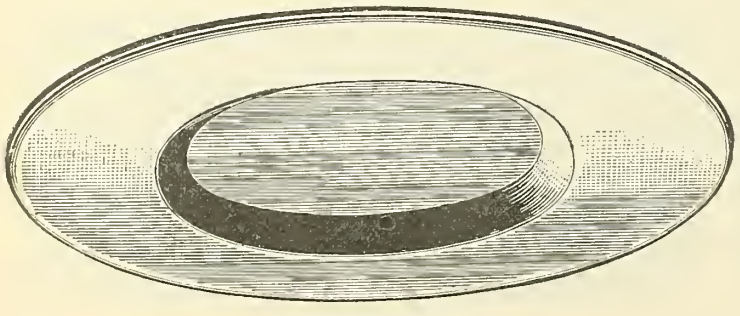
No. R7D1487TH Wrought steel, sand blast, antique brass finish with edges highly polished, dozen..... $ .96

No. 1887TH Wrought bronze, polished, dozen..... 1.92



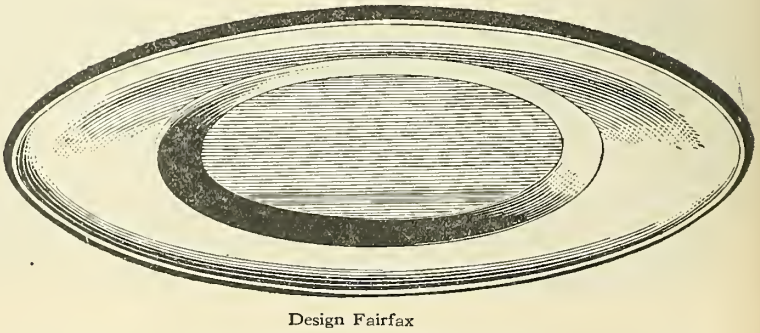
Design Anvers

No. S2KA72375 Wrought brass, sand blast antique brass shaded finish, with edges highly polished, dozen..... $2.88



Design Portsmouth

No. 1887PC Wrought bronze, polished, dozen..... $1.80



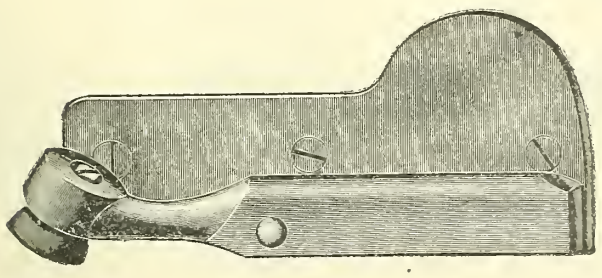
Design Fairfax

No. OB1887FC Wrought brass, old brass finish, dozen..... $1.80

SEE DISCOUNT SHEET

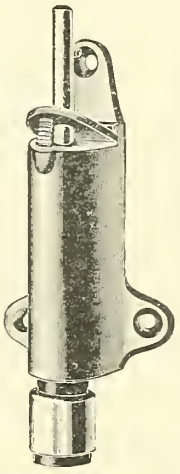
Door Holders

Half Size Cuts



The lever swings on a strong pin which passes through both lever and plate and is riveted at the back. Spring is of round wire, compression type. Back plate acts as a guard to prevent the door being scraped by the toe.

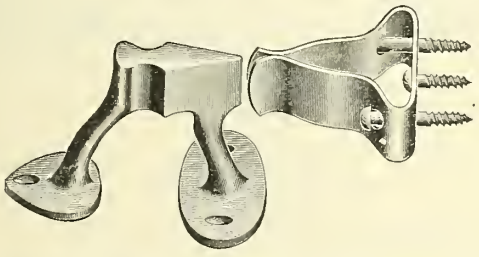
No. 142 Cast bronze, polished, dozen..... $21.90
No. 42 Cast iron, amber bronzed, dozen..... 5.70
No. 042 Cast iron, bronze-plated, dozen..... 11.35



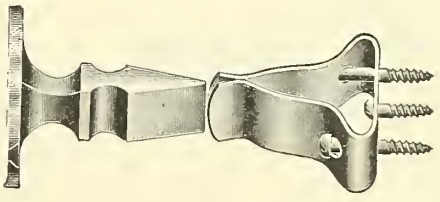
This Holder is only 4½ inches in length and is a practical holder for light doors.

Packed with screws

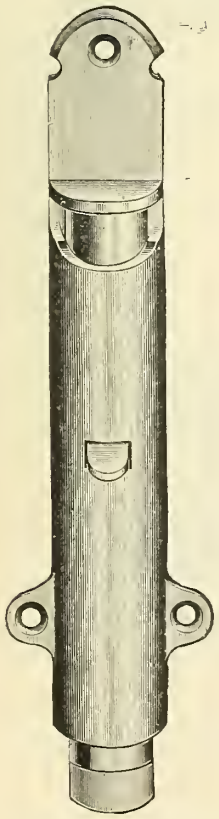
No. YT5224 Iron, bronze-plated, dozen. $9.15
No. OT5224 Iron, old brass finish, dozen. 10.00
No. 5228P Cast bronze, polished, dozen. 14.20



No. 118 Height 2 inches, projection on door 2 inches. Iron, bronze-plated. Packed with screws. Dozen..... $5.60

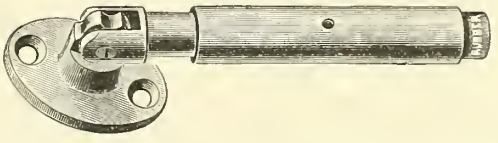


No. 119 Projection on door 2 inches, on base-board 2 inches. Iron, bronze-plated. Packed with screws. Dozen..... $5.60



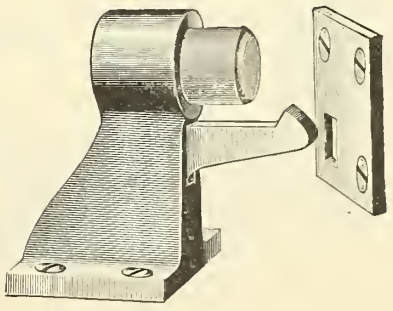
Packed with screws

No. 2860 Cast bronze, polished, dozen.. $34.56
No. 3860 Cast iron, amber bronzed, dozen..... 10.56
No. N3860 Cast iron, bronze-plated, dozen..... 14.88
No. LB3860 Cast iron, statuary bronze, finish, dozen..... 17.04
No. KA3860 Cast iron, old brass finish, dozen..... 17.04



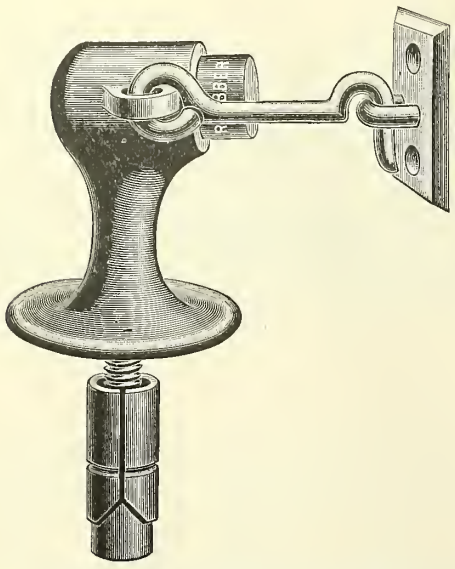
No. 4288P Cast bronze, polished. Packed with screws. Dozen.. $20.00

Door Stop and Holder

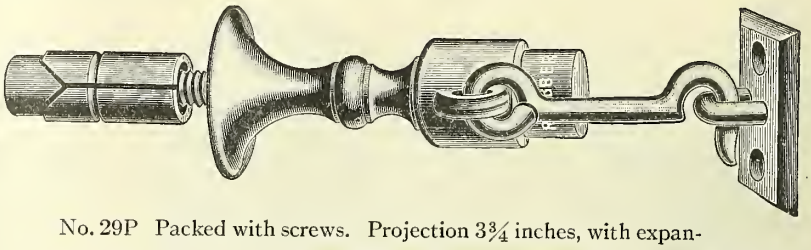


No. 828 Cast bronze. Base 1¾ x 1¾ inches; height 2¾ inches; strike 1¾ x 1¾ inches; hook 1⅝ x ¼ inches. Attached by wood screws. Dozen..... $40.20

Door Stops and Holders



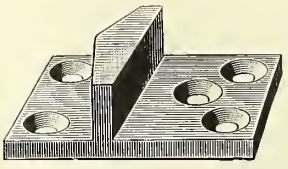
No. 30P Packed with screws. 3 inches high, with expansion bolt. Made of cast bronze, polished, dozen $41.70



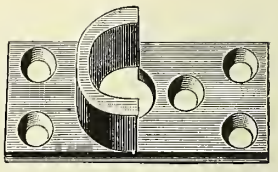
No. 29P Packed with screws. Projection 3¾ inches, with expansion bolt. Made of cast bronze, polished, dozen..... $41.70

Sliding Door Stops

Made of cast iron, Pekin finish. Packed with screws.
Dozen..... $ .65



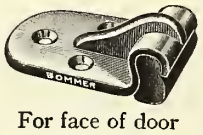
No. 36
For plain front Base, 1⅜ x 2½ inches



No. 37
For Astragal front. Base, 1⅜ x 2¾ inches

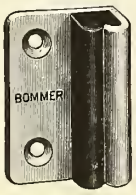
Closet Door Strikes

Half Size Cuts



For face of door
Packed with screws

No. 1070 Wrought bronze, polished, dozen..... $4.80
No. 1070 N Wrought brass, nickel-plated, dozen 4.80
No. 1070 OB Wrought brass, old brass finish, dozen 5.28



Reversible, for edge of door or partition wall. Packed with screws.

No. 1072 Wrought bronze, polished, dozen $4.80
No. 1072 N Wrought brass, nickel-plated, dozen..... 4.80
No. 1072 OB Wrought brass, old brass finish, dozen..... 5.28

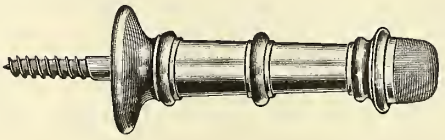
Door Stops



No. 3 2½ inches projection. Packed with screws. Wrought steel, bronze-plated. dozen..... $2.00

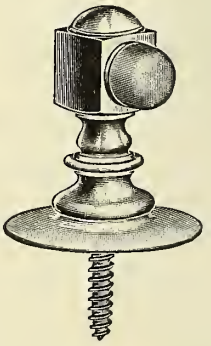


No. Y200 2½ inches projection, cast iron, bronze-plated, dozen..... $1.40



3⅛ Inches Projection

No. 365 Cast bronze, polished, dozen..... $10.80
No. KA365 Cast brass, old brass finish, dozen..... 13.50
No. LB365 Cast bronze, statuary bronze finish, dozen..... 13.50

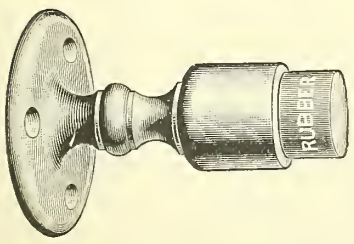


No. 366 2⅜ inches high, cast bronze, polished, dozen..... $16.20

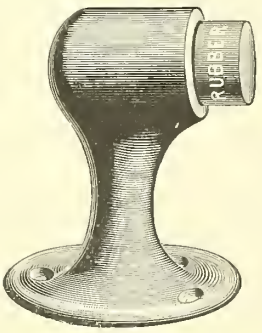
See next page for remainder of listing of Door Stops

Door Stops

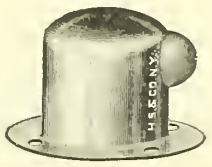
See preceding page for remainder of listing of Door Stops



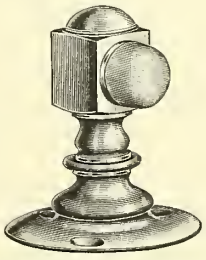
No. 27P 3⅛ inches projection, cast bronze, polished. Packed with screws. Dozen..... $18.50



No. 32P 3 inches high, cast bronze, polished. Packed with screws. Dozen..... $28.00

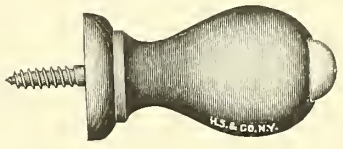


No. 1 1⅜ inches high. Packed with screws. Wrought steel, bronze-plated, dozen..... $1.70

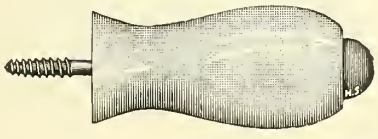


2⅜ inches high. Packed with screws

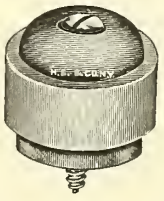
No. 366½ Cast bronze, polished, dozen..... $16.20
No. LB366½ Cast bronze, statuary bronze finish, dozen..... 18.90



No. 100 Length 2½ inches, ash, gross..... $2.50
No. 100 Length 3 inches, ash, gross..... 2.70
No. 150 Length 2½ inches, polished cherry, gross..... 12.00
No. 150 Length 2½ inches, polished antique oak, gross..... 12.00



No. 200 2¾ inches long, covered with white celluloid, dozen... $3.60

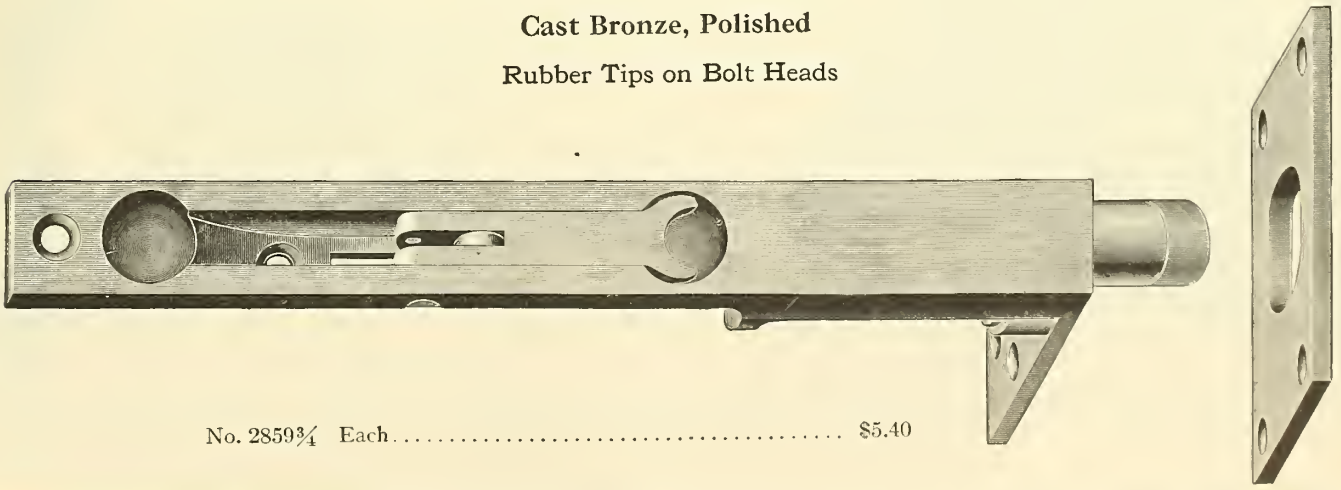


No. 10 1¼ inches diameter, polished oak, rubber band ¾ inch wide, 1½ inches outside diameter, 2-inch oval head, nickel-plated screws, dozen..... $2.40

Door Holders

Cast Bronze, Polished

Rubber Tips on Bolt Heads



No. 2859¾ Each..... $5.40

Coil Door Springs



16 inches long, $\frac{13}{32}$ inch diameter. Made of best music spring wire, japanned. Packed with screw eyes.

No. 54 Dozen $1.55

Rod Door Springs

Torrey



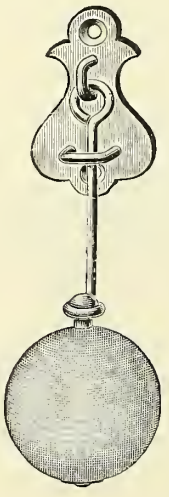
The tension of this spring can be instantly adjusted by means of the slide shown in the top fixture. The rod is set directly over, and parallel with, the crack between the door and frame, thus eliminating wear and tear and insuring long life to the spring. The spring is of best steel and the fixtures are malleable iron. A special wrench is furnished with each set for adjusting the tension.

Packed with screws

No. 39 Japanned, dozen $2.00

Screen Door Check

No-Slam



Rubber ball, nickel-plated trimmings. May be used on a screen door. Fitted with any door spring or spring hinge.

Packed with screws

Dozen $8.00

Door Springs

Bommer

Extra Heavy Wrought Steel, Planished



Style of all 2400 Numbers

These Springs are exceptionally strong and durable, with a lasting finish. They are convenient for the carpenter and user to handle and apply. Being sold completely assembled, the parts cannot become separated and lost. The coil springs are made of high-grade steel wire, with an adjustable tension which can be regulated (with the aid of a wire nail or rod) after the spring is in place.

Japanned, Bright Black

Number	2400	2410	2420	2430
Length over all, inches	9	11	12	13
Gross	$19.80	25.20	36.00	50.40

Bronze-plated

Number	2401	2411	2421	2431
Length over all, inches	9	11	12	13
Dozen	$5.00	6.30	9.00	10.50

Dull Brass Finish

Number	2403	2413	2423	2433
Length over all, inches	9	11	12	13
Dozen	$5.50	6.90	9.90	11.50

Japanned, Bright Black

Number	2500	2510	2520
Length over all, inches	7	8	10
Gross	$24.00	32.40	50.40

Bronze-plated

Number	2501	2511	2521
Length over all, inches	7	8	10
Dozen	$6.00	8.10	12.60

Dull Brass Finish

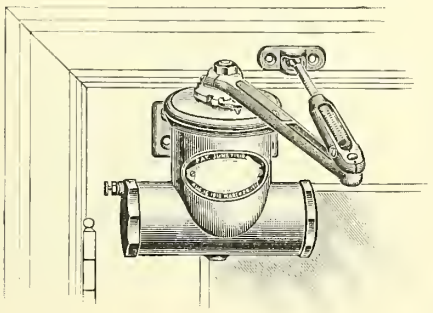
Number	2503	2513	2523
Length over all, inches	7	8	10
Dozen	$6.60	8.90	13.90



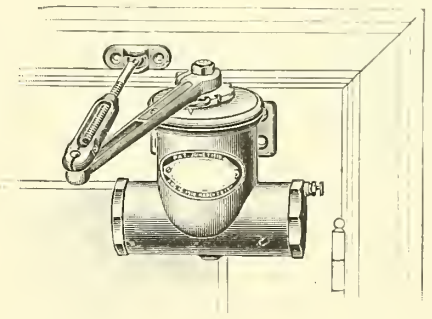
Style of all 2500 Numbers

Door Checks and Springs

Illustrations showing hands of doors and methods of installation



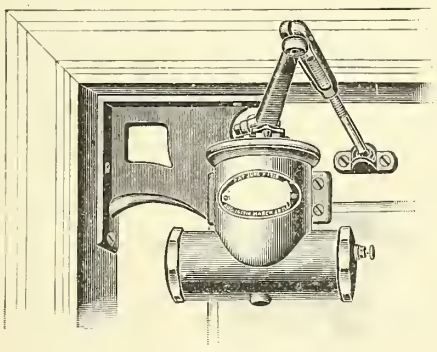
Right-hand Door with Right-hand Check and Spring



Left-hand Door with Left-hand Check and Spring

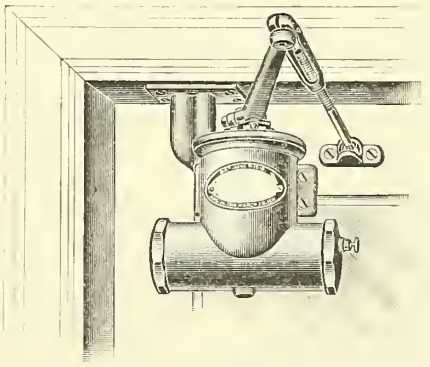
Special Application by Means of Brackets

The following illustrations show four styles of brackets for applying door checks. They can all be furnished for application the reverse of those shown.



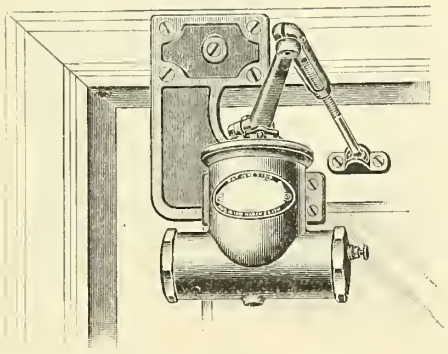
Corner Bracket

Left-hand Door with Right-hand Check and Spring



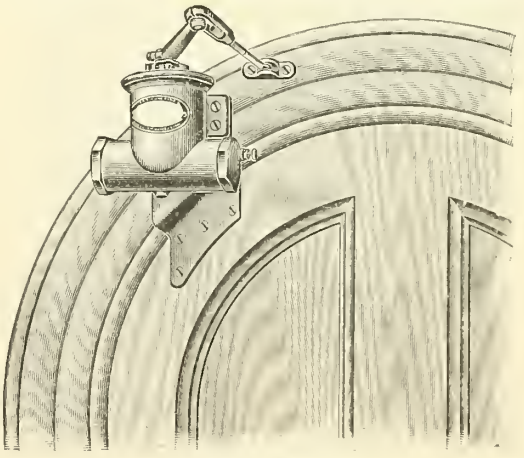
Overhead or Soffit Bracket

Left-hand Door with Right-hand Check and Spring



Flush Bracket

Left-hand Door with Right-hand Check and Spring

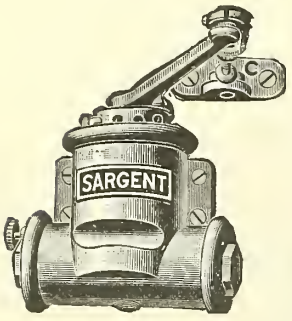


Circular Top Bracket

Right-hand Door with Right-hand Check and Spring

For Door Checks and Brackets, see next four pages

Door Checks and Springs



Sargent Liquid

Made of cast iron, gold bronzed. Suitable for either right or left-hand doors without changing any of the parts.

Spring is adjustable tension, very compact and powerful, and is made from extra heavy clock-spring steel of finest quality.

Check can be instantly varied for light or heavy draft by means of a thumb-screw.

Packed with screws to match.

Prices are for Check and Spring complete.

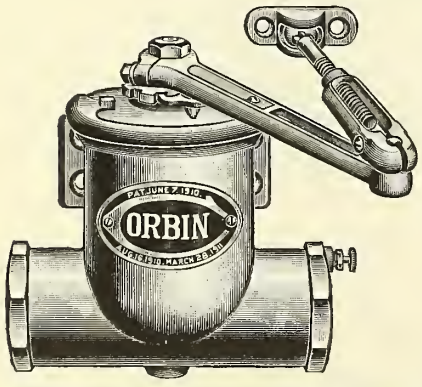
No. 321	For screen doors and light narrow inside doors, each	$3.25
No. 322	For heavy screen doors, light inside doors, pantry doors, etc., each	4.25
No. 323	For medium size doors, each	5.00
No. 324	For general use on inside doors and medium outside doors, each	6.00
No. 325	For heavy and wide outside doors, each	8.00
No. 326	For extra heavy and wide outside doors, each	10.00

Door Check Brackets for Above

See page 1013 for illustrations

Numbers	321	322	323	324	325	326
Corner, each	$ .50	$ .60	$ .65	$ .70	$ .75	$ .85
Soffit, each	.15	.20	.30	.35	.40	.45
Flush, each	.30	.30	.35	.50	.55	.55
Circular, each	1.00	1.00	1.20	1.30	1.40	1.50

Above can be furnished in all standard finishes, also polished bronze when specially ordered.



Corbin Liquid—Model of 1911

Made of cast iron, gold bronzed.

Suitable for either right or left hand without changing any of its parts. Spring is adjustable tension made of steel wire and very powerful.

The checking chamber is controlled by a thumb-screw which adjusts the closing of the door.

Packed with screws to match.

Prices are for Check and Spring, complete.

No. 1	For screen doors and light narrow inside doors, each	$3.25
No. 2	For heavy screen doors, light inside doors, pantry doors, etc., each	4.25
No. 3	For medium size doors, each	5.00
No. 4	For general use on inside doors and medium outside doors, each	6.00
No. 5	For heavy and wide outside doors, each	8.00
No. 6	For extra heavy and wide outside doors, each	10.00

Door Check Brackets for Above

See page 1013 for illustrations

Number	1	2	3	4	5	6
Corner, each	$ .50	$ .60	$ .65	$ .70	$ .75	$ .85
Soffit, each	.15	.20	.30	.35	.40	.45
Flush, each	.30	.30	.35	.50	.55	.55
Circular, each	1.00	1.00	1.20	1.30	1.40	1.50

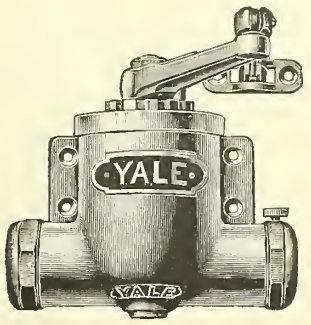
Above can be furnished in all standard finishes, also polished bronze, when specially ordered.

See preceding page for illustrations of Hands of Doors and methods of installation

Door Checks and Springs

Yale Liquid—Model Y

Made of Cast Iron, Gold Bronzed



The check combines a powerful coil spring and a metallic piston moving in a metallic cylinder against a non-freezing liquid, the one operating to close the door and the other to check or control it. A simple regulating valve furnishes the necessary adjustment, so that any desired action may be given to the door, whereby it will always be positively closed, but under a control which prevents slamming. The working parts are immersed in a lubricating fluid, so that the wear from continued use is very slight.

Packed with screws to match.

Prices are for Check and Spring complete

No. 11	For screen and other very light doors, each	$3.25
No. 12	For light inside doors not exceeding 7 feet high and 2½ feet wide, each	4.25
No. 13	For inside doors of medium size not exceeding 7 feet high and 3 feet wide, each	5.00
No. 14	For heavy inside and ordinary outside doors not exceeding 7½ feet high and 3 feet wide, each	6.00
No. 15	For heavy outside doors 8½ feet high by 4 feet wide, each	8.00

Door Check Brackets for Above

See page 1013 for illustrations

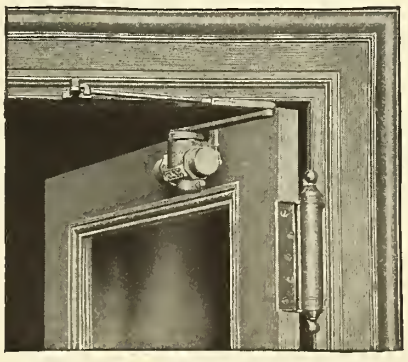
	No. 11 Each	No. 12 Each	No. 13 Each	No. 14 Each	No. 15 Each
Corner	$ .50	$ .60	$ .65	$ .70	$ .75
Soffit	.15	.20	.30	.35	.40
Flush	.30	.30	.35	.50	.55
Circular	1.00	1.00	1.20	1.30	1.40

Above can be furnished in all standard finishes, also polished bronze when specially ordered.

See page 1013 for illustrations of Hands of Doors and methods of installation

Double Acting Door Check

Yale—Model C



Check on door opened in



Check on door opened out

Note that door has been made transparent to show the position of arms—which rise to permit the door to open out.

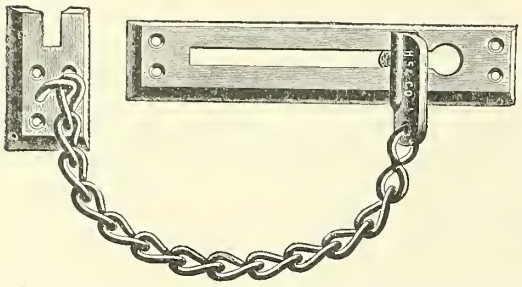
This Check is designed for use on doors hung on double-acting spring hinges, which permit the door to swing in both directions. As the hinges provide the necessary spring to close the door this article is a checking device only. The door is free to swing in both directions, the arms dropping below the soffit of the door frame when the door swings to the side opposite to that on which the check is attached, and passing over the top of the door when the latter is moved in the contrary direction.

The Check brings the door quietly to rest on the center without any of the flapping which is otherwise inevitable with such doors.

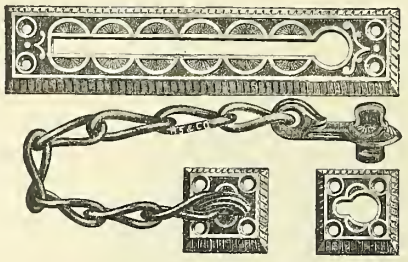
Finished in gold bronze, each $7.00

Chain Door Fasts

One Third Size Cuts



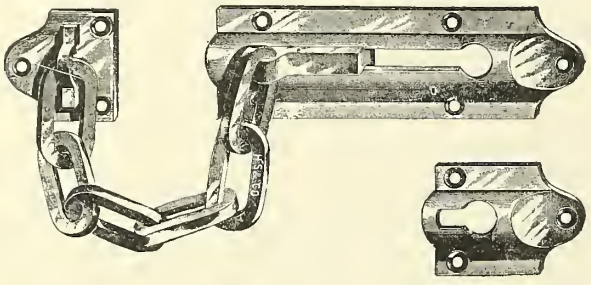
No. Y156 Cast iron, bronze-plated, length of slide over all 6 inches. Packed with screws. Dozen $8.30
No. 188P Cast bronze, polished, length of slide over all 4 inches. Packed with screws. Dozen 15.40
No. OB188 Cast brass, old brass finish, length of slide over all 4 inches. Packed with screws. Dozen 17.60



Packed with screws

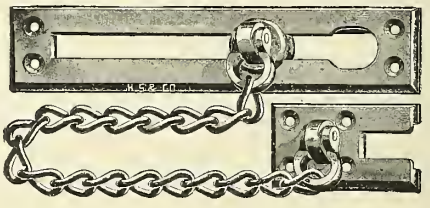
Length of Slide overall 6 inches. Made of Cast Iron

No. 3264 Amber bronzed finish, dozen $4.60
No. N3264 Bronze-plated, dozen 7.40

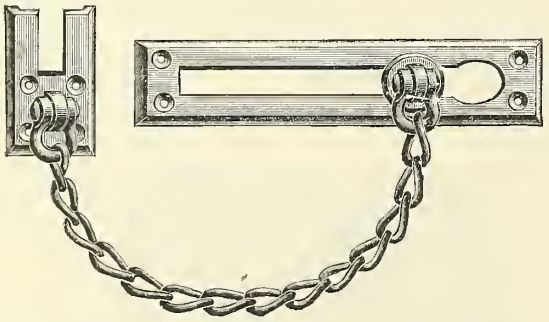


Length of Slide overall 6 inches. Heavy Chain. Packed with screws

No. 1500 Cast bronze, polished, dozen $30.70
No. OB1500 Cast brass, old brass finish, dozen 33.50



No. 2264½ Cast bronze, polished, length of slide over all 6 inches. Packed with screws. Dozen $30.00
No. LB2264½ Cast bronze, statuary bronze finish, length of slide over all 6 inches. Packed with screws. Dozen 32.88

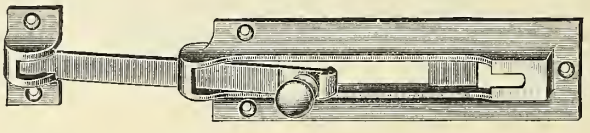


No. OB166 Cast brass, old brass finish, length of slide over all 6 inches. Packed with screws. Dozen $25.40

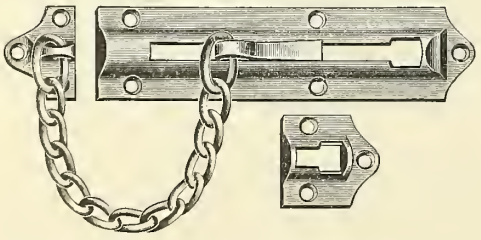
Combination Bolt and Fast



Showing Used as a Bolt



Showing Used as a Door Fast



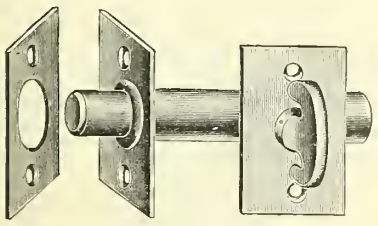
No. 466 Cast Brass, Polished. Packed with Screws
Length of slide over all 4 inches, dozen $14.00
Length of slide over all 6 inches, dozen 19.20

No. 2263 Cast bronze, polished, length of slide over all 5⅝ inches. Packed with screws. Dozen $24.00

SEE DISCOUNT SHEET

Mortise Door Bolts

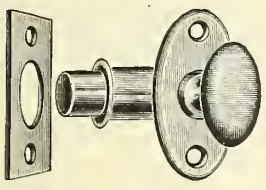
Half Size Cuts



Backset 1¾ Inches

No. 0654½ Wrought bronze, polished, steel bolt. Packed with screws. Dozen..... $5.10

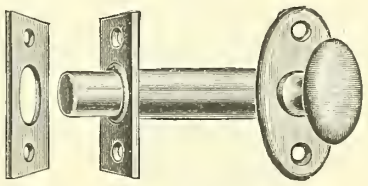
No. DA0654½ Wrought brass, old brass finish, steel bolt. Packed with screws. Dozen..... 5.55



Backset ⅞ Inch

No. N3657¼ Wrought steel, iron knob, bronze-plated. Packed with screws. Dozen..... $4.20

No. DA3657¼ Wrought steel, iron knob, old brass finish. Packed with screws. Dozen..... 4.50



Backset 1¾ Inches

No. 0657½ Wrought bronze plate and case, cast bronze knob, polished, iron bolt. Packed with screws. Dozen..... $5.55

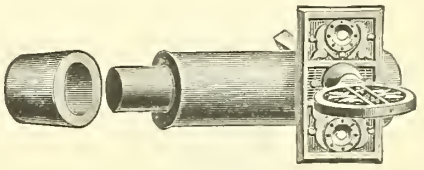
No. LB0657½ Wrought bronze plate and case, cast bronze knob, statuary bronze finish, iron bolt. Packed with screws. Dozen.... 6.00

No. E0657½ Wrought bronze plate and case, cast bronze knob, nickel-plated, iron bolt. Packed with screws. Dozen..... 6.00

No. N3657½ Wrought steel plate and case, iron knob, bronze-plated, iron bolt. Packed with screws. Dozen..... 4.65

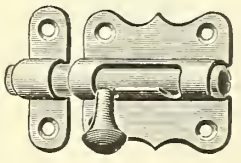
No. R3657½ Wrought steel plate and case, iron knob, antique copper finish, polished, iron bolt. Packed with screws. Dozen.... 4.95

No. DA3657½ Wrought steel plate and case, iron knob, old brass finish, iron bolt. Packed with screws. Dozen..... 4.95



No. T294A Case ¾x2½ inches, thumb knob plate ⅞x1⅝ inches, backset 2 inches; cast iron, amber bronzed. Packed with screws. Dozen..... $2.20

Cellar Window Bolts

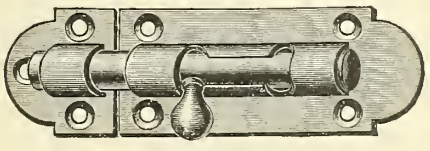


Wrought Steel, 2½ Inches

No. 364 Japanned, polished bolt and knob, dozen..... $1.70

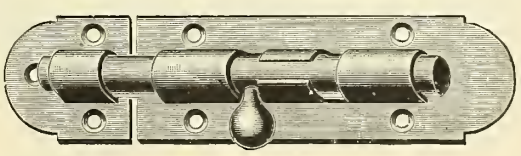
No. YT364 Bronze-plated, bright finish, unpolished. Packed with screws. Dozen..... 1.40

Barrel Bolts

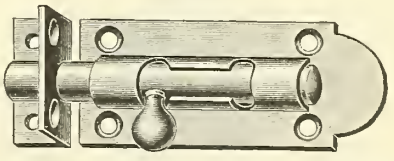


Wrought Steel

Size, Inches	No. 1084 Japanned Plate Polished Bolt Brass Knob Dozen	No. 408A Bronze-plated Dozen Packed with Screws	No. 408F Old Brass Finish Dozen Packed with Screws
3	$2.15	$1.70	$1.95
4	2.45	1.85	2.10
5	3.00	2.15	2.40
6	3.40	2.60	2.85

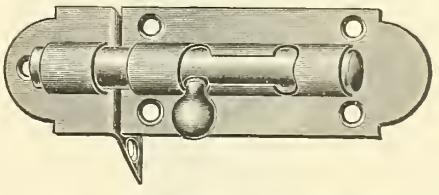


No. 3367 Wrought steel, 4 inches, galvanized. Packed with screws. Dozen..... $3.50



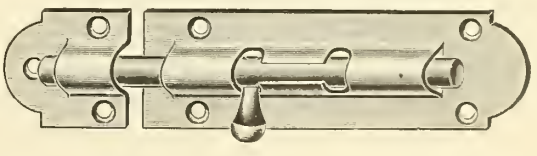
No. 1081 Wrought steel, necked staples, japanned plates, polished bolts, brass knobs.

Size, inches	3	4	5	6
Dozen	$2.25	2.60	3.15	3.60



No. 1108. Wrought Brass, Polished, packed with screws

Size, inches	3	4	5	6
Dozen	$7.60	9.70	11.50	13.00



No. 1922. Wrought Brass, Polished, packed with screws

Size, inches	2½	3
Dozen	$2.25	3.00

Foot Bolts

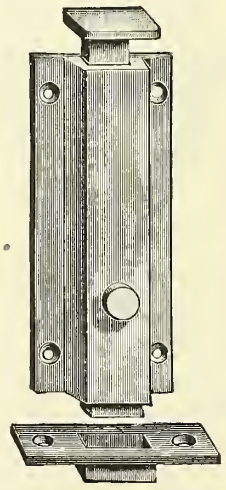


No. T2491 Made of wrought steel, Tuscan bronzed

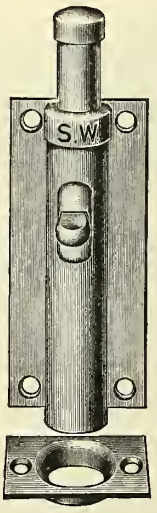
Length, inches	6	8
Dozen	$5.90	7.40

No. OT2491 Old brass finish, unpolished.

Length, inches	6	8
Dozen	$12.80	15.00

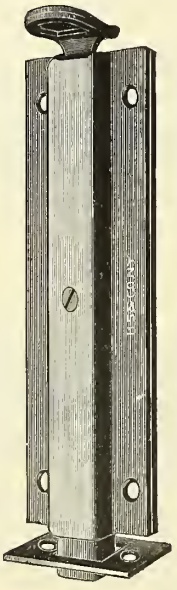


No. 1891P Cast bronze, polished, 6 inches long Packed with screws, Dozen $22.20



No. 356A Wrought steel, bronze-plated, 6 inches long. Packed with screws. Dozen $8.00

Bottom Bolts



Extra heavy for garage and warehouse doors.

Made of heavy pressed steel with stiff back-plate to prevent binding. The bolt is released by a slight pressure against the toe-piece at the top, doing away for the necessity of the central or kick spring.

No. 440 Pressed steel, japanned. 12 inches long. Packed with screws. Dozen $47.00

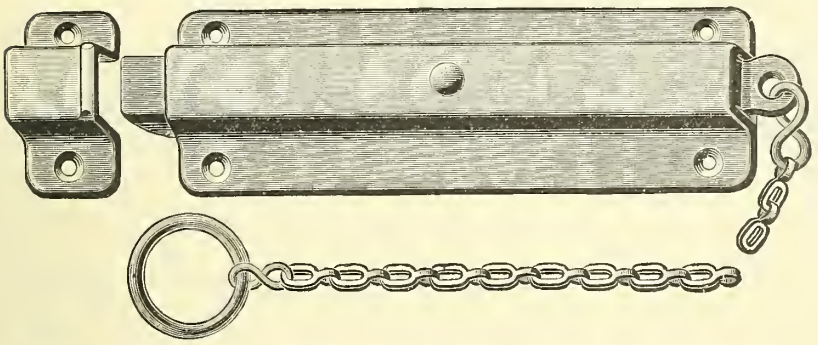


Extra heavy for garage and warehouse doors.

No. 450 Wrought iron keepers, japanned, steel bolts hot galvanized, ¾ inch diameter, 24 inches long. Packed with screws.
Dozen $39.00

Chain Bolts

Packed With Screws

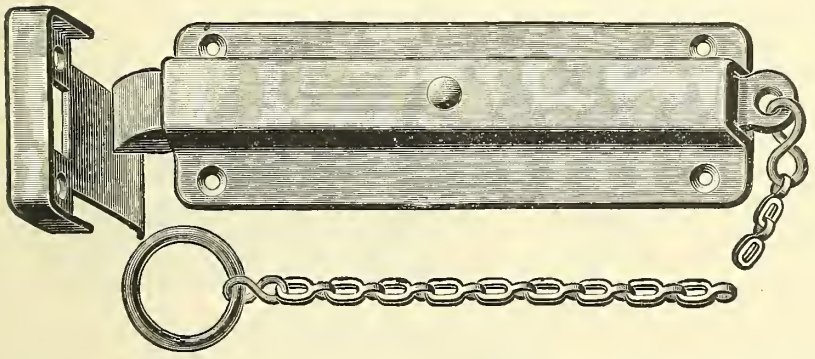


No. T2481 Wrought steel, Tuscan bronzed.

Length, inches	3	4	6	8
Dozen	$4.50	5.60	7.00	8.90

No. OB2481 Wrought steel, old brass finish, unpolished.

Length, inches	3	4	6	8
Dozen	$9.30	10.40	14.00	16.00



With Reverse Bevel

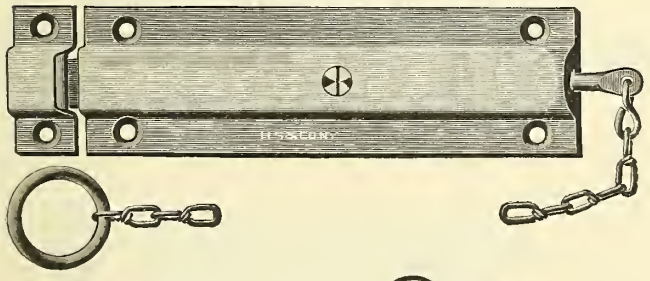
No. T2482 Wrought steel, Tuscan bronzed.

Length, inches	3	4	6	8
Dozen	$4.50	5.60	7.00	8.90

No. OT2482 Wrought steel, old brass finish, unpolished.

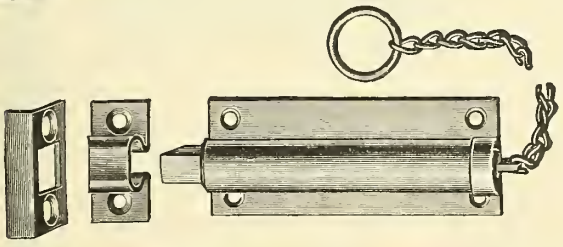
Length, inches	3	4	6	8
Dozen	$9.30	10.40	14.00	16.00

Extra Heavy, for Garage and Warehouse Doors

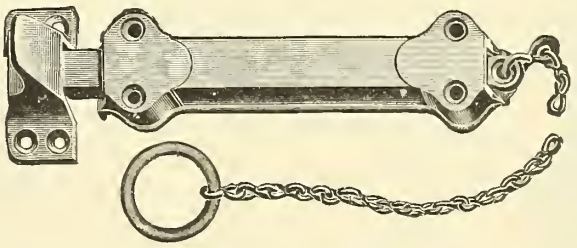


Made of heavy pressed steel, with stiff back-plate to prevent binding. Reversible for doors opening out by removing central screw and turning bolt around.

No. 430 Pressed steel, japanned. Packed with screws. 12 inches long. Dozen $47.00

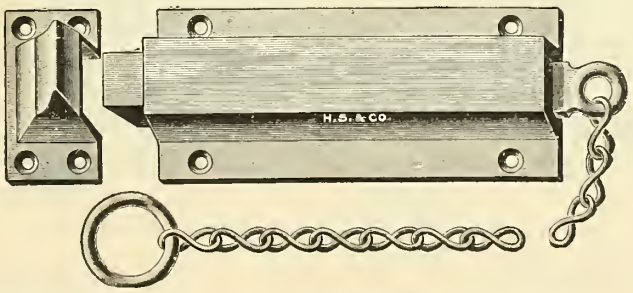


Wrought steel. Reversible by simply pulling the bolt out and turning it around. 6 inches long. Packed with screws.
No. 355A Bronze-plated, dozen $10.00

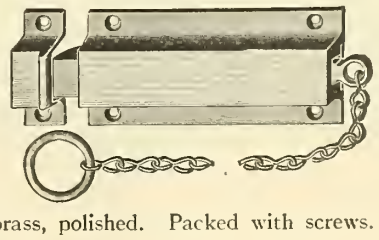


No. 381 Cast iron, japanned, polished bolt.

Length, inches	3	4	5	6	8
Dozen	$1.25	1.50	1.90	2.70	3.80



No. 1883P Extra heavy cast bronze, polished, 6 inches long. Packed with screws. Dozen $22.40

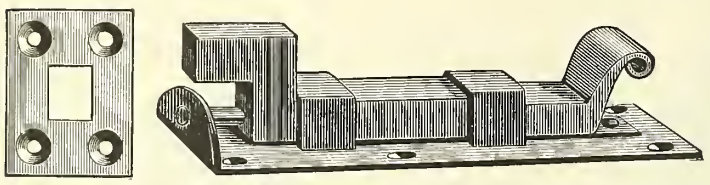


No. 158 Cast brass, polished. Packed with screws.

Length, inches	2	3
Dozen	$8.64	10.80

Cut shows plain bevel. Reverse bevel furnished at same price.

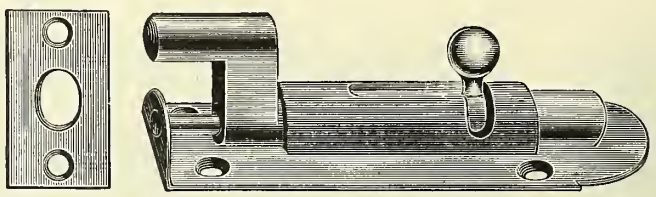
Neck Bolts



No. 1102

Wrought Steel, Japanned Plate, Polished Bolt

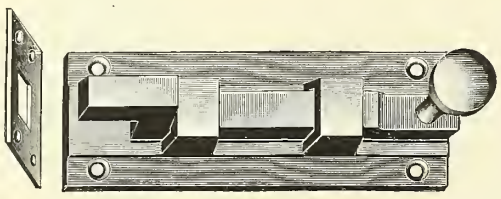
Length, inches	4	6	8
Dozen	$2.90	4.30	5.50



No. 1100

Wrought Steel, Japanned Plate, Polished Bolt

Length, inches	4	6	8
Dozen	$3.65	3.85	4.10



No. 141

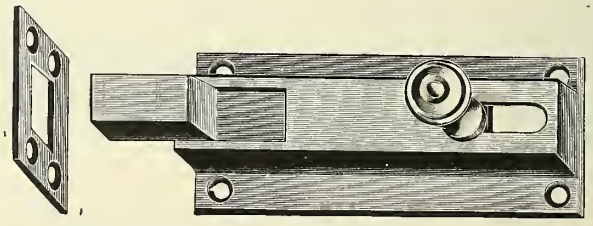
Cast Brass, Polished. Packed with Screws

Length, inches	3	4
Dozen	$6.00	7.50

DA141

Cast Brass, Old Brass Finish. Packed with Screws

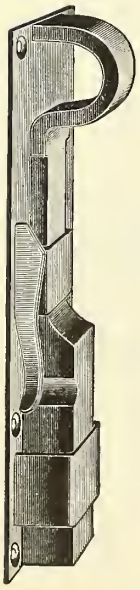
Length, inches	3	4
Dozen	$8.70	10.20



No. 2442½

No. 2442½ Cast bronze, polished. Packed with screws. 4 inches long, dozen $12.60

Surface Bolts



Wrought Steel. Extra Heavy

Length Inches	No. 1050 1¾-inch Plate ¾-inch Square Bolt Dozen	No. 1054 1¼-inch Plate ½-inch Square Bolt Dozen
8	$7.15	$6.40
10	7.60	6.80
12	8.10	7.40
15	8.80	7.80
18	9.25	8.15
24	9.80	8.90

No. 1178P

Cast Bronze, Polished. Packed with Screws

Length 6 inches, dozen $17.00
Length 12 inches, dozen 23.20

No. OB1178

Cast Brass, Old Brass Finish. Packed with Screws

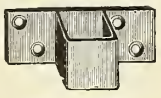
Length 6 inches, dozen $19.70
Length 12 inches, dozen 26.00

Above bolts are packed with regular strikes as illustrated on top of bolt. No. 3 Strikes will be supplied at same price when specially ordered.





No. 1 Staple



No 2. Staple

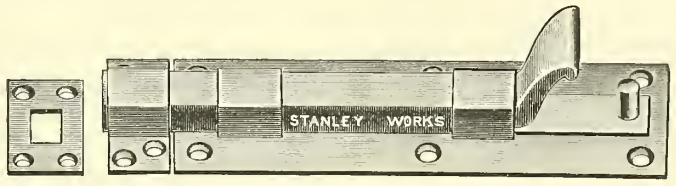


Strike No. 3

8, 10 and 12 inch bolts have No. 1 Staple; larger sizes No. 2.

Square Bolts

Half Size Cuts



No. 1088

Wrought Steel, Plain Staples, Japanned Plates, Polished Bolts

Length, inches	3	4	5	6	7	8	9	10	12
Dozen	$2.00	2.50	2.65	2.85	3.75	4.00	4.35	6.50	7.00

No. 1090

With Floor Plates

Wrought Steel, Japanned Plates, Polished Bolts

Length, inches	3	4	5	6	7	8	9	10	12
Dozen	$2.00	2.50	2.65	2.85	3.75	4.00	4.35	6.50	7.00

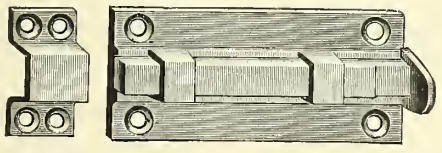
Extra Staples and Floor Plates for Above

Staples

For 3 inch bolts, dozen	$ .40
For 4, 5 and 6 inch bolts, dozen	.45
For 7, 8 and 9 inch bolts, dozen	.60
For 10 and 12 inch bolts, dozen	.75

Floor Plates

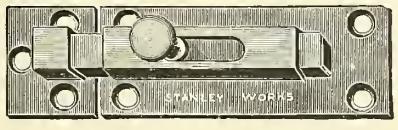
For 3 inch bolts, dozen	$ .40
For 4, 5 and 6 inch bolts, dozen	.60
For 7, 8 and 9 inch bolts, dozen	.60
For 10 and 12 inch bolts, dozen	.75



No. 145

No. 145 Cast Brass, Polished. Packed with Screws

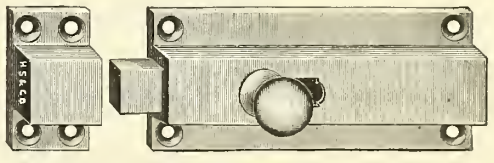
Length, inches	3	4	5	6
Dozen	$5.76	8.10	9.90	11.70



Packed with Screws

Wrought Steel, Light. 3 Inches Long

No. 414A	Bronze-plated, dozen	$3.80
No. 414F	Old brass finish, dozen	4.30



No. 149

Cast Brass, Polished. Packed with Screws

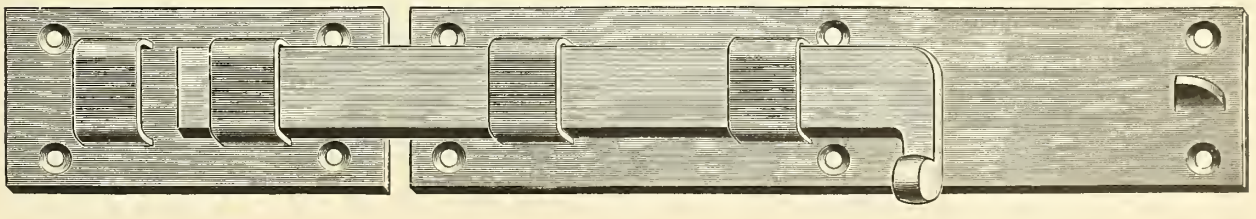
Length, inches	2½	3	4
Dozen	$6.30	8.10	10.80

No. 2144½

Cast Bronze, Polished. Packed with Screws

Length, inches	2½	3	4
Dozen	$8.10	9.90	12.60

Shutter Bolts



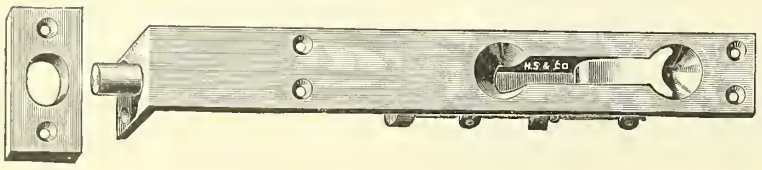
No. 334

Wrought Steel. All Galvanized

Length, inches	6	7	8	10	12
Dozen	$3.75	4.15	4.50	5.75	6.75

Flush Bolts

Packed with Strikes and Screws



No. 2362 Cast bronze, polished.
No. DA2362 Cast brass, old brass finish.

1¼ Inches Wide

Length, inches	10	12	18
No. 2362 Dozen	$36.00	45.00	63.00
No. DA2362 Dozen	40.32	49.32	67.32



No. P1867

Cast Bronze, Polished. 1⅛ Inches Wide

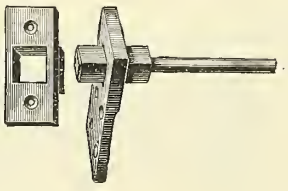
Length, inches	8	12	18
Dozen	$17.55	22.42	26.55

Extension Flush Bolts



Packed with screws. 1¼ x 6½-inch plate. 1⅛ x 2⅜-inch guide. ½-inch square bolt. 9, 12, 18 and 24 inches long. Specify which wanted.

No. 385A Steel, bronze-plated, with bronze lever, dozen $18.00
No. 385F Steel, old brass finish, with bronze lever, dozen 18.00





Packed with screws.

1¼ x 6¾-inch plate. 1⅜ x 2⅜-inch guide. ½-inch square bolt.

Cast Bronze, Polished

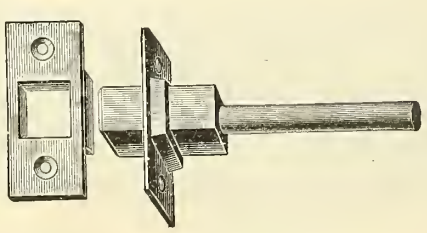
No. 1116P Cast bronze, polished.
No. A3B1116 Cast bronze, statuary bronze finish.
No. OB1116 Cast brass, old brass finish.

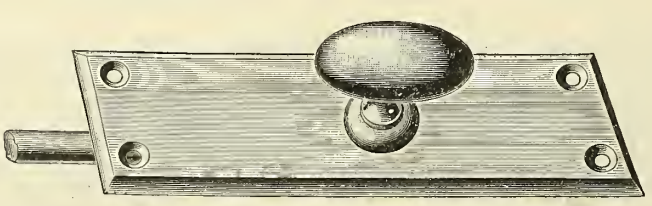
Length, inches	12	18	24
No. 1116P Dozen	$25.90	25.90	25.90
No. A3B1116 Dozen	29.60	29.60	29.60
No. OB1116 Dozen	29.60	29.60	29.60

⅞ x 6-inch plate. 15/16 x 1⅞-inch guide. ⅜-inch square bolt.

No. 1126P Cast bronze, polished.
No. A3B1126 Cast bronze, statuary bronze finish.
No. OB1126 Cast brass, old brass finish.

Length, inches	12	18
No. 1126P Dozen	$25.90	25.90
No. A3B1126 Dozen	29.60	29.60
No. OB1126 Dozen	29.60	29.60

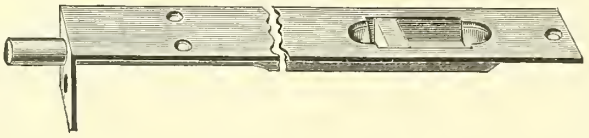




Packed with screws. 1½ x 5⅝-inch plate. ½-inch square bolt. Turning of oval knob controls the movement of bolt. 12, 18 and 24 inches long. Specify which desired.

No. OB1129 Cast brass, old brass finish, polished, dozen $27.80
No. 1129P Cast bronze, natural color, highly polished, dozen 24.10

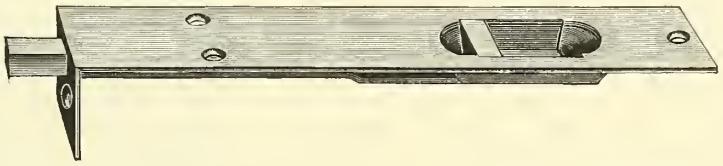
Flush Bolts



Packed with screws

Plates ¾ inch wide. Bolts ¼ inch diameter

Length, inches			6	9	12	15	18
No. 393½A	Wrought Steel.	Polished light bronze, dozen	$5.00	5.75	6.50	7.15	7.90
No. 393½F	Wrought Steel.	Polished dull brass, dozen	5.65	6.40	7.15	7.80	8.55

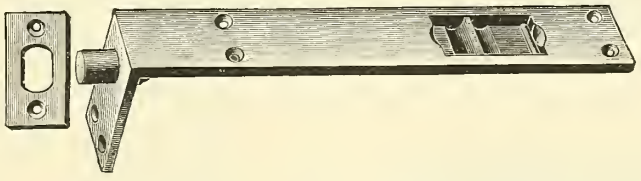


Plates 1 inch wide. ⅜-inch square bolt

Length Inches	No. 1026 Plain Steel Polished Plates Dozen	No. 396A Wrought Steel Polished Light Bronze Dozen Packed with screws	No. 396F Wrought Steel Polished Old Brass Dozen Packed with screws
9	$4.05	$8.20	$8.90
12	4.60	9.25	10.00
18	5.50	11.25	12.00

Plates 1¼ inches wide. ½-inch square bolts.

Length Inches	No. 102S Plain Steel Polished Plates Dozen	No. 400A Wrought Steel Polished Light Bronze Dozen Packed with screws	No. 400D2 Wrought Steel Polished Antique Copper Dozen Packed with screws	No. 400F Wrought Steel Polished Old Brass Dozen Packed with screws
9	$5.10	$9.50	$10.20	$10.20
12	5.70	10.50	.....	11.20
18	6.90	12.50	13.20	13.20
24	8.10	14.50	.....	15.20



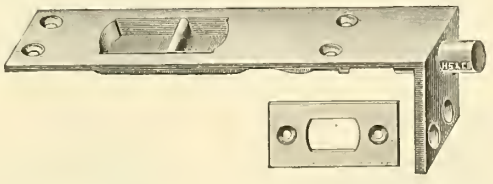
1 inch wide. Packed with strikes and screws

No. 0131½ Wrought bronze, polished, with brass bolt

Length, inches	6	8	10	12
Dozen	$8.55	10.50	12.90	15.90

No. DA0131½ Wrought brass, old brass finish.

Length, inches	6	8	10	12
Dozen	$12.15	14.10	17.22	20.22



1⅛ inches wide. Packed with strikes and screws

No. 2356 Cast bronze, polished.

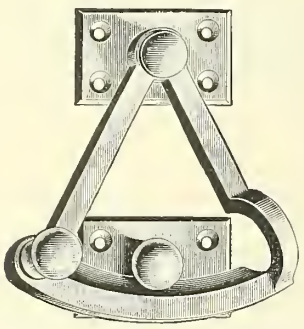
Length, inches	8	12	15	18
Dozen	$18.90	24.75	26.70	29.70

No. DA2356 Cast brass, old brass finish.

Length, inches	8	12	15	18
Dozen	$22.50	29.07	31.02	34.02

Dutch Door Quadrant Fasteners

One-Third Size Cut



Made Right and Left Hand. State which wanted.
Illustration shows Left Hand.

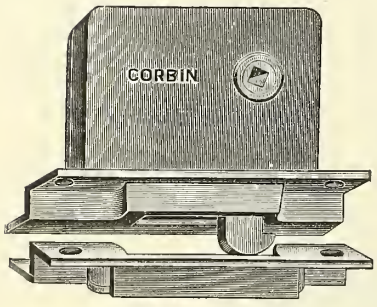
4¾ Inches. Packed with Screws

No. **175** Cast bronze, polished, dozen..... $37.50
No. OB175 Cast brass, old brass finish, dozen..... 37.50

Dutch Door Bolts

Flush

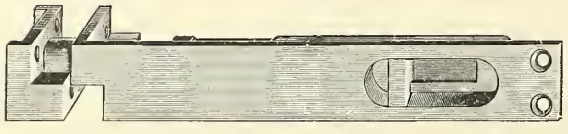
One-Third Size Cuts



For knobs and lever handles, see Index.

Case 3¼ x 2⅝ x ⅝ inches. Front to center of hub ⅞ and 1⅜ inches. Front 1 x 5 inches. ½-inch rabbet. $\frac{5}{16}$-inch hub.

No. 1693¾B Bolt and front, cast bronze, polished, each..... $6.20
No. DA1693¾ Bolt and front, cast brass, old brass finish, each 6.32



Made Right and Left Hand. State which wanted.
Illustration shows right hand.

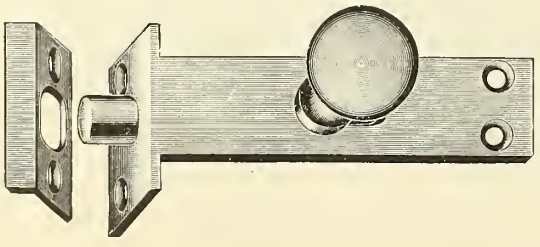
1¼ Inches Wide. 8 Inches Long

Packed with Screws

No. 2357 Cast bronze, polished, each..... $3.75
No. DA2357 Cast brass, old brass finish, each..... 4.05
No. LB2357 Cast bronze, statuary bronze finish.....1.00

Half Mortise

Half Size Cut



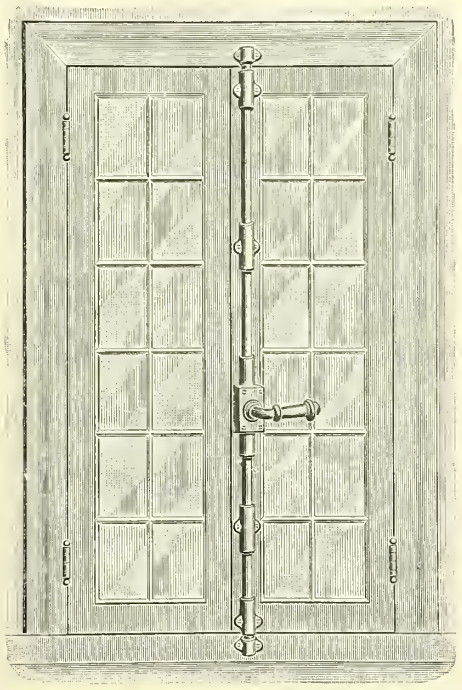
1 Inch Wide. 4 Inches Long

Packed with Screws

No. 1399½ Cast brass, polished, dozen..... $13.86
No. DA1399½ Cast brass, old brass finish, dozen..... 14.46

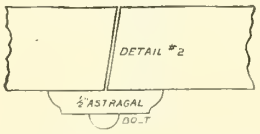
Cremorne or French Window Bolts

Showing the Hand of Cremorne or French Window Bolts

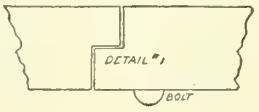


Cut showing double French Windows with Right Hand Cremorne Bolt

Showing Bolt Attached to Rabbetted Window

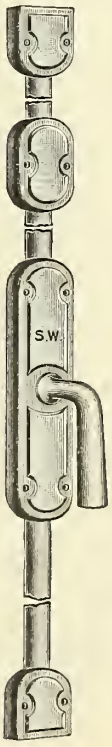


Showing Bolt Attached to ½ inch Astragal



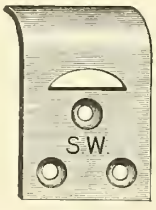
Cremorne Bolts are always used on the inside of a casement or French window. If the bolt is placed on the leaf of the window to the right of a person facing it, a right-hand bolt is required, whether the window opens in or out. If placed on the leaf to the left, a left-hand bolt is required.

For Casement or French Windows

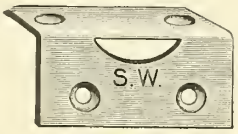




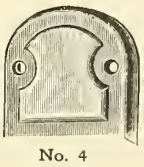
No. 1



No. 2



No. 3



No. 4

For doors opening in or out.

Plates 1⅜ inches wide, bolts ⅝ inch half round.

Bolts are regularly packed with two No. 2 strikes and one No. 1 strike. No. 3 or No. 4 Staples will be substituted when ordered.

Furnished regularly in 8-foot lengths with handle in center, so that they can be cut to suit.

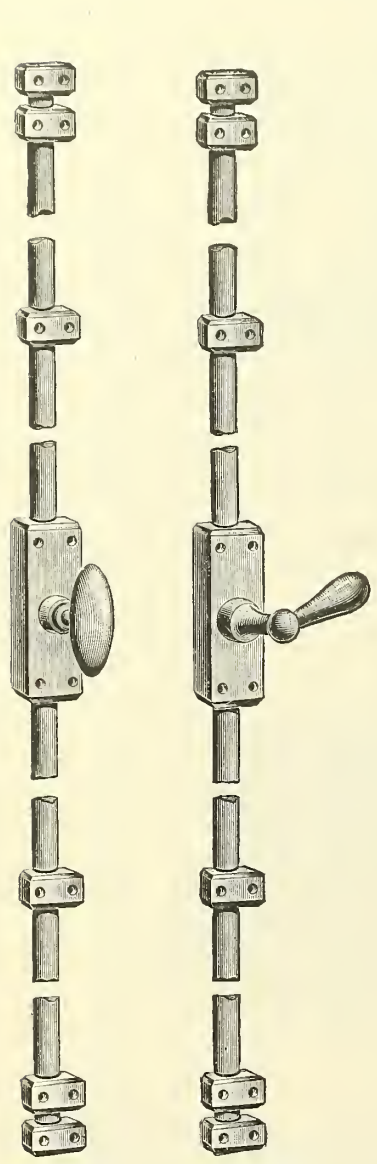
No. 373A Wrought steel, bronze-plated, dozen..... $50.00

No. 373F Wrought steel, old brass finish. dozen..... 55.00

For other Cremorne Bolts, see next page

Cremorne or French Window Bolts

For Casements or French Windows



No. 3158P
No. OB3158
For Sash Opening In

No. 3158½P
No. OB3158½
For Sash Opening Out

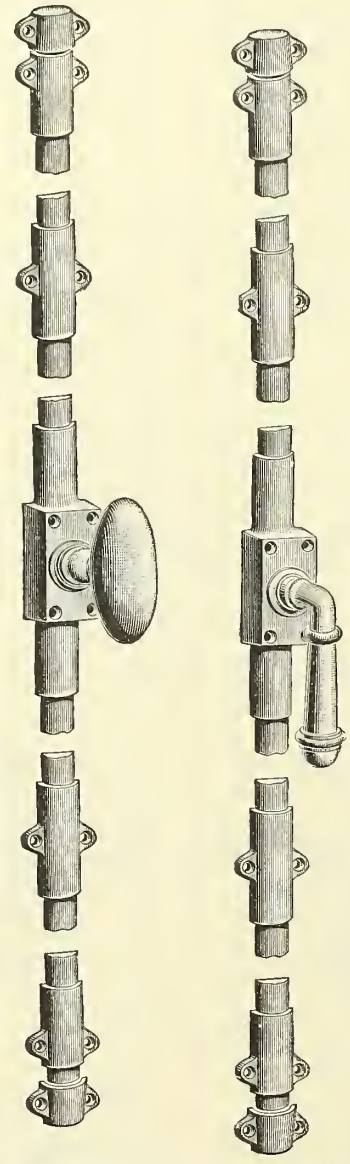
Handle Case 1⅛ x 3⅝ inches. End Guides 1⅛ x ¾ inches. Rod ½ inch half round

No. 3158P Cast bronze, polished, each $7.70

No. OB3158 Cast brass, old brass finish, each 8.50

No. 3158½P Cast bronze, polished, each 7.70

No. OB3158½ Cast brass, old brass finish, each 8.50



No. 4158P
No. OB4158
For Sash Opening In

No. 4158½P
No. OB4158½
For Sash Opening Out

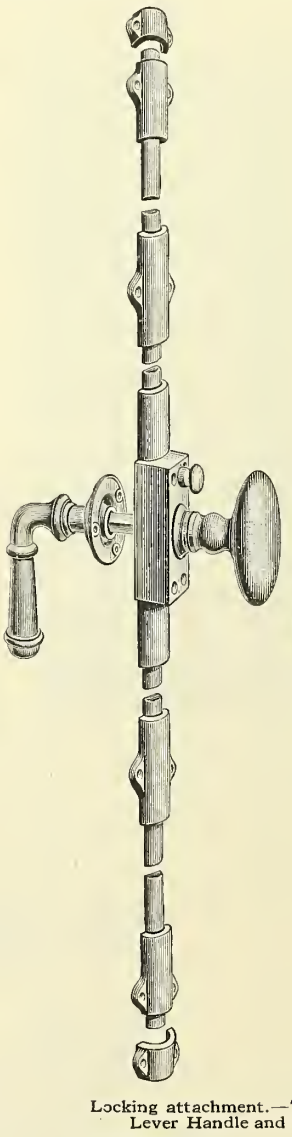
Handle Case No. 4158P and No. OB4158 1 5/16 x 5⅞ inches. Handle Case No. 4158½P and No. OB4158½, 1½ x 5⅞ inches. End Guides 1 9/16 x 1¾ inches. Rod ⅝ inch half round

No. 4158P Cast bronze, polished, each. $11.60

No. OB4158 Cast brass, old brass finish, each 12.30

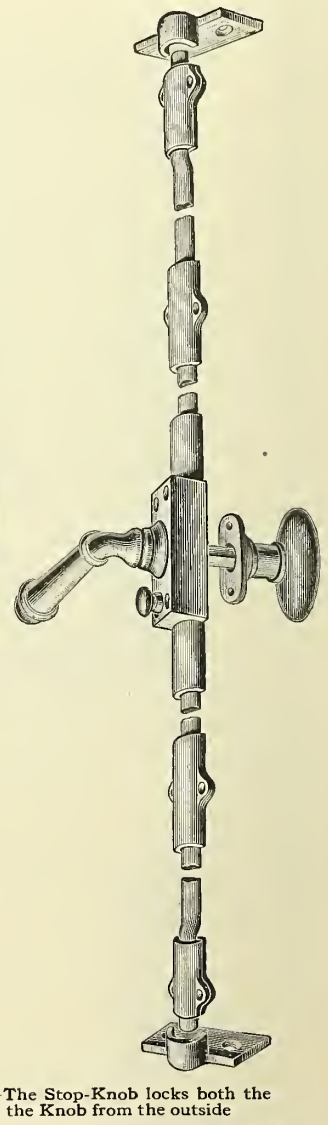
No. 4158½P Cast bronze, polished, each 12.30

No. OB4158½ Cast brass, old brass finish, each 13.10



Locking attachment.—The Stop-Knob locks both the Lever Handle and the Knob from the outside

No. 4158¼P
No. OB4158¼
For Sash Opening In



No. 4158¾P
No. OB4158¾
For Sash Opening Out

Handle Case 1½ x 5⅞ inches. End Guides 1 9/16 x 1¾ inches. Rod ⅝ inch half Round

No. 4158¼P Cast bronze, polished, each $18.50

No. A3B4158¼ Cast bronze, statuary bronze finish, each 20.00

No. OB4158¼ Cast brass, old brass finish, each 20.00

No. 4158¾P Cast bronze, polished, each 18.50

No. A3B4158¾ Cast bronze statuary bronze finish, each 20.00

No. OB4158¾ Cast brass, old brass finish, each 20.00

These bolts are furnished regularly in 8-foot lengths, so that they can be cut and arranged to suit length and hand of windows. They are furnished with one nosing, as shown on Bolt No. 4158¼P above, and one universal strike, as shown on Bolt 4158¾P above, or two of either, but if construction of trim will not allow the use of these, special strikes will be sent on receipt of detail.

Panic Exit Bolts

These Panic Exit Bolts do not operate through the action of springs. They are instantly released by a slight touch at any point on the cross-bar or handle which extends across the door. This principle makes them the ideal fastening for outer doors of schools, theatres, churches, public buildings, factories and all other buildings where many people gather, as any jamming of exits is impossible.

Directions for Ordering

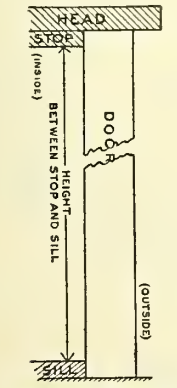


Figure 1

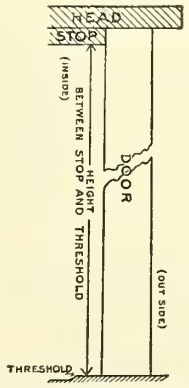


Figure 2

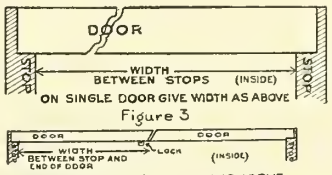
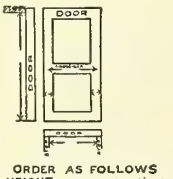


Figure 3

Figure 4
(GIVE HEIGHT ONLY ON #15 LOCK)



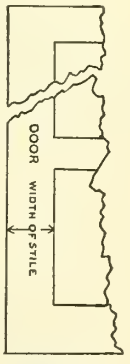
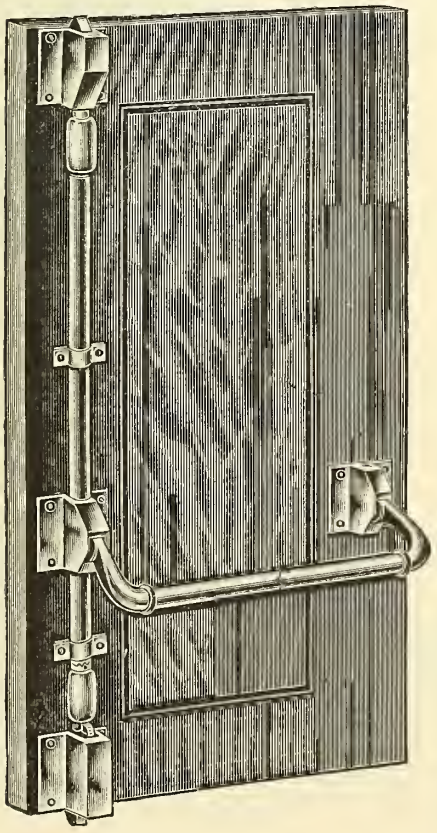


Figure 5

State whether right or left-hand door on inside. Right-hand door inside is left-hand reverse bevel outside. Left-hand door inside is right-hand reverse bevel outside.



Style 25

Rod is ½ inch diameter. Cross-bar is ¾ inch diameter

Style 75

Extra heavy, for use on large doors. Rod is $\frac{9}{16}$ inch diameter. Cross-bar is 1 inch diameter.

Prices include entire equipment for a single door, with screws, ready for installation.

Steel Rod Plated to Match Finish	Style 25		Style 75	
Not Polished	No.	List	No.	List
Brass, natural finish	2510S	$8.00	7410S	$14.00
Bronze, natural finish	2511S	8.20	7411S	14.40
Brass, antique copper	257½S	8.80	747½S	15.00
Brass, Bower-Barff (imitation)	2547	8.80	7447	15.60
Highly Polished				
Brass, natural finish	2510	9.80	7410	16.60
Bronze, natural finish	2511	10.00	7411	17.00
Brass, nickel-plated	254	10.40	744	17.80
Brass, antique copper	257½	10.80	747½	18.00
Brass, dull finish	259	10.80	749	18.00
Solid Brass or Bronze Rod Not Polished				
Brass, natural finish	2610S	9.60	7510S	16.00
Bronze, natural finish	2611S	9.80	7511S	16.40
Brass, antique copper	267½S	10.40	757½	17.00
Brass, Bower-Barff (imitation)	2647	10.40	7547	17.60
Highly Polished				
Brass, natural finish	2610	11.00	7510	18.00
Bronze, natural finish	2611	11.20	7511	18.40
Brass, nickel-plated	264	11.60	754	19.20
Brass, antique copper	267½	12.00	757½	19.60
Brass, dull finish	269	12.00	759	19.60

We are in position to furnish other types of panic bolts to meet the varied conditions

Metal Numbers and Letters

Full Size Cuts



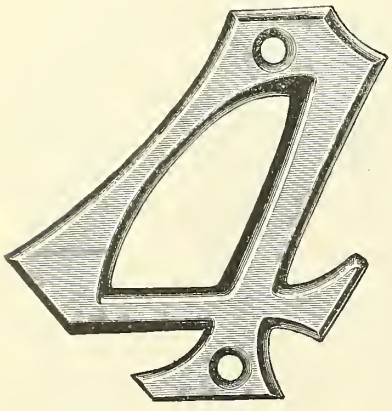
Regular, 1½ inches, with Pins cast in
Cast brass, polished, dozen..... $ .90
Cast brass, nickel-plated, dozen..... 1.00



Regular, 2 inches, with Pins cast in
Cast brass, polished, dozen..... $1.20



Niagara, 3 inches
Sheet aluminum, polished. Packed with pins. Dozen..... $1.00



Sixteenth Century, 2 inches
Cast bronze, polished. Packed with pins. Dozen..... $1.80



Sixteenth Century, 1 inch
Cast bronze, polished. Packed with pins. Dozen..... $1.20



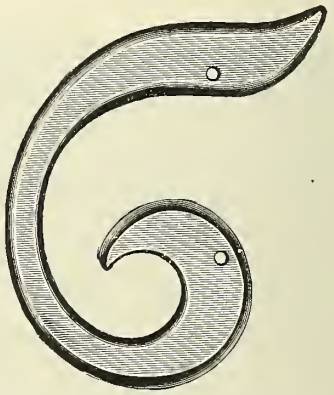
Sixteenth Century, ½ inch
Cast bronze, polished. Packed with pins. Dozen..... $ .96



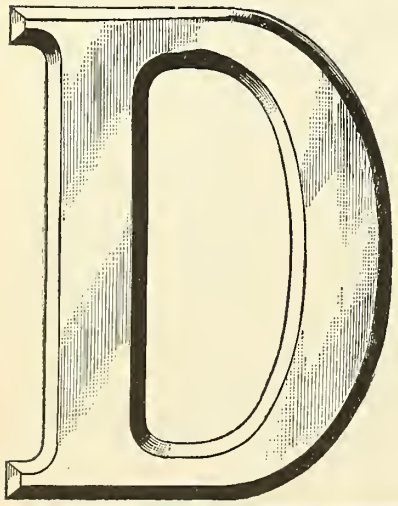
Sixteenth Century, ½ inch
Cast bronze, polished. Packed with pins. Dozen..... $ .96



Sixteenth Century, 1 inch
Cast bronze, polished. Packed with pins. Dozen..... $1.20

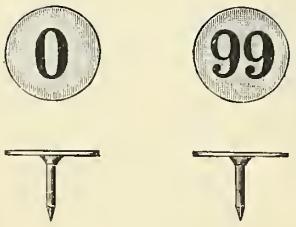


Sixteenth Century, 2 inches
Cast bronze, polished. Packed with screws. Dozen..... $1.80



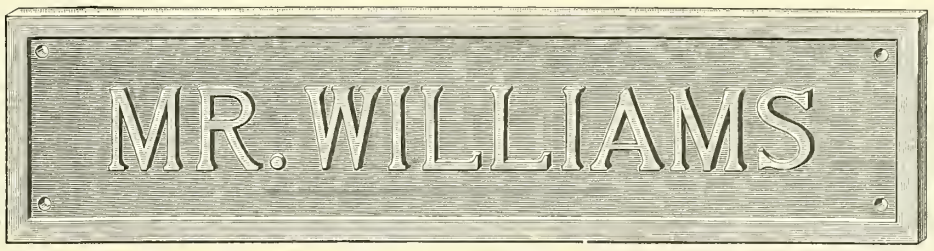
No. 380P 2½ inches, cast bronze, polished. Packed with screws.
Dozen..... $3.48

Numbered Thumb Tacks



Brass, Black Figures
In sets of 1 to 10 inclusive..$2.20
In sets of 1 to 25 inclusive.. 5.50
In sets of 1 to 40 inclusive.. 8.80
In sets of 1 to 50 inclusive..11.00
In sets of 1 to 99 inclusive..22.00
We do not sell less than full sets.

Name Plates



No. 802P

Cast bronze, highly polished surface, shaded background. Standard size is 3½ x 16 inches, with 1¼-inch letters. All names furnished to order. Prices on application

Sign Plates



No. 702

Iron, white enamel background, blue enamel letters, size 2½ x 10 inches. Lettered as follows: "No Admittance," "Cashier," "Janitor," "Ladies," "Gentlemen," "No Smoking," "Toilet," "Office," "Private," "Book-keeper." Dozen..... $8.00



No. 602



No. 603



No. 604

Conform with New York City Requirements

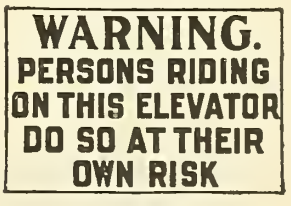
No. 602 Tin, red enamel background, white enamel letters, size 3½ x 14 inches. Lettered "No Smoking." Dozen..... $5.00
No. 603 36-gauge, cold rolled steel, red enamel background, white embossed letters, 4 x 14 inches. Lettered "To the Fire Escape." Dozen.. 5.00
No. 604 36-gauge, cold rolled steel, red enamel background, white embossed letters, 4 x 14 inches. Lettered "To the Fire Escape." Dozen.. 5.00



Nos. 402 and 502

No. 402 Tin, red enamel background, white enamel letters, size 9½x11¾ inches. Letters 9 inches high. Lettered "Exit." Dozen..... $5.00

No. 502 Iron, red enamel background, white enamel letters, size 10 x 14 inches. Letters 8 inches high. Lettered "Exit." Dozen..... 15.00



No. 302

36-gauge, cold rolled steel, blue ground, white letters, 7 x 10 inches. Dozen..... $5.00

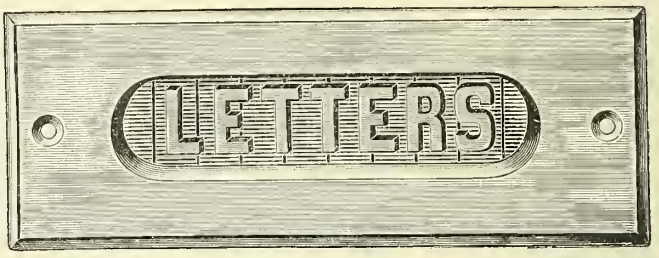
Conforms with New York City and State Requirements

Letter-Box Plates



No. 26

No. 26 2⅜ x 5⅞ inches over all, opening 1⅛ x 4⅜ inches.
Cast iron, amber bronzed, dozen $4.50



No. X2246

No. Y2246 2½ x 6¾ inches over all, opening 1 x 4⅜ inches.
Wrought steel, bronze-plated, dozen $7.70



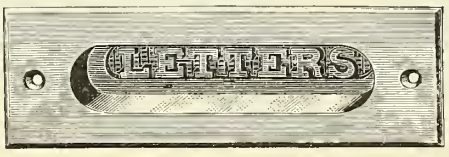
4 x 10½ inches over all. Opening 2 x 7 inches. Opening is large enough to take magazines and newspapers.

Cast Iron, Bronze-plated, Polished

No. N3424½ Without back-plate, each $1.65
No. NO3424½ With back-plate, each 1.90

Cast Bronze, Polished

No. 2424½ Without back-plate, each $4.50
No. O2424½ With back-plate, each 5.70



2⅛ x 7 Inches Over All. Opening 1 x 4¾ Inches

No. P1334 Without inside plate, cast bronze, polished, dozen .. $12.50
No. P1344 With inside plate, as shown opposite, cast bronze, polished, dozen 16.25
No. P1344–37 With inside plate, cast brass, old brass finish, dozen 16.25



Inside plate for Nos. P1334 and P1334–37.

Dozen $4.50

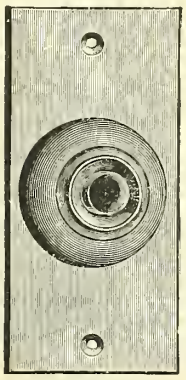
Letter-Box Hoods



No. PH1338 2⅜ x 7 inches over all, opening 5 inches wide.
Made of polished cast bronze, dozen $12.50

Push Buttons

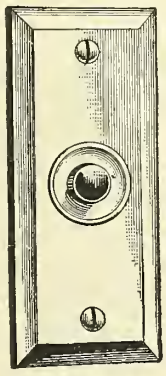
Half Size Cuts



No. 1256¾

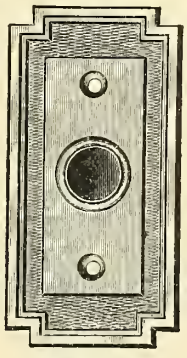
Cast Bronze, Polished

No. 43 2½ x 1 inches over all, dozen. $9.60
No. 1256¾ 3¾ x 1¾ inches over all, dozen 7.20



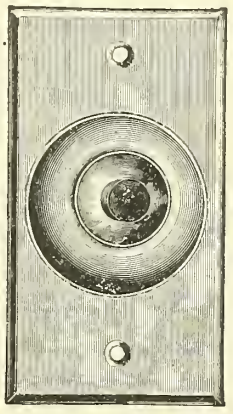
Design Tarlton

No. OB9184TC 1⅝ x 3¾ inches over all, wrought brass, old brass finish, dozen $7.20

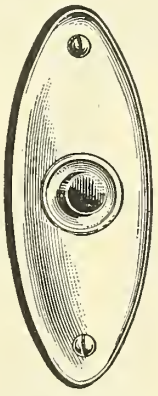


Design Corfu

No. LB82361 2⅝ x 3⅝ inches over all, cast bronze, statuary bronze finish, dozen $40.32



No. 9 4⅝ x 2⅜ inches over all, cast bronze, polished, dozen $6.90



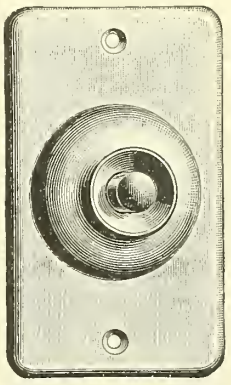
Design Fairfax

No. OB9184FC 1 9/16 x 3⅞ inches over all, wrought brass, old brass finish, dozen $7.20



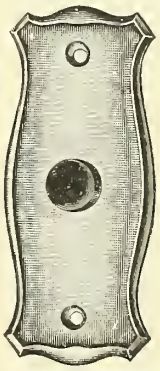
Design Hudson

No. 9184TH 1⅝ x 4 inches, wrought bronze, polished, dozen $7.20



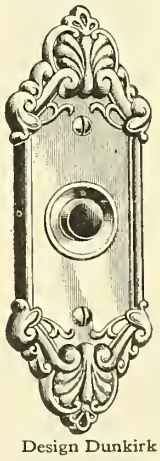
4 x 2⅜ inches over all

No. 9184MR Wrought bronze, polished, dozen $10.80
No. AB9184 Wrought bronze, antique copper finish, dozen 12.25



Design Princeton

No. SKA72161 1½ x 3¾ inches over all, wrought brass, old brass finish, sand blast, dozen $10.80



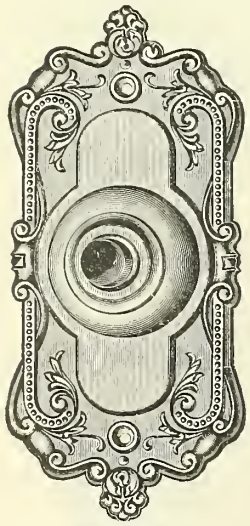
Design Dunkirk

No. R5D9184DF 1½ x 4⅜ inches over all, wrought brass, antique brass, sand finish, depressed surfaces oxidized and relieved, dozen. $7.20

For other Push Buttons, see Index

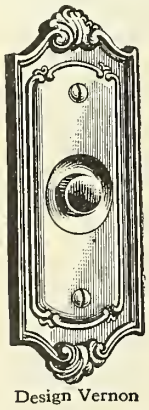
Push Buttons

Half Size Cuts



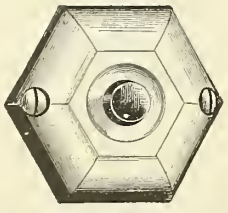
Design Holland

No. ERxRR 71760 2½ x 5⅜ inches over all, wrought bronze, royal copper finish, depressed surfaces in antique copper finish, dozen... $10.80



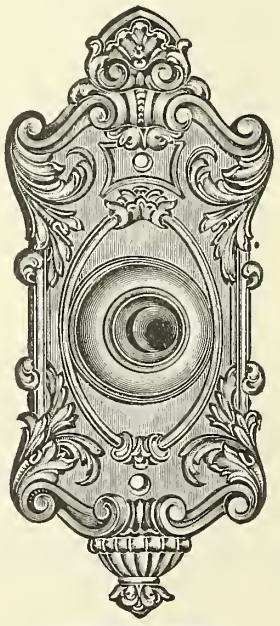
Design Vernon

No. R7D 9184VF 1½ x 3⅞ inches over all, cast brass, antique brass finish, sand blast, with edges highly polished, dozen..... $14.40



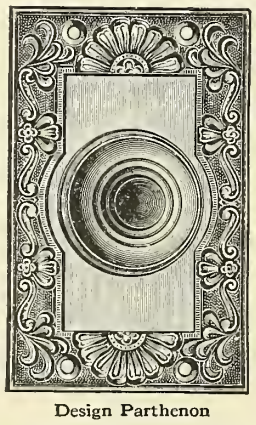
Design Deerfield

No. OB9184DC 2 5/16 x 2 inches, cast brass, old brass finish, dozen... $19.80



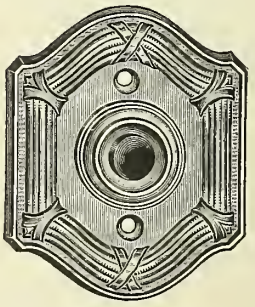
Design Marseilles

No. KA89160 2¾ x 6⅜ inches over all, cast brass, old brass finish, dozen..... $27.00



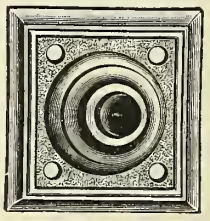
Design Parthenon

No. R81060 2⅜ x 3¾ inches over all, cast bronze, antique copper finish, dozen..... $34.56



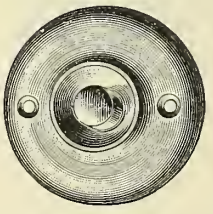
Design Navarre

No. KA90160 2½ x 3 inches over all, cast brass, old brass finish, dozen 60.48



Design Victor

No. KA71860 2 x 2⅛ inches over all, wrought brass, old brass finish, dozen..... $10.80

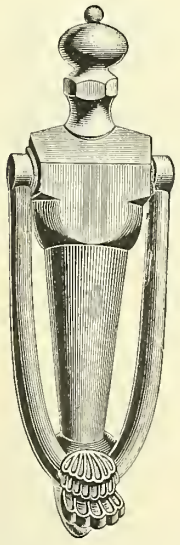


Design Round

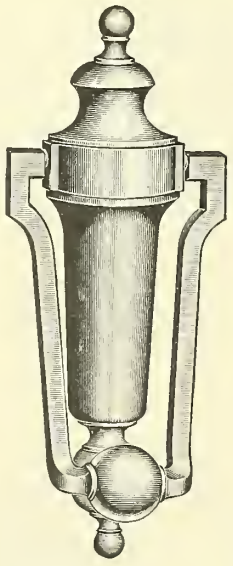
No. 9138P Cast bronze, polished, dozen..... $8.00

For other Push Buttons, see Index

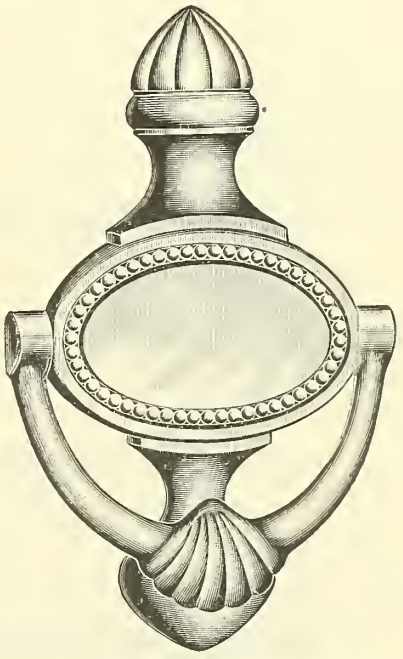
Door Knockers



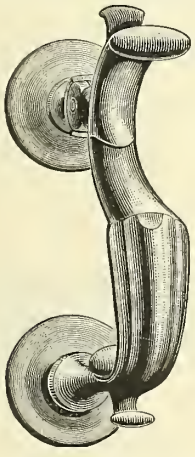
No. 5P 2⅝ x 8¼ inches over all, cast bronze, polished, each..... $3.20



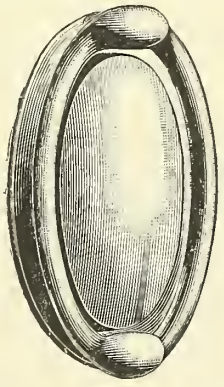
3½ x 8¾ Inches Over All
No. KA1909½ Cast brass, old brass finish, each..... $4.50
No. LB1909½ Cast bronze, statuary bronze finish, each..... 4.50



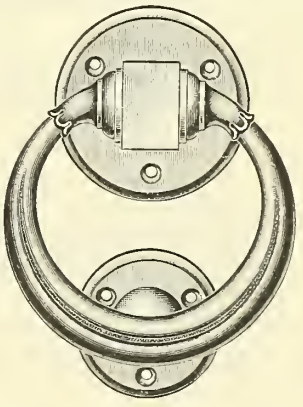
4 x 6¾ Inches Over All
No. 1893 Cast Bronze, polished, each. $4.35
No. KA1893 Cast brass, old brass finish, each..... 4.70



No. OB12 2x6½ inches over all, cast brass, old brass finish, each $5.54

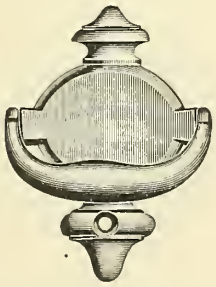


No. OB8 3¼ x 5¾ inches over all, cast brass, old brass finish, each.. $5.94



No. 1911½ 4½ x 6 inches over all, cast bronze, polished, each..... $20.00

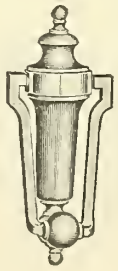
For Chamber and Guest-Room Doors



2⅞ x 2⅛ Inches Over All
No. 1912 Cast bronze, polished, each..... $3.12
No. OB1912 Cast brass, old brass finish, each..... 3.48



⅞ x 3¼ Inches Over All
No. 35 Cast bronze, polished, each.. $1.67
No. OB35 Cast Brass, old brass finish, each..... 1.67



1⅝ x 4⅛ Inches
Made of Cast Bronze
No. 2909½ Polished, each..... $3.75
No. LB2909½ Statuary bronze, each. 3.90

Knob Spindles

Standard—Plain



No.	Length Inches	Extension Inches	For Knobs	Dozen
1	3¼	1 to 2	Mortise 5/16 inch	$ .75
2	3⅝	1¼ to 2¼	Mortise 5/16 inch	.75
4	4¾	1¼ to 2¾	Mortise 5/16 inch	.75
6	3¾	1¾ to 2½	Rim 5/16 inch	.75
7	4	1¾ to 2½	Rim 5/16 inch	.75
20	5	1½ to 3¼	Rim 5/16 inch	.75

Standard-Swivel



No.	Length Inches	Extension Inches	For Knobs	Dozen
10	4½	1¼ to 2¾	Mortise 5/16 inch	$1.50
11	5¼	1½ to 3	Mortise 5/16 inch	1.50
12	5½	1½ to 3¼	Mortise ⅜ inch	1.75

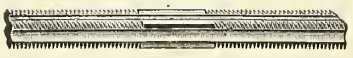
Standard-Swivel Reducing



These Spindles are made to permit the use of a knob with 5/16-inch shank in connection with locks having ⅜-inch hub.

No. 37¾ For knobs with standard shanks, dozen..... $2.52

Screwless-Plain

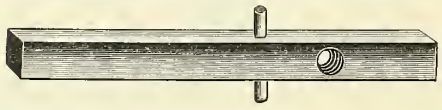


No. 056 Corbin P. Y. Model, wrought steel, 5/16-inch, dozen.. $1.50
No. 156 Sargent F Model, wrought steel, 5/16-inch, dozen 1.00



No. 056½ Corbin P. Y. Model, wrought steel, 5/16-inch, dozen.. $1.50
No. 156½ Sargent F. Model, wrought steel, 5/16-inch, dozen.... 1.00

Standard Mortise Bolt Spindles



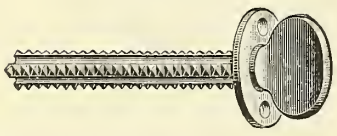
No. 55 Wrought steel, 5/16-inch, dozen..... $ .75

Standard Closet Spindles

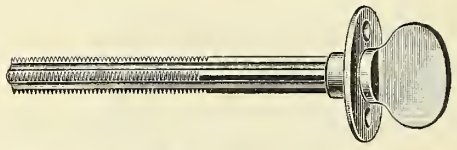


No. 15 Wrought steel, 5/16-inch, dozen.....$1.50

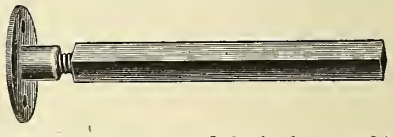
Screwless Closet Spindles



No. 23D Cast bronze thumb-piece and rose, screwless, Sargent F model, 5/16-inch wrought steel spindle, dozen $5.30

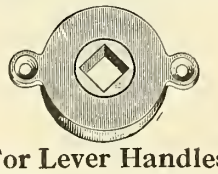


No. 046½ Cast bronze thumb-piece and rose, 1⅜ inch diameter, screwless, Corbin P. Y. model, 5/16-inch wrought steel spindle, dozen..... $7.20



No. 40 Wrought steel, 5/16-inch, dozen. $4.20

Auxiliary Spring



For Lever Handles

This Auxiliary Spring when placed on the spindle under the rose will hold the lever handle firmly in position—the levers are too heavy for the spring in the ordinary lock.

For 5/16-inch spindle, each..... $ .30
For ⅜-inch spindle, each..... .35

Knob Plates



Applied to door under rose or escutcheon to hold knob rigid.

Made of Cast Iron

No. 20 For 5/16-inch spindle, dozen... $ .40
No. 21 For ⅜-inch spindle, dozen... .40

Knob Screws and Washers





Screws.

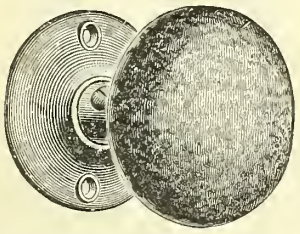
Size ⅜ x 9 inches, blued iron, gross.... $ .60
Size ⅜ x 9 inches, polished bronze, gross . 1.12

Washers

Size 5/16 inch, pound ..... $ .60
Size ⅜ inch, pound ..... .40

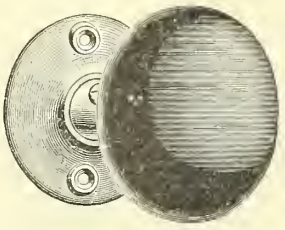
Door Knobs

Half Size Cuts



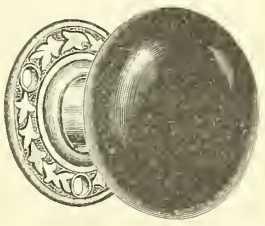
Mineral, round type. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Japanned mountings.

No. 500 Mortise. Dozen pairs..... $1.65
No. 505 Rim. Dozen pairs..... 1.65



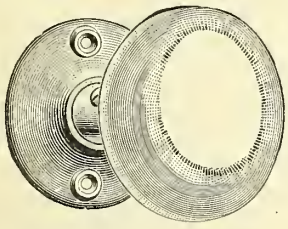
Ebony, round type. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Japanned mountings.

No. 512 Mortise. Dozen pairs..... $1.90
No. 517 Rim. Dozen pairs..... 1.90



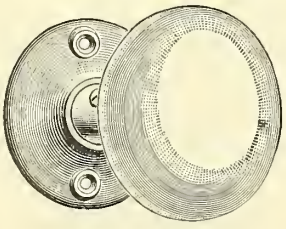
Jet, round type. 2¼ inches diameter, $\frac{5}{16}$-inch spindle. Bronze-plated mountings.

No. N3700 Mortise. Dozen pairs... $4.20
No. N3700½ Rim. Dozen pairs.... 4.20



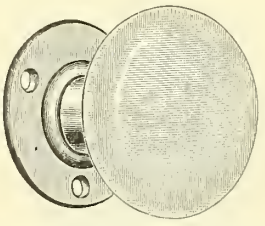
Porcelain, round type. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Japanned mountings.

No. 510 Mortise. Dozen pairs..... $1.90
No. 515 Rim. Dozen pairs..... 1.90



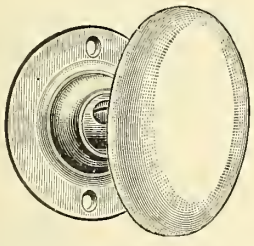
Porcelain, round type. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Porcelain mountings.

No. 550 Mortise. Dozen pairs..... $4.80
No. 555 Rim. Dozen pairs..... 4.80

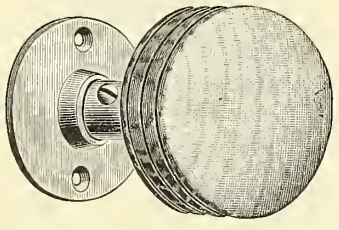


Porcelain, round type. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Wrought bronze mountings, polished.

No. 2851 Mortise. Dozen pairs.... $7.65
No. DA2851 Mortise. Wrought brass, old brass finish, Dozen pairs.... 9.30

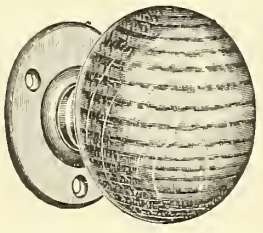


No. 1818P Mortise. Porcelain, oval type. 2¼ inches diameter. Polished wrought bronze mountings. $\frac{5}{16}$-inch spindle. Dozen pairs... $6.60

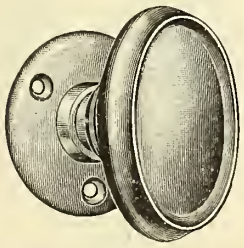


Ash or Natural Cherry, box type. Wrought bronze mountings. 2¼ inches diameter. $\frac{5}{16}$-inch spindle.

No. 231 Mortise. With roses, dozen pairs..... $5.00
No. 231 Mortise. Without roses, dozen pairs..... 3.20

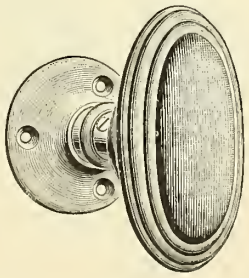


No. DA6001¼ Mortise. Oak, cherry or cypress, round type. Wrought brass, old brass finish mountings. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. With roses, dozen pairs.... $11.64

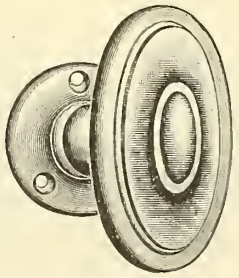


*No. 1612 Mortise. Cast bronze, polished. Oval type. 2¼ inches diameter. $\frac{5}{16}$-inch spindle.

With roses, dozen pairs..... $58.50
Without roses, dozen pairs..... 54.00



*No. A3B1982 Mortise. Cast bronze, statuary bronze finish. Oval type. 2⅝ inches diameter. $\frac{5}{16}$-inch spindle. With roses, dozen pairs. $37.20



No. KA1616 Mortise. Cast brass, old brass finish. Oval type. 2¾ inches diameter. $\frac{5}{16}$-inch spindle.

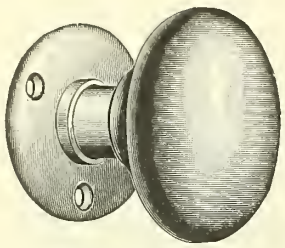
With roses, dozen pairs..... $57.20
Without roses, dozen pairs..... 51.80

*Can be furnished with screwless spindles which allow for close adjustment, avoids rattle and prevents knob working loose from spindle. Add $2.70 to lists.

Design Knobs are listed under Lock Sets, see Index

Door Knobs

Half Size Cuts

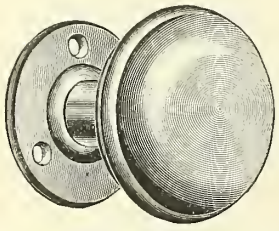


No. 01508 Mortise. Cast bronze, polished, oval type. 1¾ inches diameter. $\frac{5}{16}$-inch spindle.

With roses, dozen pairs..... $29.70
Without roses, dozen pairs..... 25.20

No. 1508 Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle.

With roses, dozen pairs..... $29.70
Without roses, dozen pairs..... 25.20



Round Type

No. 01583 Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Wrought bronze, polished.

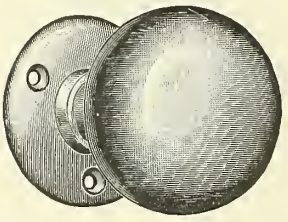
With roses, dozen pairs..... $12.90
Without roses, dozen pairs..... 10.50

No. RO1583 Mortise. Same dimensions as above. Wrought bronze, antique copper finish.

With roses, dozen pairs..... $15.60
Without roses, dozen pairs..... 12.30

No. 1523½ Mortise Same dimensions as above. Wrought steel, bronze-plated.

With roses, dozen pairs..... $6.90
Without roses, dozen pairs..... 6.00



No. 1511 Mortise. Cast bronze, polished, ball type. 2½ inches diameter. $\frac{5}{16}$-inch spindle.

With roses, dozen pairs..... $36.90
Without roses, dozen pairs..... 32.40

No. 1512 Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle.

With roses, dozen pairs..... $29.70
Without roses, dozen pairs..... 25.20

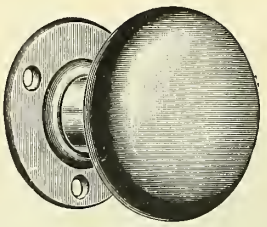
Above knobs can be furnished with screwless spindles, which allow for close adjustment, avoids rattle and prevents knob working loose from spindle. Add $2.70 per dozen pairs to lists.



Canton Design, Round Type

No. 60022 Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Wrought steel, bronze-plated.

With roses, dozen pairs..... $6.90
Without roses, dozen pairs..... 6.00



Round Type

No. 1919 Mortise. 1¾ inches diameter. $\frac{5}{16}$-inch spindle. Cast bronze, polished.

With roses, dozen pairs..... $22.50
Without roses, dozen pairs..... 18.00

No. 1419½ Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Wrought bronze, polished.

With roses, dozen pairs..... $15.15
Without roses, dozen pairs..... 12.75

No. DA1419½ Mortise. Same dimensions as above. Wrought brass, old brass finish.

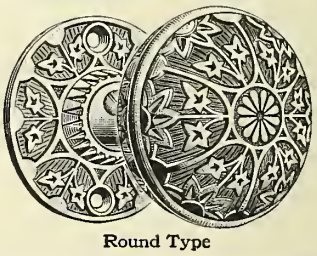
With roses, dozen pairs..... $17.85
Without roses, dozen pairs..... 14.55

No. 1519½ Mortise. Same dimensions as above. Cast bronze, polished.

With roses, dozen pairs..... $22.50
Without roses, dozen pairs..... 18.00

No. 1518½ Mortise. 2½ inches diameter. $\frac{5}{16}$-inch spindle. Cast bronze, polished.

With roses, dozen pairs..... $29.70
Without roses, dozen pairs..... 25.20



Round Type

No. 1442A Mortise. 2½ inches diameter. $\frac{5}{16}$-inch spindle. Cast iron, amber bronzed.

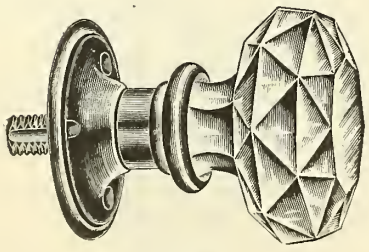
With roses, dozen pairs..... $4.60
Without roses, dozen pairs..... 4.00

For above knobs equipped with $\frac{5}{16}$-inch swivel spindles, add to lists..... $1.80
For above knobs equipped with $\frac{3}{8}$-inch swivel spindles, add to lists..... 1.80
For above knobs equipped with $\frac{3}{8}$-inch straight spindles, add to lists..... 1.20

Design Knobs are listed under Lock Sets, see Index.

Glass Door Knobs

Half Size Cuts

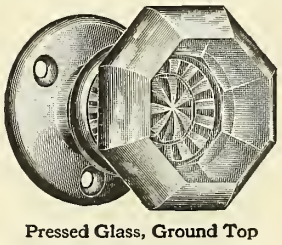


Cut Glass

Cast Brass, Old Brass Finish Mountings

No. OB7694 Mortise. 2 inches diameter. $\frac{5}{16}$-inch spindle, screwless type, with roses, dozen pairs.... $43.00

No. OB7695 Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle, screwless type, with roses, dozen pairs. 48.00

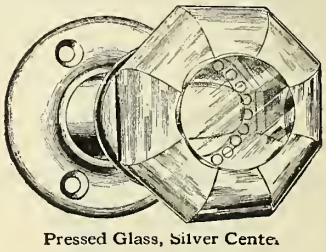


Pressed Glass, Ground Top

No. O240½ Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle, screwless type. Polished cast bronze mountings, with roses. Dozen pairs... $36.00

No. DA0240½ Mortise. 2¼ inches diameter. $\frac{5}{16}$-inch spindle, screwless type. Cast brass, old brass finish mountings, with roses. Dozen pairs..... 41.40

No. E0240½ Mortise 2¼ inches diameter. $\frac{5}{16}$-inch spindle, screwless type. Cast brass, nickel-plated mountings, with roses. Dozen pairs 41.40



Pressed Glass, Silver Center

2¼ Inches Diameter. $\frac{5}{16}$-inch Spindle, Screwless Type

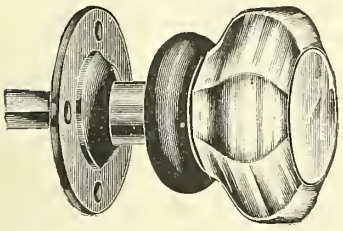
No. 3010P Mortise. Polished wrought bronze mountings, with roses. Dozen pairs..... $30.00

No. OB3010 Mortise. Wrought brass, old brass finish mountings, with roses. Dozen pairs..... 33.60

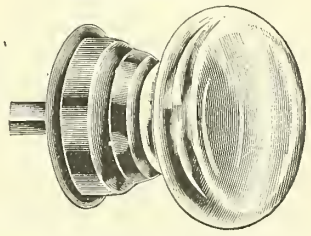
No. N3010P Mortise. Wrought bronze, nickel-plated mountings, with roses. Dozen pairs..... 33.60

Glass Door Knobs

Half Size Cuts



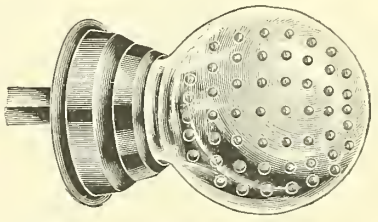
No. 4¼ Mortise. Pressed glass, 2¼ inches diameter. $\frac{5}{16}$-inch spindle. Polished cast bronze mountings. With roses. Dozen pairs..... $15.00



Pressed Glass, 2¼ Inches Diameter. $\frac{5}{16}$-inch Spindle

No. 1 Mortise. Polished wrought bronze mountings, with roses. Dozen pairs..... $15.00

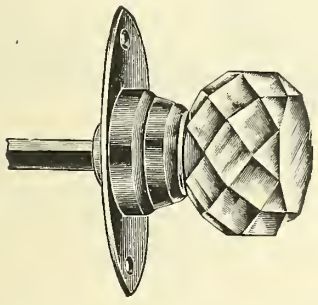
No. OB1 Mortise. Wrought brass, old brass finish mountings, with roses. Dozen pairs..... 15.00



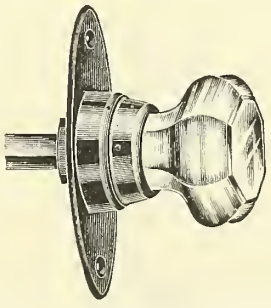
No. SB32 Mortise. Pressed glass, flecked. Wrought bronze, statuary bronze finish, mountings, 2¼ inches diameter. $\frac{5}{16}$-inch spindle, with roses. Dozen pairs..... $62.00

Glass Mortise Bolt Knobs

Half Size Cuts

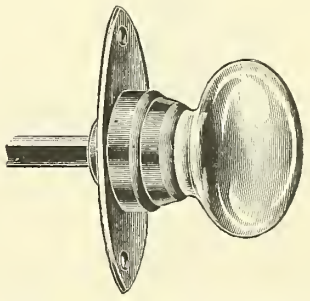


No. OB22MB Cut glass. Wrought brass, old brass finish mountings, $\frac{5}{16}$-inch spindle. Dozen..... $42.00



No. 4MB Pressed glass. Polished wrought bronze mountings, $\frac{5}{16}$-inch spindle, dozen..... $13.50

No. OB4MB Pressed glass. Wrought brass, old brass finish mountings, $\frac{5}{16}$-inch spindle. Dozen..... 13.50

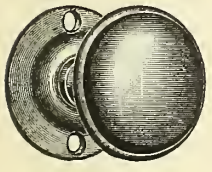


No. 1MB Pressed glass. Polished wrought bronze mountings, $\frac{5}{16}$-inch spindle. Dozen..... $13.50

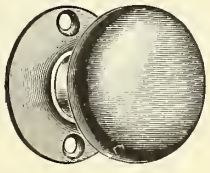
No. OB1MB Pressed glass. Wrought brass, old brass finish mountings, $\frac{5}{16}$-inch spindle. Dozen..... 13.50

Mortise Bolt Knobs

Half Size Cuts



No. 1584 $\frac{5}{16}$-inch spindle. Polished wrought bronze. Dozen..... $6.45



No. 1919 $\frac{5}{16}$-inch spindle. Polished cast bronze. Dozen..... $11.25

No. KA1919 $\frac{5}{16}$-inch spindle. Cast brass, old brass finish. Dozen.... 12.60

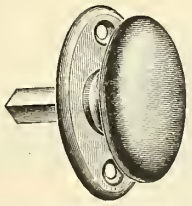
Thumb Knobs

Half Size Cuts



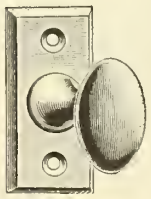
No. 118P $\frac{3}{16}$-inch spindle. Plate 1⅛ x $1\frac{11}{16}$ inches. Polished wrought bronze. Dozen..... $2.40

No. OB118 $\frac{3}{16}$-inch spindle. Plate 1⅛ x $1\frac{11}{16}$ inches. Wrought brass, old brass finish. Dozen..... 2.40



No. 02148¼ $\frac{5}{16}$-inch spindle. Plate 1⅛ x 2⅞ inches. Polished cast bronze. Dozen..... $9.60

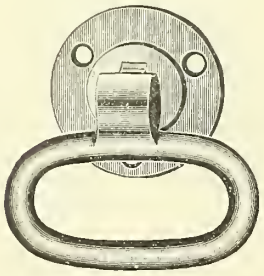
No. LB02148¼ $\frac{5}{16}$-inch spindle. Plate 1⅛ x 2⅞ inches. Cast bronze, statuary bronze finish. Dozen... 9.60



No. 1047P $\frac{5}{16}$-inch spindle. Plate ⅞ x 1⅞ inches. Polished cast bronze. Dozen..... $3.20

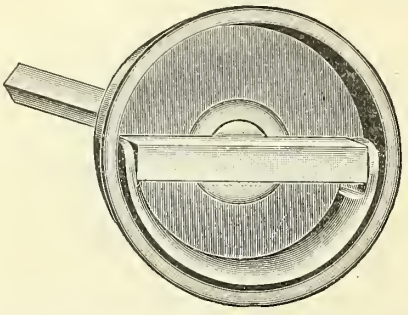
No. OB1047 $\frac{5}{16}$-inch spindle. Plate ⅞ x 1⅞ inches. Cast brass, old brass finish. Dozen..... 3.60

Drop Handles



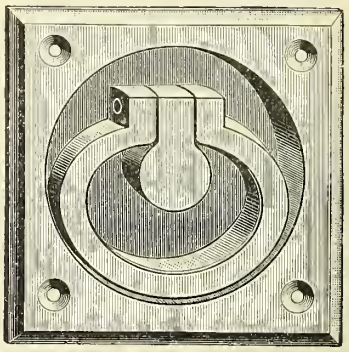
No. P1431 Plate 1⅝ inches diameter, $\frac{5}{16}$-inch spindle, cast bronze, polished, dozen pairs..... $39.00

Flush Cup Handles



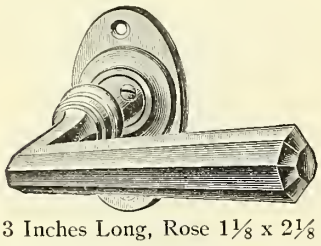
No. 515 Plate 3 inches diameter, $\frac{5}{16}$-inch spindle, polished cast bronze, dozen..... $14.00

No. OB515 Plate 3 inches diameter, $\frac{5}{16}$-inch spindle, cast brass, old brass finish, dozen..... 15.40



No. 86P Plate 3½ inches square, $\frac{5}{16}$-inch spindle, polished cast bronze, dozen..... $24.00

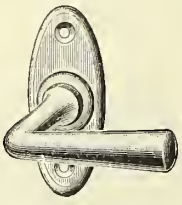
Lever Handles



Lever 3 Inches Long, Rose 1⅛ x 2⅛ Inches

No. A3B1131 Cast bronze, statuary bronze finish, dozen..... $20.00

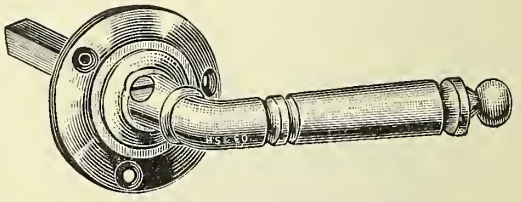
No. OB1131 Cast brass, old brass finish, dozen..... 20.00



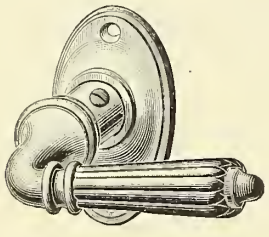
Lever 1¾ Inches Long, Plate ⅞ x 2⅜ Inches

No. 1039P Cast bronze, polished, dozen..... $7.00

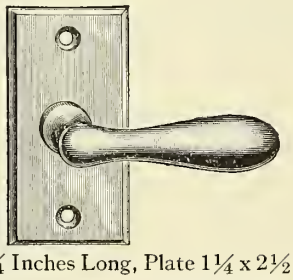
No. A3B1039 Cast bronze, statuary bronze finish, dozen..... 8.60



No. 3 Lever 3⅛ inches long, rose 1¾ inches diameter, cast bronze, polished, dozen..... $12.00



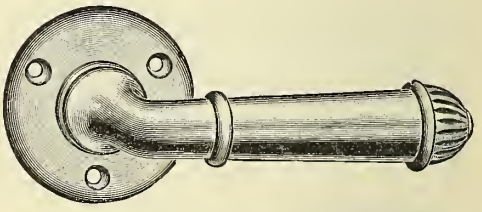
No. 1143P Lever 2⅝ inches long, rose 1¾ x 2⅛ inches. Cast bronze, polished, dozen..... $18.00



Lever 1¾ Inches Long, Plate 1¼ x 2½ Inches

No. 2117¼ Cast bronze, polished, dozen..... $11.34

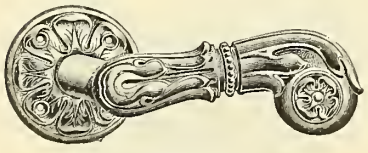
No. KA2117¼ Cast brass, old brass finish, dozen..... 13.68



3⅜ Lever Inches Long, Rose 2⅛ Inches Diameter

No. 1002 Cast bronze, polished, dozen..... $25.56

No. KA1002 Cast brass, old brass finish, dozen..... 28.08



Courtray

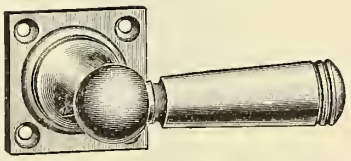
Lever 4 Inches Long, Roses 2⅛ Inches Diameter

State hand Cut shows right hand

No. 2566 Polished cast bronze, dozen $42.75

No. 2566–87 Cast iron, Bower-Barff finish, dozen..... 32.45

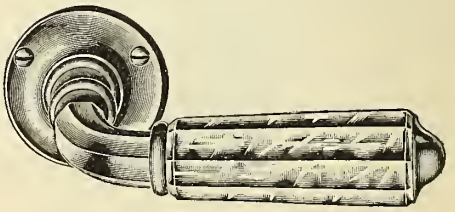
This type of lever handle is used generally for iron grill doors.



Lever 2½ Inches Long, Plate 1½ Inches Square

No. 02115½ Cast bronze, polished, dozen..... $20.88

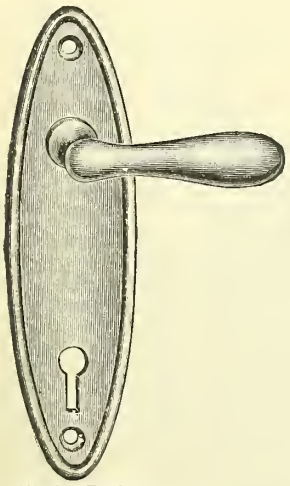
No. KA02115½ Cast brass, old brass finish, dozen..... 23.40



With glass grip

No. S8020 Lever 4¼ inches long, rose 1¾ inches diameter. Crystal glass grip, with brass, old brass finish, mountings, each..... $3.00

Escutcheons and Lever Handles

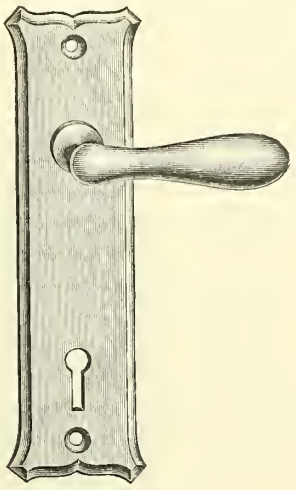


Pilgrim Design

Plate 1⅜ x 5 Inches. Center of spindle to center of keyhole 2⅝ inches.

No. 76947 Cast bronze, polished, dozen..... $25.20

No. KA76947 Cast brass, old brass finish, dozen. 27.72



Albany Design

No. LB76447 Plate 1⅜ x 5 inches. Center of spindle to center of keyhole 2⅝ inches. Cast bronze, statuary bronze finish, dozen . . . $24.00

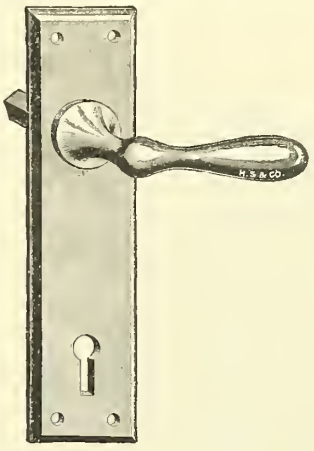


Plate 1 x 3⅜ Inches. Center of spindle to center of keyhole 2¼ inches.

No. P1510 x P1518 Polished cast bronze, dozen $8.80

No. 1510 x 1518–37 Cast brass, old brass finish, dozen..... 10.00

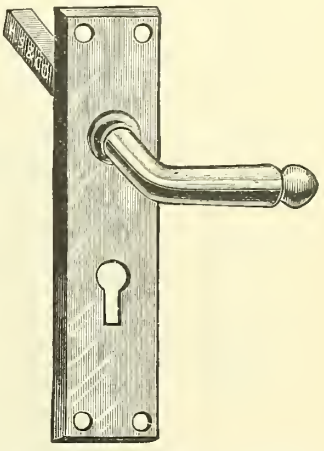


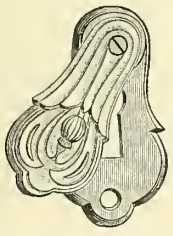
Plate 1 x 4½ Inches. Center of spindle to center of keyhole 1 9/16 inches.

No. 2117 Polished cast bronze, dozen..... $12.36

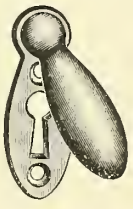
No. OB2117 Cast brass, old brass finish, dozen. 14.70

Drop Escutcheons

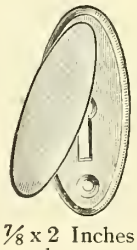
Half Size Cuts



No. 131 13/16 x 2¼ inches, white porcelain drop, nickel-plated base, dozen..... $1.70



No. 2663 ¾ x 2 inches, cast bronze, polished, dozen..... $7.20



⅞ x 2 Inches

No. 811P Cast bronze, polished, dozen..... $3.40

No. OB811 Cast brass, old brass finish, dozen..... 3.80

Plate Escutcheons

Half Size Cuts



1 1/16 x 2¼ Inches

No. OB870FC Wrought brass, old brass finish, dozen..... $1.20

No. N870FC Wrought bronze, nickel-plated, dozen..... 1.20



1⅛ x 1¾ Inches

No. 2560 Wrought bronze, polished, dozen. $1.80

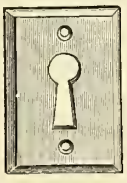
No. DA2560 Wrought brass, old brass finish, dozen..... 1.80



No. LB2660½ 1⅛ x 2⅛ inches. Cast bronze, statuary bronze finish, dozen..... $4.14



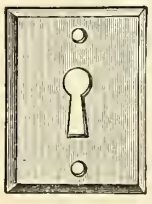
No. N60040 1⅛ x 1¾ inches. Wrought steel, bronze-plated, dozen.. $ .72



1¼ x 1¾ Inches

No. 2596½ Wrought bronze, polished, dozen $ .90

No. R2596½ Wrought bronze, antique copper finish, dozen..... 1.20



No. 2590½ 1½ x 2 inches, wrought bronze, polished, dozen..... $1.08



No. 1354 1¼ x 2¼ inches, cast bronze, polished, dozen..... $1.50



1¼ x 1¾ Inches

No. 2596¼ Wrought bronze, polished, dozen $ .90

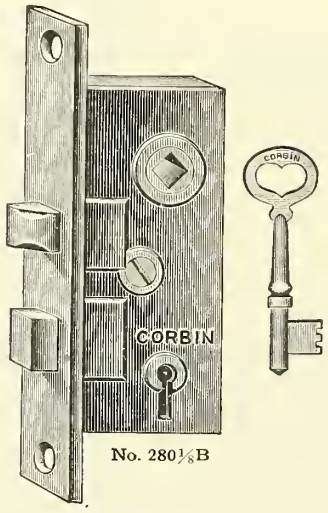
No. DA2596¼ Wrought brass, old brass finish, dozen..... 1.20

Other Escutcheons are listed with Lock Sets, see Index

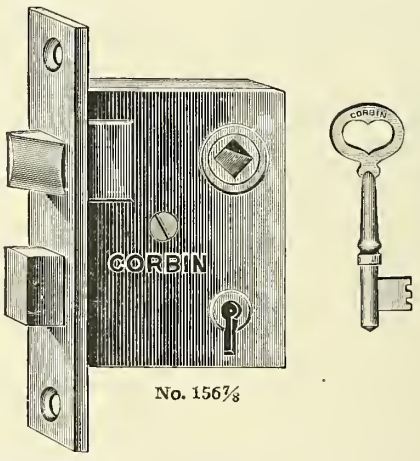
Mortise Knob Locks

Reversible

Half Size Cuts

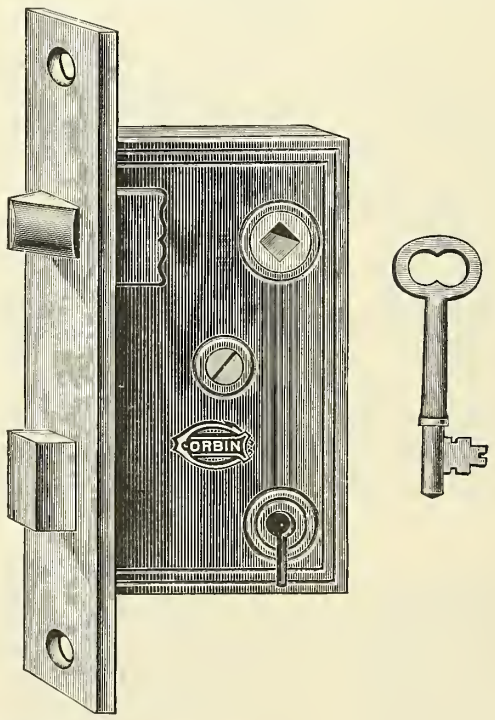


No. 280 1/8 B



No. 156 7/8

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Key Changes	Front and Bolts Material	Front and Bolts Finish	Dozen
0101 1/2 Reading	3 1/2 x 1 1/2 x 1/2	1	1 9/16	3 x 3/4	5/16	1	6	Cast Brass	Polished	$13.50
280 1/8 B Corbin	3 5/8 x 1 5/8 x 1/2	1	2 1/4	5 x 3/4	5/16	1	12	Cast Bronze	Polished	16.20
01365 1/2 B Corbin	4 1/4 x 2 1/4 x 5/8	1 1/2	2 5/8	6 1/8 x 1 1/16	5/16	1	120	Cast Bronze	Polished	27.00
DA01365 1/2 Corbin	4 1/4 x 2 1/4 x 5/8	1 1/2	2 5/8	6 1/8 x 1 1/16	5/16	1	120	Cast Brass	Old Brass	28.80
LB01365 1/2 Corbin	4 1/4 x 2 1/4 x 5/8	1 1/2	2 5/8	6 1/8 x 1 1/16	5/16	1	120	Cast Bronze	Statuary Bronze	28.80
No. 156 7/8										
156 7/8 Corbin	2 7/8 x 2 1/4 x 1/2	1 11/16	1 9/16	4 3/8 x 1 11/16	5/16	2	8	Cast Brass	Polished	$16.20
DA156 7/8 Corbin	2 7/8 x 2 1/4 x 1/2	1 11/16	1 9/16	4 3/8 x 1 11/16	5/16	2	8	Cast Brass	Old Brass	17.40



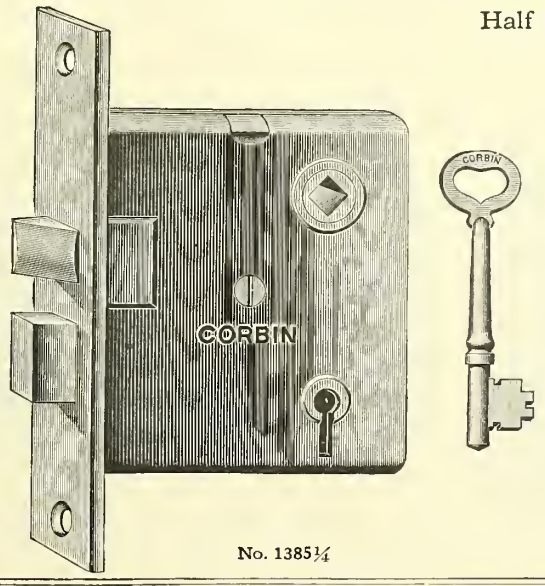
Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inches	Number of Tumblers	Number of Key Changes	Front and Bolts Material	Front and Bolts Finish	Dozen
281 Corbin	4 3/4 x 2 3/4 x 5/8	2	3 1/8	7 1/8 x 1 1/8	5/16	3	36	Cast Brass	Polished	$28.80

SEE DISCOUNT SHEET

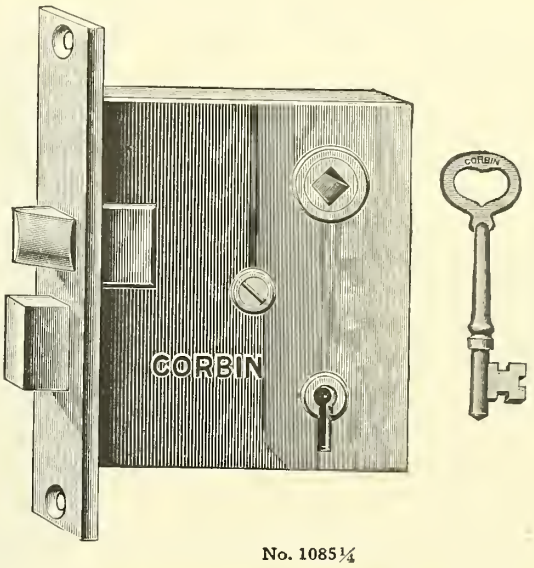
Mortise Knob Locks

Reversible

Half Size Cuts



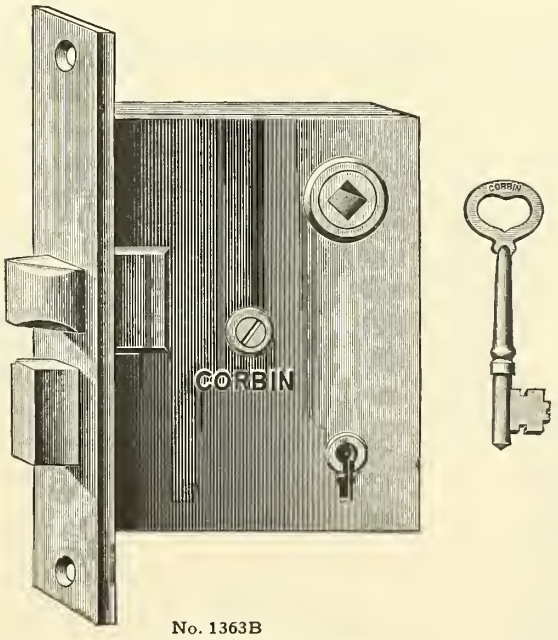
No. 1385¼



No. 1085¼

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Key Changes	Front and Bolts		Dozen
								Material	Finish	
*5234P Sargent	3½x3¼x⅝	2½	2 3/16	5⅜x 13/16	5/16	1	24	Cast Bronze	Polished	$7.50
*OB5234 Sargent	3½x3¼x⅝	2½	2 3/16	5⅜x 13/16	5/16	1	24	Cast Brass	Old Brass	8.30
1385¾ Corbin	3¾x3⅜x 9/16	2½	2 3/16	5⅜x 15/16	5/16	3	36	Cast Brass	Polished	14.85
No. 1085¼, Etc.										
1285 Corbin	3¾x3⅛x½	2⅜	2 3/16	5¼x⅞	5/16	1	12	Cast Brass	Polished	7.50
1085¼ Corbin	3¾x3½x 9/16	2⅝	2 3/16	5⅜x⅞	5/16	1	12	Cast Brass	Polished	9.00
1287 Corbin	4½x3½x 9/16	2⅝	2⅝	5⅞x⅞	5/16	1	12	Cast Brass	Polished	15.00
OB5744 Sargent	4½x3½x⅝	2⅝	2⅞	6⅝x1	5/16	1	24	Cast Brass	Old Brass	15.20

* Nos. 5234P and OB5234 are equipped with easy spring latch bolts.



No. 1363B

Equipped with easy Spring Latch Bolts

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Key Changes	Front and Bolts		Dozen
								Material	Finish	
*1363B Corbin	4¼x3½x⅝	2¾	2⅝	6⅛x1	5/16	1	24	Cast Bronze	Polished	$27.00
†1365B Corbin	4¼x3½x⅝	2¾	2⅝	6⅛x1	5/16	3	48	Cast Bronze	Polished	30.60

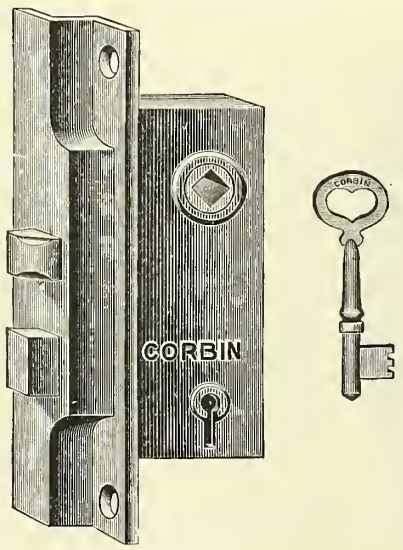
Master Keying. Prices on application.

*No. 1363B master keyed in three sets of 40 each, the 120 all different, with master keys to pass each set.

†No. 1365B master keyed in one set of 640, all different, with a master key to pass, or in sixteen sets of 40 each, the 640 all different, with master keys to pass each set and a grand master key to pass all.

Rabbeted Mortise Knob Locks

Not Reversible State Hand Required



No. 290B, Etc.

Number	Size Case Inches	Front to Center of Hub Inches	Center of Hub to Center of Key Post Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Key Changes	Front and Bolts Material	Front and Bolts Finish	Dozen
290B Corbin	3⅝x2⅛x½	1⅝	2¼	5¾x1	5/16	1	9	Cast bronze,	polished	$33.30
DA290 Corbin	3⅝x2⅛x½	1⅝	2¼	5¾x1	5/16	1	9	Cast brass,	old brass finish	34.50
‡*01367¼B Corbin	4¼x2¼x⅝	1⅝	2⅝	6½x1 3/16	5/16	1	120	Cast bronze,	polished	45.00
††5264P Sargent	3½x3¼x⅝	2	2 3/16	5½x1	5/16	1	50	Cast bronze,	polished	13.50
‡1367½B Corbin	4¼x3½x⅝	2¾	2⅝	6½x1 3/16	5/16	3	640	Cast bronze,	polished	52.50

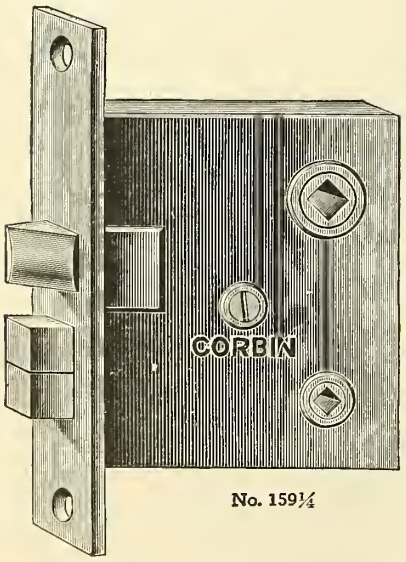
*Master keyed in 3 sets of 40 each, the 120 all different, with master keys to pass each set. Prices on application.
†Master keyed in 1 set of 200, all different, with a master key to pass, or in 4 sets of 50 each, the 200 all different, with master keys to pass each set. Prices on application.
‡Equipped with Easy Spring Latch Bolt.

Mortise Communicating Door Locks

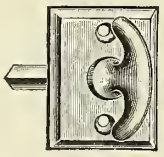
Reversible

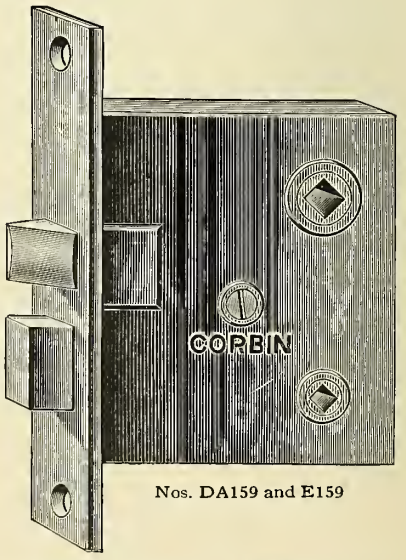
Case 3⅝ x 3¼ x 9/16 inches; front to center of hub 2⅝ inches; distance between centers of hubs 2 3/16 inches; front 5½ x 15/16 inches; hubs 3/16 and 5/16 inch. Easy spring latch bolt.

Operates: Latch bolt by knobs from either side. Dead bolts by thumb knobs from one side only, locking against opposite side.



No. 159¼





Nos. DA159 and E159

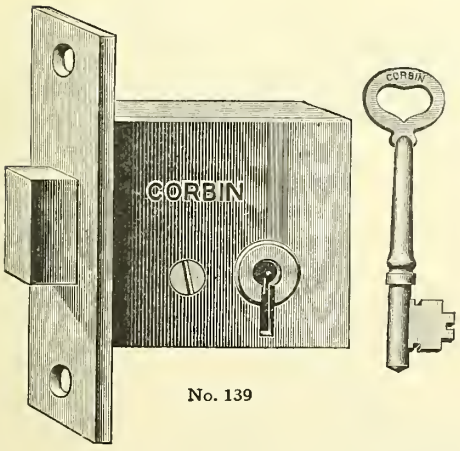
No. DA159 Corbin Cast brass front and bolts, old brass finish, with one cast brass thumb-piece No. DA2149, old brass finish, dozen $18.30

No. E159 Corbin Cast bronze, nickel-plated, front and bolt, with one cast bronze, nickel-plated thumb-piece No. 22149, dozen 18.30

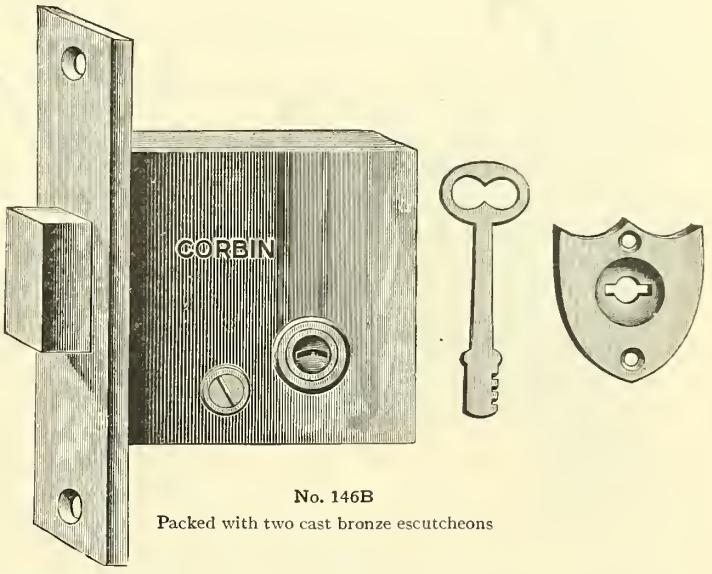
No. 159¼B Corbin Cast bronze, polished, front and bolts, with two cast bronze, polished, thumb-pieces No. E2149, dozen 25.20

Mortise Dead Locks

Reversible



No. 139



No. 146B

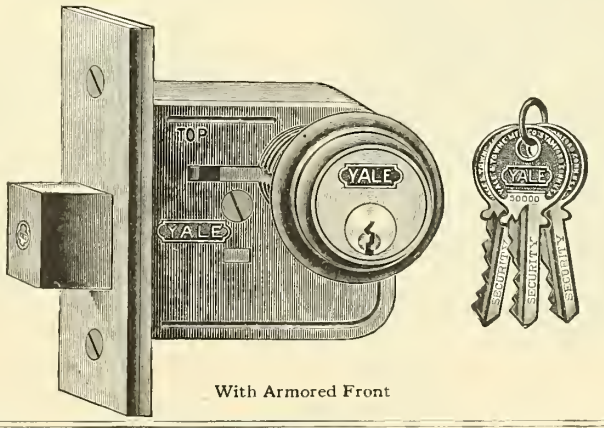
Packed with two cast bronze escutcheons

No. 139, Etc.

Number	Size Case Inches	Front to Center of Keyhole Inches	Size Front Inches	Number of Tumblers	Number of Changes	Front and Bolts Material	Front and Bolts Finish	Dozen
115 Corbin	$1\frac{7}{8}$x$2\frac{5}{8}$x$\frac{5}{8}$	$1\frac{7}{8}$	$3\frac{1}{4}$x $\frac{13}{16}$	1	12	Cast brass,	polished	$10.65
116 Corbin	$1\frac{7}{8}$x$2\frac{5}{8}$x$\frac{5}{8}$	$1\frac{7}{8}$	$3\frac{1}{4}$x $\frac{13}{16}$	3	36	Cast brass,	polished	13.35
136B Corbin	$2\frac{1}{4}$x$3\frac{1}{4}$x$\frac{5}{8}$	$2\frac{9}{16}$	$3\frac{3}{4}$x $\frac{7}{8}$	3	36	Cast bronze,	polished	15.45
139 Corbin	$2\frac{3}{8}$x$2\frac{3}{4}$x$\frac{3}{4}$	2	$4\frac{1}{4}$x$1\frac{1}{16}$	3	18	Cast brass,	polished	27.00

No. 146B, Etc.

Number	Size Case Inches	Front to Center of Hub Inches	Size Front Inches	Number of Tumblers	Number of Changes	Front and Bolts Material	Front and Bolts Finish	Dozen
205 Bohannon	3x$2\frac{1}{2}$x$\frac{5}{8}$	$1\frac{3}{4}$	5 x $\frac{7}{8}$	4	36	Cast bronze,	polished	$33.00
146B Corbin	3x$3\frac{1}{2}$x$\frac{7}{8}$	$2\frac{3}{8}$	$5\frac{1}{2}$x$1\frac{5}{16}$	5	75	Cast bronze,	polished	39.60



With Armored Front

Number	Size Case Inches	Front to Center of Keyhole Inches	Size Front Inches	Number of Pin Tumblers	Number of Changes	For Thickness Doors Inches	Front and Bolts Material	Front and Bolts Finish	Dozen
322 Yale	$2\frac{3}{8}$x$3\frac{1}{8}$x$\frac{3}{4}$	$2\frac{1}{4}$	4x1	5	Practically unlimited	$1\frac{1}{4}$ to $2\frac{1}{8}$	Bronze,	polished	$58.35
322¼ Yale	$2\frac{3}{8}$x$3\frac{1}{8}$x$\frac{3}{4}$	$2\frac{1}{4}$	4x1	5	Practically unlimited	$1\frac{1}{2}$ to $1\frac{7}{8}$	Bronze,	polished	83.35
324 Yale	$2\frac{3}{8}$x$3\frac{5}{8}$x$\frac{3}{4}$	$2\frac{3}{4}$	4x1	5	Practically unlimited	$1\frac{1}{4}$ to $2\frac{1}{8}$	Bronze,	polished	58.35
324¼ Yale	$2\frac{3}{8}$x$3\frac{5}{8}$x$\frac{3}{4}$	$2\frac{3}{4}$	4x1	5	Practically unlimited	$1\frac{1}{2}$ to $1\frac{7}{8}$	Bronze,	polished	83.35

Operation

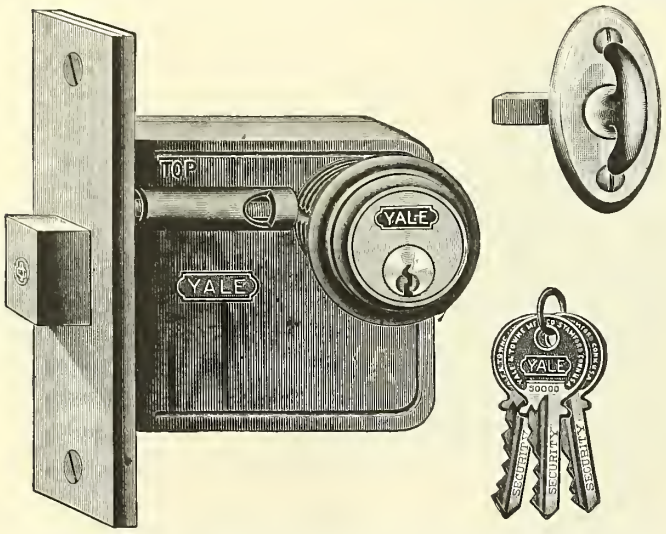
Nos. 322 and 324 with one cylinder locked by key from one side. Nos. 322¼ and 324¼ with two cylinders locked by key from either side.

Master Keying

In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices on application.

Mortise Lead Locks

Half Size Cuts



Operation

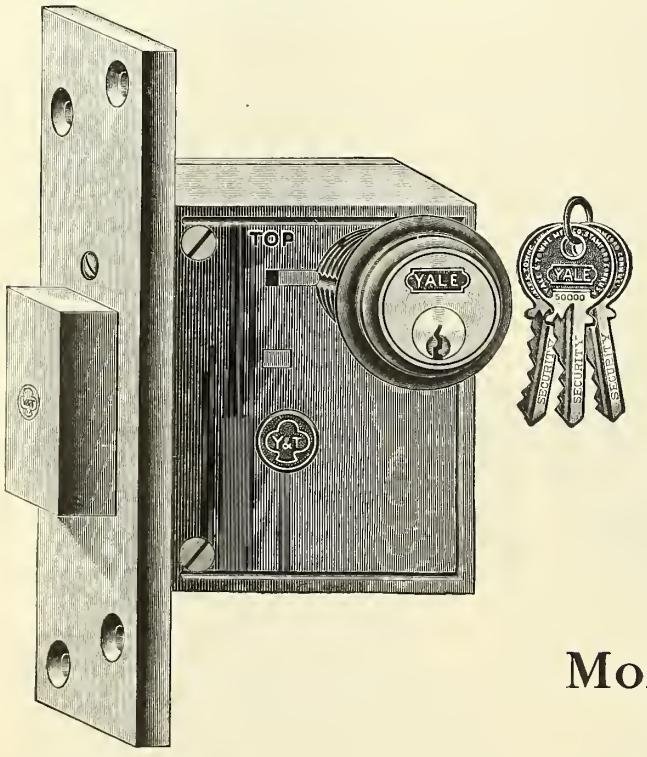
For doors 1⅜ to 1⅞ inches thick.

With one cylinder locked by key from outside and one thumb knob locked from inside.

Armored fronts. Each lock has one bronze cylinder and one bronze thumb-piece.

Number	Size Front Inches	Front to Center of Cylinder Inches	Size Front Inches	Number Pin Tumblers	Number of Changes	Front and Bolt Material	Front and Bolt Finish	Dozen
*325 Yale	2½x3½x¾	2¾	4x1	5	Practically unlimited	Bronze	Polished	$68.35
†328 Yale	3 x3⅝x¾	2¾	5x1	5	Practically unlimited	Bronze	Polished	76.70

* Reversible.
† Not reversible, state hand wanted.
Master keyed same as Lock No. 322, etc., on preceding page.



Size case, 4x3⅞x1¼ inches.
Front to center of cylinder, 2¾ inches.
Size front, 7¼x1¾ inches.
Five pin tumblers with practically unlimited changes.
Polished bronze fronts and cylinders.

No. 318 Yale, 1 cylinder; for doors 2 to 3¼ inches thick. Locked from one side. Dozen $116.40
No. 318¼ Yale, 2 cylinders, for doors 2 to 2¾ inches thick. Locked from two sides. Dozen 143.65

Master keyed same as Lock No. 322, etc., on preceding page.

Mortise Bolts

Reversible

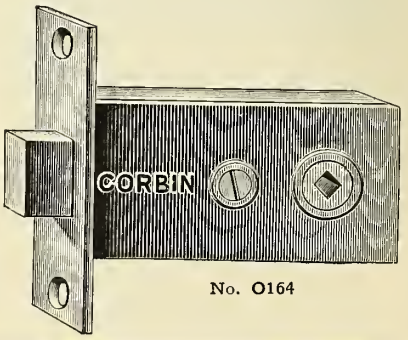
Half Size Cuts

Size case, 1½x3½x½ inches. Front to center of hub, 2⅝ inches. Size front, 3¼x⅞ inches. Size hub, $\frac{5}{16}$ inch.

No. 0164 Corbin Wrought brass front, cast brass bolt, dozen $9.75

Size case, 2⅛x3¼x⅝ inches. Front to center of hub, $2\frac{9}{16}$ inches. Size front, $4\frac{1}{8}$x$1\frac{1}{16}$ inches. Size hub, $\frac{5}{16}$ inch.

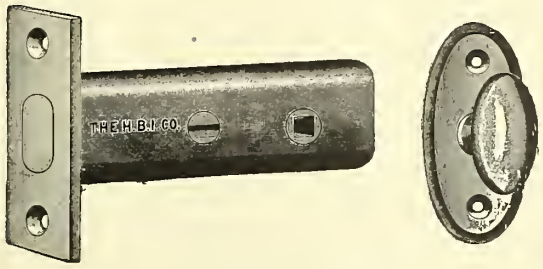
No. 0168½ Corbin Cast brass front and bolt, polished, dozen $19.80
No. LB0168½ Corbin Cast bronze front and bolt, statuary bronze finish, dozen 21.00



No. 0164

Mortise Bolts

Reversible

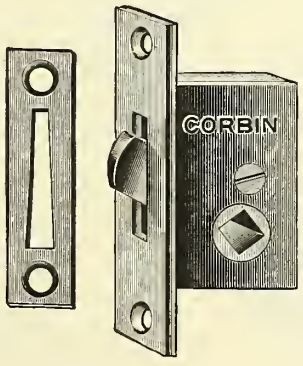


Size case, 1¼x3½x½ inches.
Front to center of hub, 2½ inches.
Size front, 2½x$\frac{13}{16}$ inches.
Size hub, $\frac{3}{16}$ inch.

No. 4934 Ives. Cast bronze, polished, front and bolt, dozen.... $6.65
No. 4951 Ives. Cast brass front and bolt, old brass finish, dozen. 7.20

Mortise Turnbuckles

Reversible

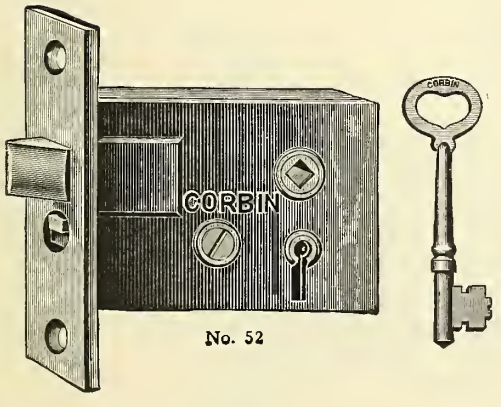


Size case, 1⅜x2⅛x½ inches.
Front to center of hub, ¾ inch.
Size front, 3½x$\frac{13}{16}$ inches.
Size hub, $\frac{5}{16}$ inch.

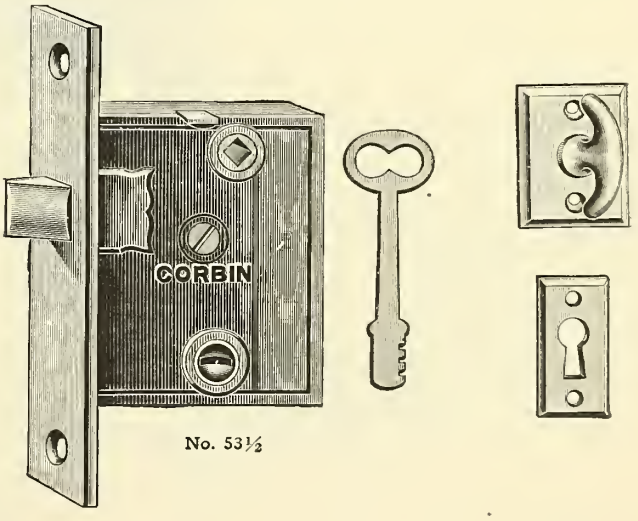
No. 76 Corbin. Cast brass front, with iron bolt, dozen..... $10.80

Mortise Night Latches

Reversible



No. 52



No. 53½

No. 52

No. 52 Corbin. Size case, 2¼x3¼x⅝ inches. Front to center of keyhole, 2⅜ inches. Size front, 3¾x⅞ inches. Size hub, $\frac{5}{16}$ inch. One tumbler, six changes.

Operates by key from outside and by thumb knob from inside. Latch bolt is fastened back by stop in face.

Cast brass front and bolt with cast brass thumb knob and wrought brass escutcheon, dozen..... $13.50

No. 53½

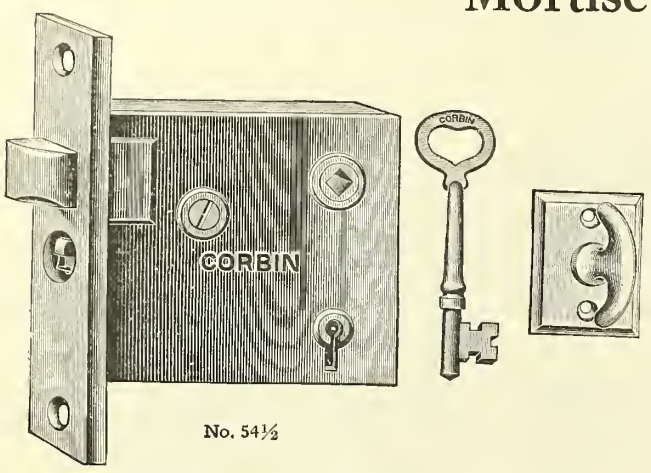
No. 53½ Corbin. Size case, 2¾x3⅜x⅝ inches. Front to center of keyhole, 2¾ inches. Size front, 4½x$\frac{15}{16}$ inches. Size hub, $\frac{5}{16}$ inch. Three tumblers, 27 changes.

Operates by key from outside and by thumb knob from inside. Latch bolt is fastened back by thumb knob.

Cast brass front and bolt, with cast brass thumb knob and escutcheon, dozen..... $24.00

Mortise Night Latches

Reversible



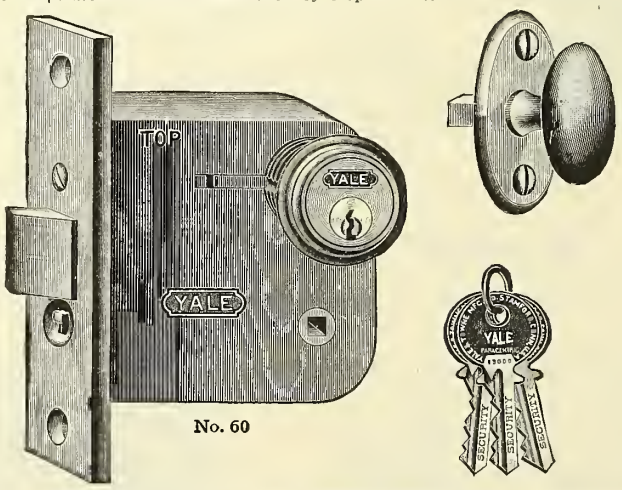
No. 54½

Operates by key from outside and by thumb-knob from inside.

Number	Size Case Inches	Front to Center of Keyhole Inches	Size Front Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Front and Bolt Material	Front and Bolt Finish	Thumb-piece	Escutcheon	Dozen
*54½ Corbin	3 x2⅝x½	1½	5x15/16	3/16	3	18	Cast Brass	Polished	Cast Brass	Wrought Brass	$19.20
†175 Bohannon	2⅝x3 x½	2⅛	4¼x⅞	3/16	3	15	Cast Bronze	Polished	Cast Bronze	Cast Bronze	20.00

* Latch Bolt is fastened back by stop in face. † Latch bolt is fastened back by stop in face.

Bronze front and bolt with one bronze cylinder and one bronze thumb-knob.



No. 60

Operation

With one cylinder unlocked by key from outside and one thumb-knob unlocked from inside. Latch bolt is fastened back by stop in face.

Number	Size Case Inches	Front to Center of Cylinder Inches	Front Style	Front Size, Inches	Size Hub Inch	Number of Pin Tumblers	Number of Changes	For Thickness Doors, Inches	Dozen
*60 Yale	2⅞x3⅛x⅝	2½	Cast	4½x⅞	5/16	4	1500	1⅛ to 1¾	$74.10
†64 Yale	3½x2¾x¾	2	Armored	5⅜x1	5/16	5	Practically unlimited	1¼ to 2⅛	74.10
†66 Yale	3½x2¾x¾	2¾	Armored	5 x1	5/16	5	Practically unlimited	1¼ to 2⅛	74.10

Master keying as follows: Prices on application.

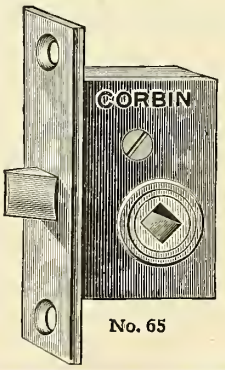
* No. 60 in one set of any number of changes up to 1500, usually required all different with a master key to pass all, or in sets alike, each set different from the other, with a master key to pass all locks.

†Nos. 64 and 66 in one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set and a grand master key to pass all the locks.

Mortise Knob Latches

Reversible

No. 4609P Sargent. Size case 2¼x1½ x9/16 inches; front to center of hub 1 inch; size front 3½x¾ inches; size hub 5/16 inch. Cast bronze front and bolt, polished, dozen... $5.00

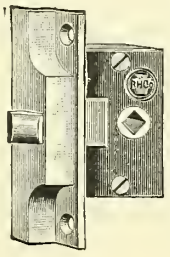


No. 65

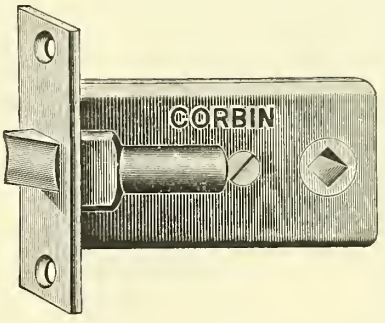
No. 65 Corbin. Size case 1⅜x1½x13/32 inches; front to center of hub 1 3/16 inches; size front 2 7/16 x 9/16 inches; size hub 5/16 inch. Cast brass front and bolt, polished, dozen... $9.00

Mortise Knob Latches

Reversible

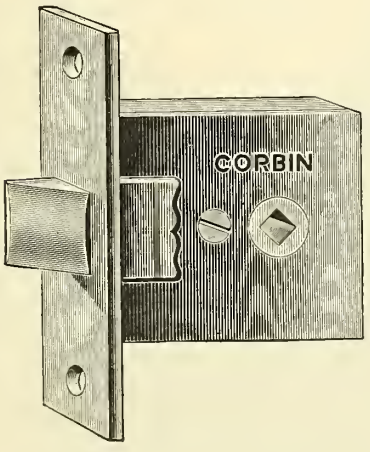


No. 1015½ Reading. Size case 2½x1½x½ inches; front to center of hub 1 inch; size front (½ inch rabbet) 3½x⅞ inch; size hub $\frac{5}{16}$ inch. Cast bronze, polished front and bolts. Dozen..... $15.00

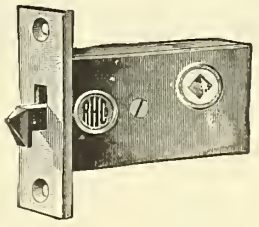


No. 12¼ Corbin. Size case 1¼x3⅛x½ inches; front to center of hub 2½ inches; size hub $\frac{5}{16}$ inch; size front 3x⅞ inches. Wrought brass front, cast brass bolt, polished, dozen..... $2.75

No. 25 Corbin. Size case 1¾x3½x$\frac{3}{8}$ inches; front to center of hub 2⅞ inches; size hub $\frac{5}{16}$ inch; size front 3x$\frac{13}{16}$ inches. Cast brass front, cast brass bolt, polished, dozen..... 5.40



Mortise Sliding Door Latches

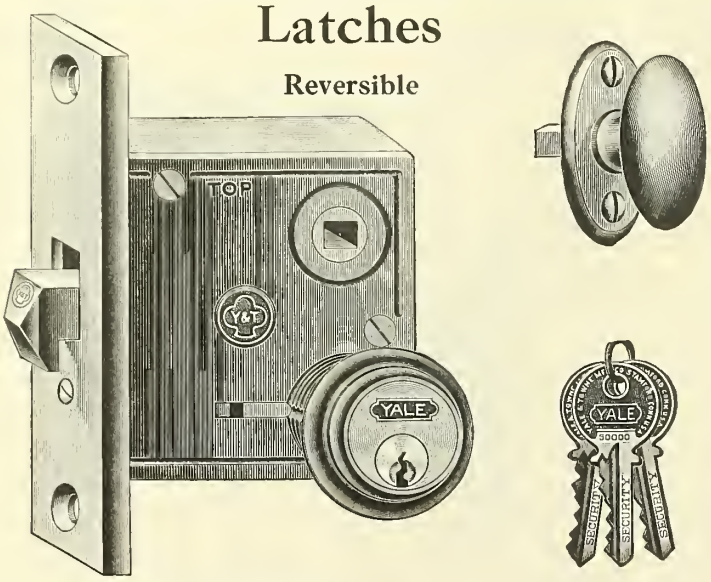


No. 89 Corbin. Size case 2$\frac{3}{8}$x2¾x$\frac{11}{16}$ inches; front to center of hub 1⅞ inches; size front (beveled ⅛ to 2 inches) 4¼x1$\frac{1}{16}$ inches; size hub $\frac{5}{16}$ inch. Cast brass, polished, front and bolt. Dozen..... $16.20

No. 1060½ Reading. Size case 1¾x3$\frac{3}{8}$x$\frac{5}{8}$ inches; front to center of hub 2¾ inches; size front 3x1 inch; size hub $\frac{5}{16}$ inch. Operates by knobs or flush cup handles from either side. Cast bronze, polished, front and bolt. Dozen..... $9.00

Mortise Sliding Door Latches

Reversible



Size case, 3¼x3½x¾ inches.
Front to center of cylinder, 2¾ inches.
Size front (cast), 1x5¼ inches.
Size hub, $\frac{5}{16}$ inch.

Operates with one cylinder unlocked by key from outside and one thumb-knob unlocked from inside.

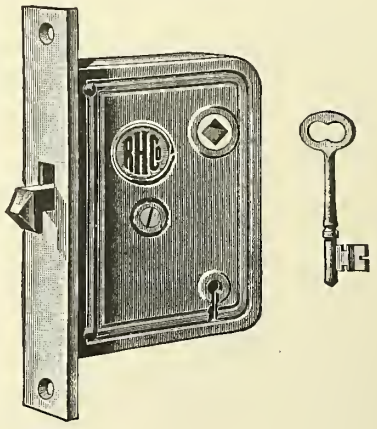
No. 1730 Yale. Bronze front and bolt, with one bronze cylinder and one bronze thumb-knob. For doors 1¼ to 2⅛ inches thick. Dozen..... $101.85

Master Keying

In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices upon application.

Mortise Sliding Door Locks

Reversible



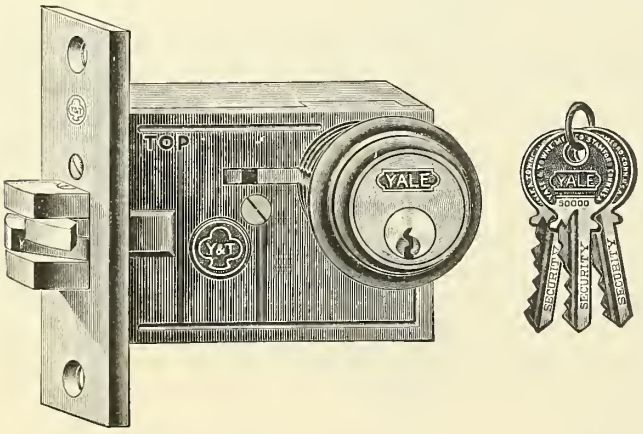
Size case, 3¼x4½x$\frac{9}{16}$ inches.
Front to center of keyhole, 2½ inches.
Size front, 6⅜x$\frac{15}{16}$ inches.
Size hub, $\frac{5}{16}$ inch.

Operates by knobs or flush cup handles from either side, or by key from either side.

No. 307 Reading. Cast brass front, polished, with iron bolt bronze-plated, dozen..... $19.50

Mortise Sliding Door Dead Locks

Reversible

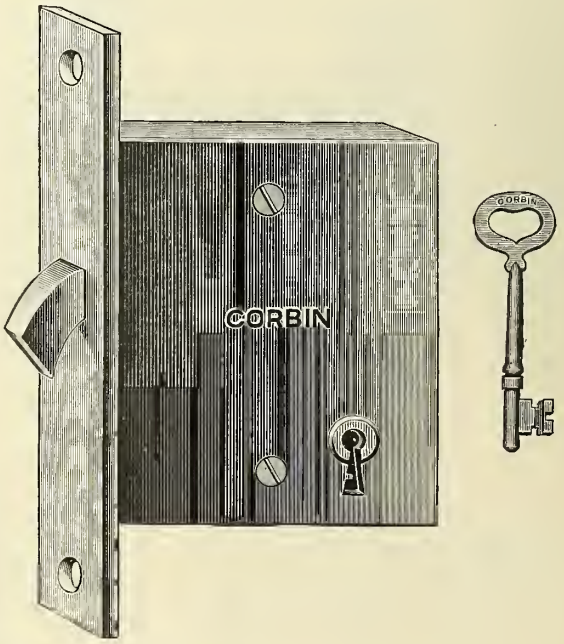


Size case, 2⅜x3⅝x⅞ inches.
Front to center of cylinder, 2¾ inches.
Size front (cast), 4x1 inches.

No. 1732 Yale. With one bronze cylinder locked by key from one side, bronze front and bolt. For doors 1¼ to 2⅛ inches thick. Dozen..... $75.00

No. 1732¼ Yale. With two bronze cylinders, locked by key from either side, bronze front and bolt. For doors 1½ to 1⅞ inches thick. Dozen..... 100.00

Master keyed same as No. 1730 listed above. Prices upon application.

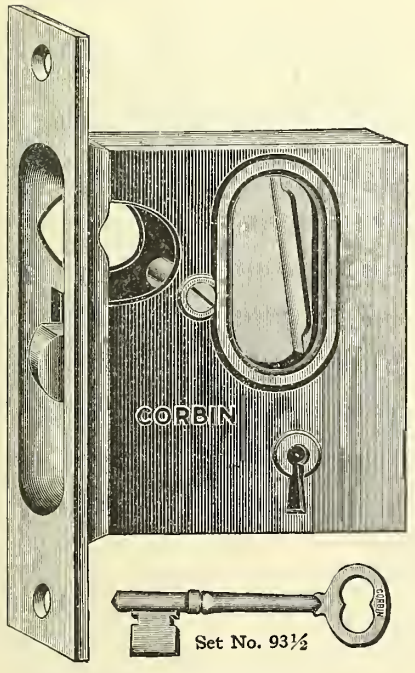


Size case, 4x3½x⅝ inches.
Front to center of keyhole, 2⅝ inches.
Size front, 6⅛x$\frac{15}{16}$ inches.

No. 284 Corbin. Cast brass, polished, front and bolt, dozen... $18.00

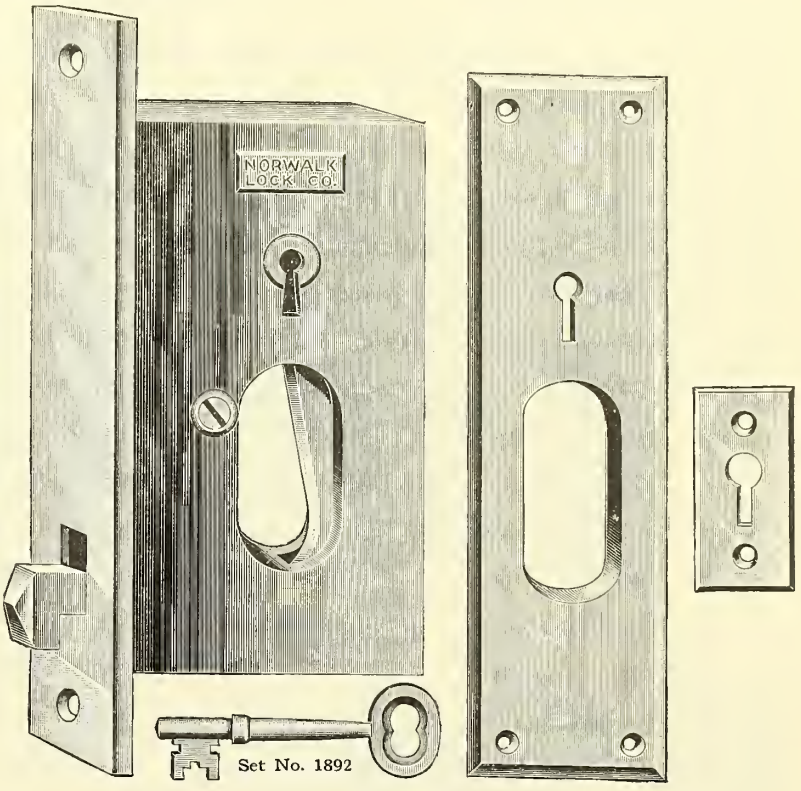
Mortise Elevator Sliding Door Locks

In Sets—Reversible



Size case, 4x3¾x5⅝ inches.
Front to center of keyhole, 2½ inches.
Size cast bronze front, 6⅜x1 3/16 inches.
Cast bronze bolt.
Size wrought bronze cup escutcheon, 2x2¾ inches.
Size wrought bronze escutcheon, 1¼x1¾ inches.

Set $2.70



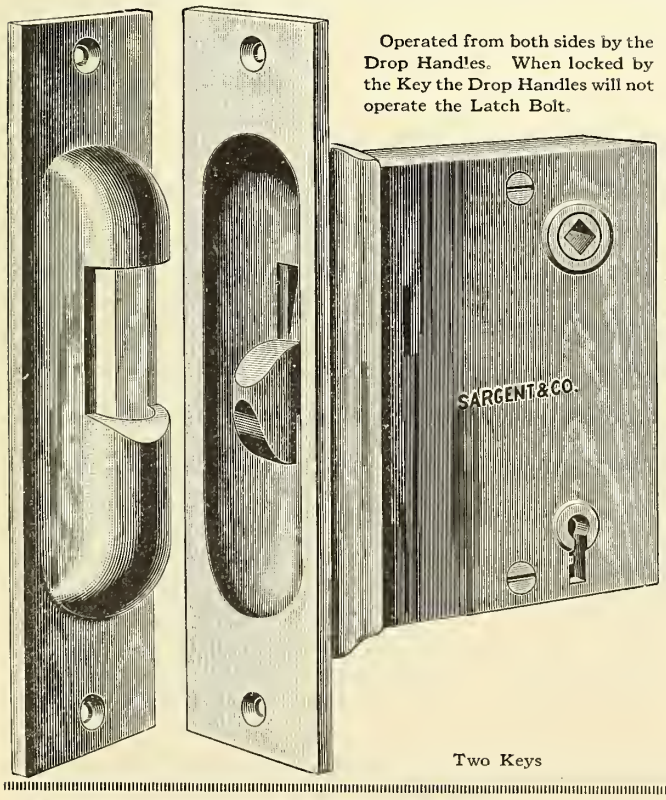
Size case, 3⅜x5⅜x5⅝ inches.
Size cast bronze front, 7⅞x1 1/16 inches.
Cast bronze bolt.
Size cast bronze cup escutcheon, 7¼x2 inches.
Size escutcheon, 2 1/16x1 1/16 inches.

Set $4.00

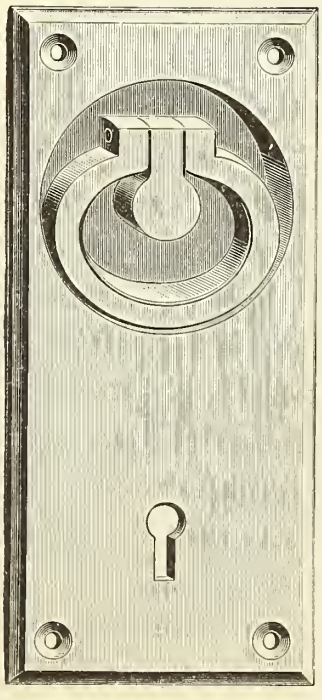
Mortise Stable or Garage Sliding Door Locks

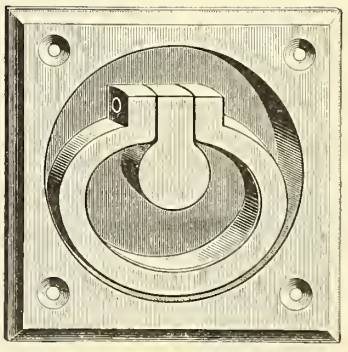
Reversible

Operated from both sides by the Drop Handles. When locked by the Key the Drop Handles will not operate the Latch Bolt.



Two Keys



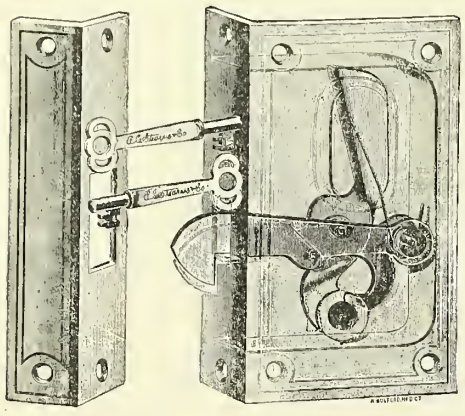


Set No. 5000

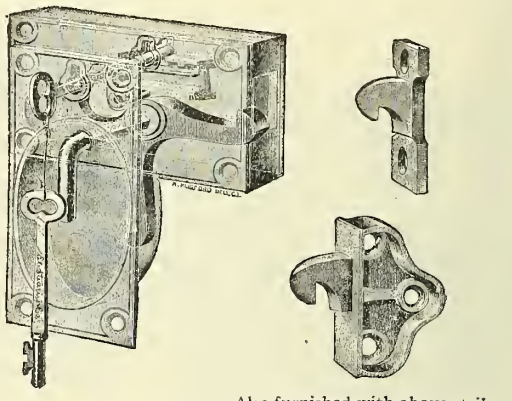
Size case, 5x4x¾ inches.
Front to center of keyhole, 3 inches.
Size cast bronze front, 8x1½ inches.
Cast bronze bolt.
Size hub, 5/16 inch.
Size cast bronze cup escutcheon, 3½x3½ inches.
Size cast bronze escutcheon, 3¼ x 7 inches.
3 tumblers, 200 changes.

Set $16.00

Barn or Garage Sliding Door Locks



Half Mortise



Also furnished with above strike, for side of door casing

Rim Reversible

This lock is reversible. It is impossible to raise the bolt from the outside by inserting any appliance under it between the door and casing, as the inner bolt, which must be raised first, is protected by a lip on the outer bolt extending under the inner bolt, so that anything inserted under the outer bolt comes in contact with this lip and cannot touch the inner bolt. May be unlocked from inside by pulling back the lever.

Two steel keys with each lock.
Face of lock, 4¼x7½ inches.
Catch plate, 1½x4½ inches.
Excutcheon, 2½x4½ inches.

No. 80 Japanned, dozen..... $30.00

Adjustable to any thickness of door from two inches down.

In opening the door, the turning of the handle disengages the lever from the catch plate. In closing it is self-acting. Locks and unlocks from either side by using key.

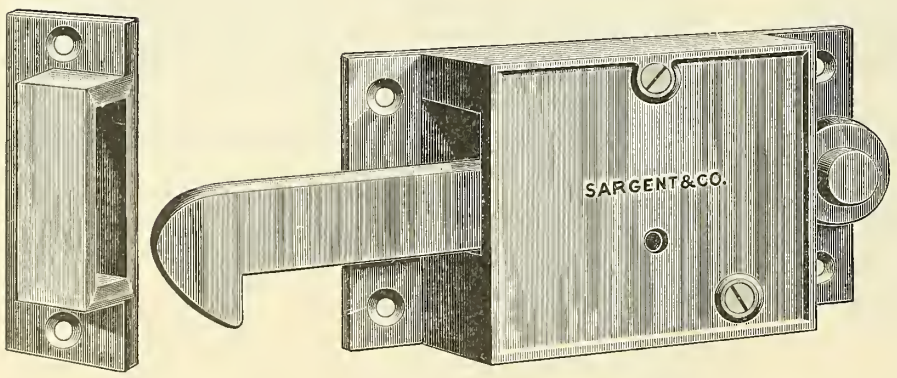
Two styles of catch furnished with each lock, one for face and one for side of door casing.

Two steel keys with each lock.
Face of lock, 2⅞x4¾ inches.
Escutcheon, 5½x2½ inches.

No. 60 Japanned, dozen..... $12.00

Rim Sliding Door Latches

Reversible



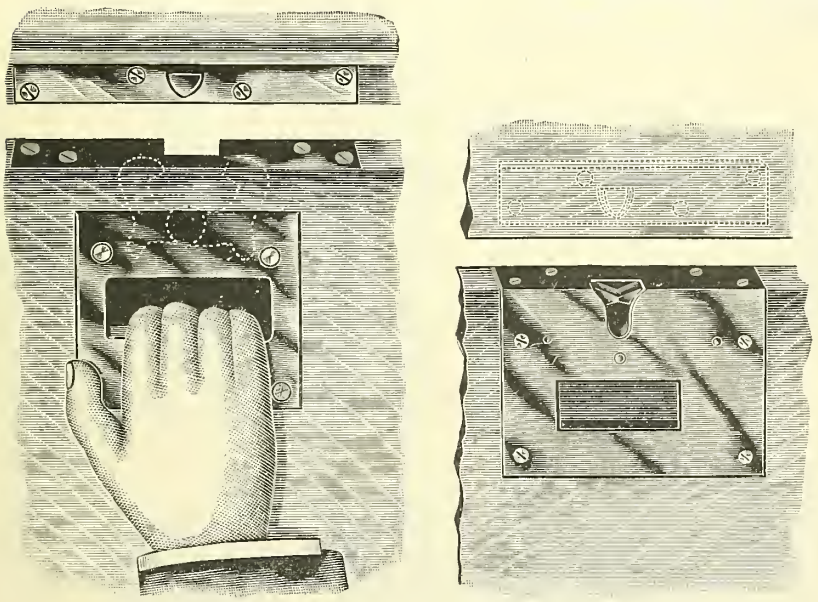
Size case, 5½x3¼x⅞ inches.

Operated from one side only by lifting the bolt with the hand.

No. 6900 Japanned, dozen..... $7.20

Steel Stable or Garage Sliding Door Locks

Half Mortise—Reversible



Made of steel with malleable jaws. The latch is made to fit flush in the door and can be operated from both sides.

Serves as a latch and pull combined and is indestructible. There are no projections on which to catch harness or clothing. Adjustable for doors 1¾ to 2½ inches thick. Width of latch, 5⅛ inches. Height, 6⅝ inches.

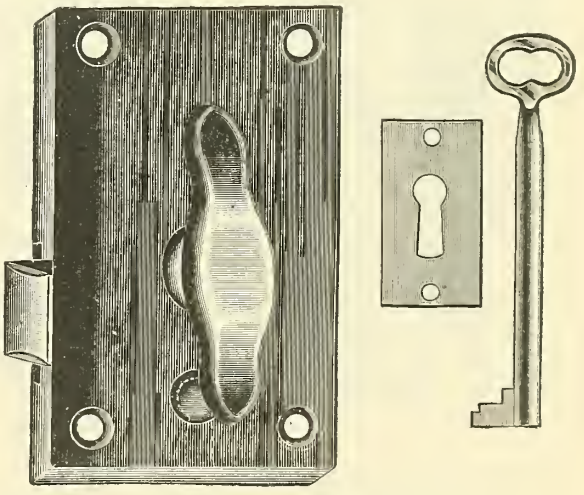
Regularly furnished with strike for single doors. Can be furnished with strikes for double doors if specified.

On panel doors outer stiles should be no less than 6 inches wide.

No. 520 Dead black finish, dozen..... $15.00

Rim Elevator Door Latches

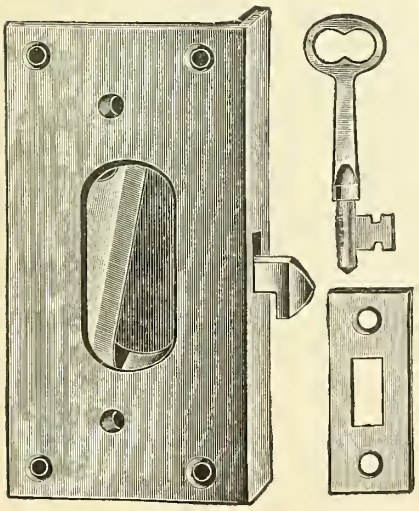
Not Reversible



State hand wanted. Cut shows left hand.
Size case, 4⅞x2⅞x$\frac{13}{16}$ inches.
Front to center of keyhole, 1½ inches.
Operated from the outside by the key.
Operated from the inside by the T-handle.

No. B1 Japanned case, bronze metal latch and T-handle, dozen. $20.00

Elevator Latches



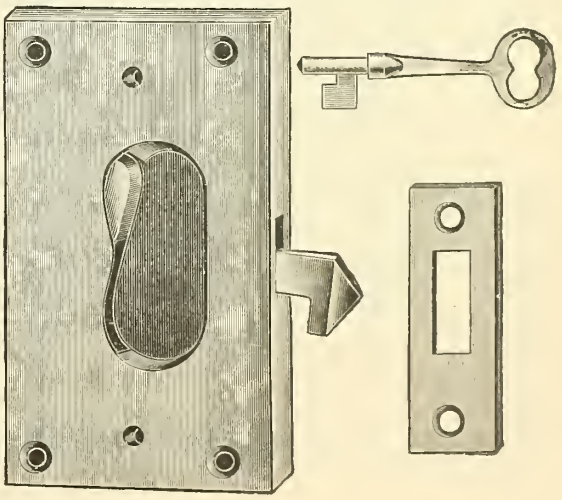
Nos. 71 and 1220
Cut shows Left Hand

All these latches are operated from the outside by key. From inside by pressing back the lever.

No. 1220 Reversible, half mortise. Size case, 2½x5 inches. Cast bronze, polished, dozen..... $18.25

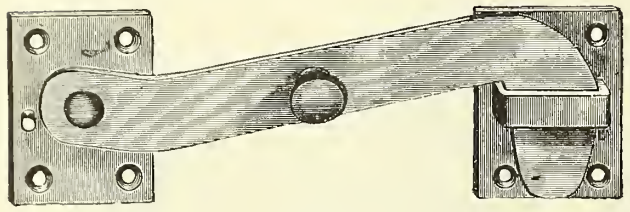
No. 71 Not reversible. State hand wanted. Half mortise. Size case, 3x5⅜ inches. Cast bronze, polished, dozen..... 25.40

No. 1076 Reversible. Rim, for iron gates, doors, etc. Size case, 2⅞ x 5 inches. Cast bronze, polished, dozen.....22.00



No. 1076
Cut shows Left Hand

Sliding Door Hooks



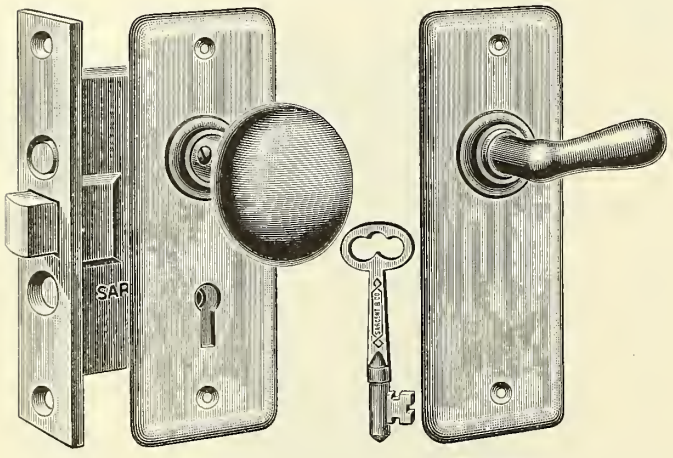
No. 1710

Made right and left hand. Cut is right hand.
Latch is $1\frac{1}{8}$x$\frac{3}{16}$ inches.
Wrought iron, galvanized.

Length, inches	6	8	10
Dozen	$13.75	14.25	17.00

Mortise Screen Door Night Latches

Reversible



For outside For Inside

Size case, 3x2¼x½ inches.
Front to center of keyhole, 1⅝ inches.
Front, ¾x4¼ inches.
Hub, $\frac{5}{16}$ inch.
Size of escutcheons, 1½ x 4½ inches.

Lever Handle for Inside, Knob for Outside

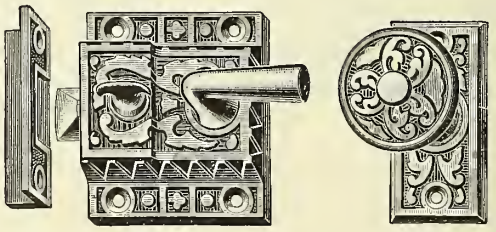
May be operated from the outside by the key, or may be operated from both sides of the knob and lever. The outside knob is set by the stop in the face of the latch.

No. 5866P Cast bronze front and bolt, cast bronze knob and lever, wrought bronze plate escutcheons, set $2.10

No. A3B5866 Cast bronze front and bolt, cast bronze knob and lever, wrought bronze plate escutcheon, statuary bronze finish, set 2.30

No. OB5866 Cast brass front and bolt, cast brass knob and lever, wrought brass plate escutcheons, old brass finish, set .. 2.30

Rim Screen Door Latches



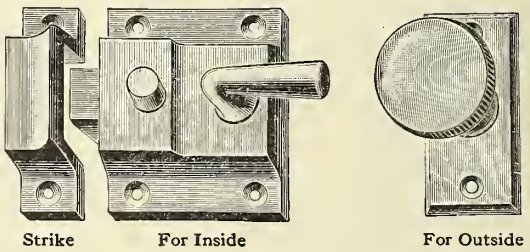
Strike For Inside For Outside

Reverse Bevel

Size case, 2¼x1⅞ inches.
Outside plate, 1x2⅛ inches.
For doors ⅞ to 1¼ inches thick. Reverse bevel.

†No. Y6555 Cast iron, bronze-plated, dozen $9.70
†No. 6855P Cast bronze, polished, dozen 19.00
†No. OB6855 Cast brass, old brass finish, dozen 20.00
*No. T6555A Cast iron, Tuscan bronze finish, dozen 4.20

*Fancy figured
†Plain



Strike For Inside For Outside

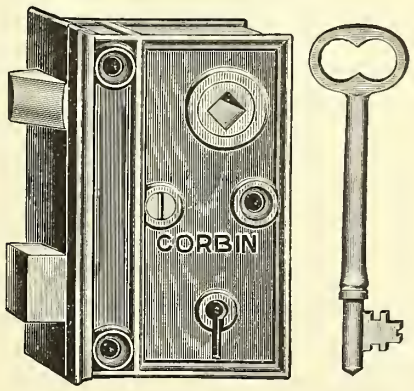
Regular Bevel

Size case, 2¼x1⅞ inches.
Outside plate, 1x2⅛ inches.
For doors ⅞ to 1¼ inches thick.

No. Y6550 Cast iron, bronze-plated, dozen $9.70
No. 6850P Cast bronze, polished, dozen 19.00

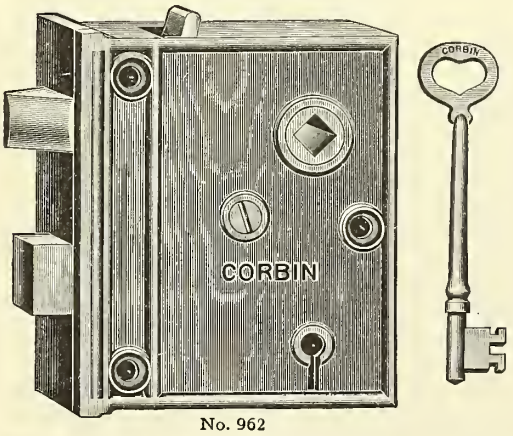
Upright Rim Knob Locks

Reversible



Size case, 3⅝x2¼ inches.
Front to center of hub, 1½ inches.
Size hub, $\frac{5}{16}$ inch.
1 tumbler, 12 changes.

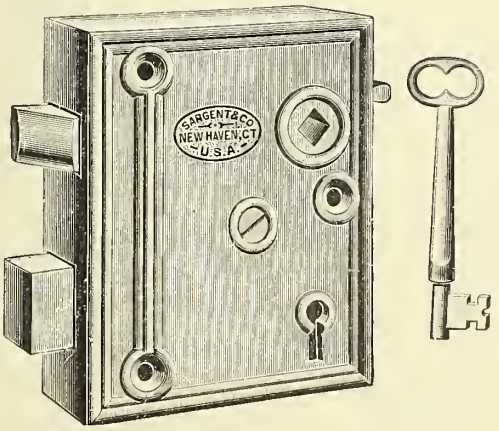
No. 459 Corbin. Iron case, japanned; cast brass bolts, dozen.. $6.90
No. N459 Corbin. Iron case, bronze-plated; cast brass bolts, dozen..... 7.94



No. 962

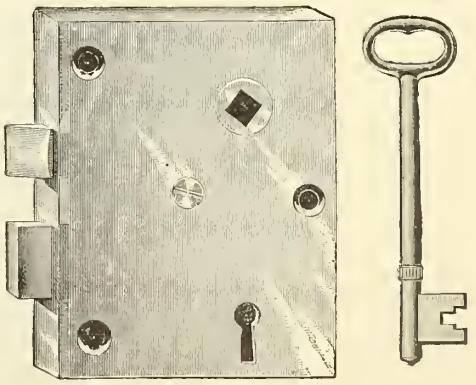
Number		Case: Size, Inches	Case: Material	Case: Finish	Front to Center of Hub Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts: Material	Bolts: Finish	Dozen
*†962	Corbin	4x3¼	Iron	Japanned	2⅜	$\frac{5}{16}$	1	6	Cast Iron	Plain	$3.90
†K961½	Corbin	4x3¼	Iron	Japanned	2⅜	$\frac{5}{16}$	1	6	Cast Iron	Plain	2.85
470½	Corbin	4x3½	Iron	Japanned	2½	$\frac{5}{16}$	1	12	Cast Brass	Plain	7.95
*2215	Sargent	4x3¼x$\frac{11}{16}$	Iron	Japanned	2$\frac{9}{16}$	$\frac{5}{16}$	1	6	Cast Brass	Plain	4.00

* With stop. † Furnished with reverse bevel strikes when so ordered.



Size case, 4x3⅛ inches.
Front to center of hub, 2½ inches.
Size hub, $\frac{5}{16}$ inch.
With stop. 1 tumbler, 6 changes.

No. B.T. 2213S Steel case, brass-plated, brass-plated bolts, dozen..... $3.30

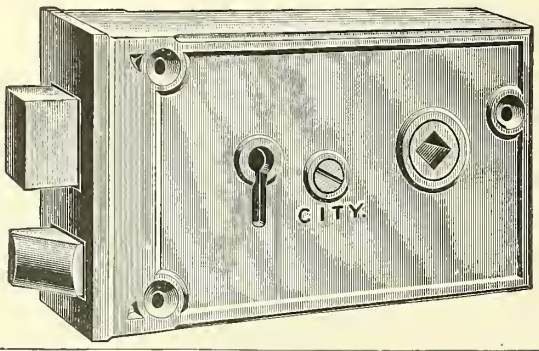


Size case, 3 x 3¾ inches.
Front to center of hub, 2⅛ inches.
Size hub, $\frac{5}{16}$ inch.
1 tumbler, 6 changes.

No. 12 Cast brass case, polished, brass inside, dozen..... $20.50

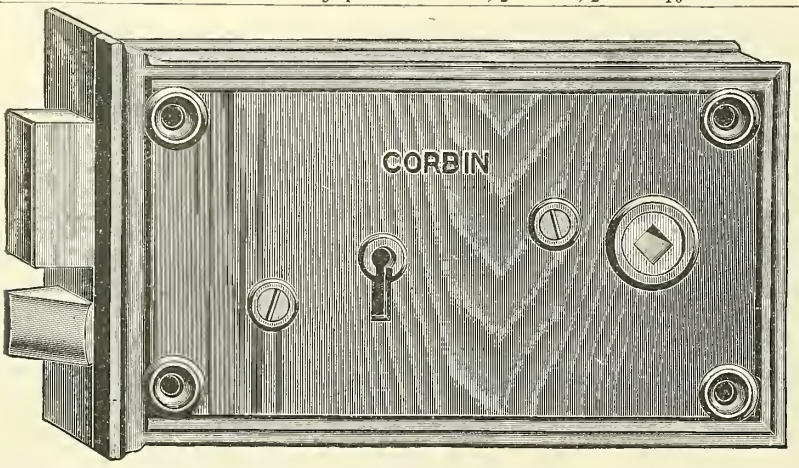
Horizontal Rim Knob Locks

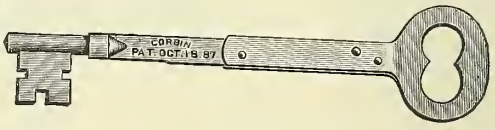
Half Size Cuts





Number	Case			Front to Center of Hub Inches	Front to Center of Keyhole Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts		Dozen
	Size, Inches	Material	Finish						Material	Finish	
5 Sargent	4 7/8 x 3 1/8	Iron	Japanned	3 1/8	4 3/4	5/16	1	6	Cast Brass	Plain	$4.80
6 Sargent	5 1/2 x 3 3/8	Iron	Japanned	3 1/2	5 1/2	5/16	1	12	Cast Brass	Plain	7.20



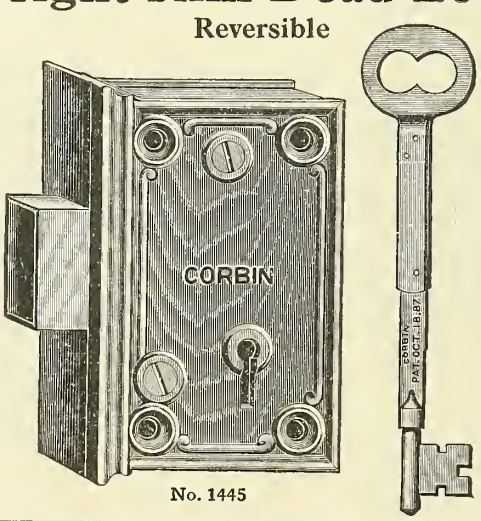


Number	Case			Front to Center of Hub Inches	Front to Center of Keyhole Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts		Dozen
	Size, Inches	Material	Finish						Material	Finish	
1673 Corbin	4 x6	Iron	Japanned	4 5/8	6	5/16	1	24	Cast Iron	Plain	$25.50
*626 Reading	4 3/4 x7	Iron	Japanned	4 3/4	7	5/16	1	16	Cast Iron	Plain	25.00

* With Flat Keys.

Upright Rim Dead Locks

Reversible



No. 1445

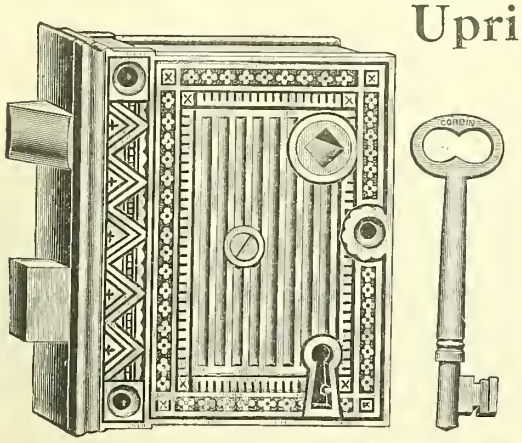
Number	Case			Center of Keyhole Inches	Number of Tumblers	Number of Changes	Bolt		Dozen
	Size, Inches	Material	Finish				Material	Finish	
1445 Corbin	4 x2 1/2	Iron	Japanned	1 5/8	1	24	Cast Iron	Plain	$12.75
1448 Corbin	4 x2 1/2	Iron	Japanned	1 5/8	3	36	Cast Brass	Plain	17.70
*1450 Corbin	5 1/2 x 3 5/8	Iron	Japanned	2 5/16	1	12	Cast Iron	Plain	21.60

* With Flat Keys.

SEE DISCOUNT SHEET

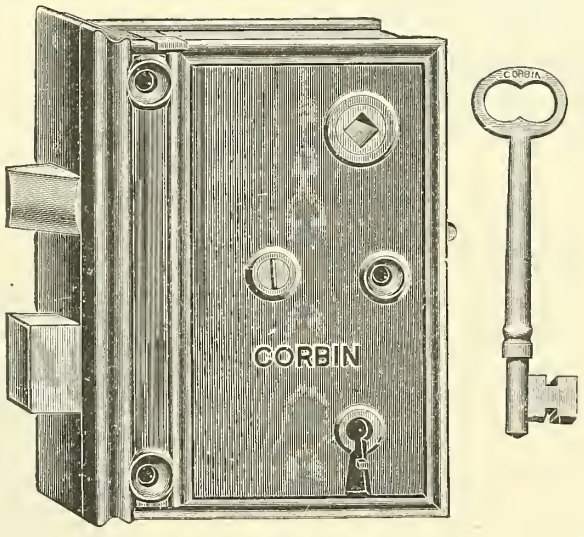
Upright Rim Knob Locks

Reversible



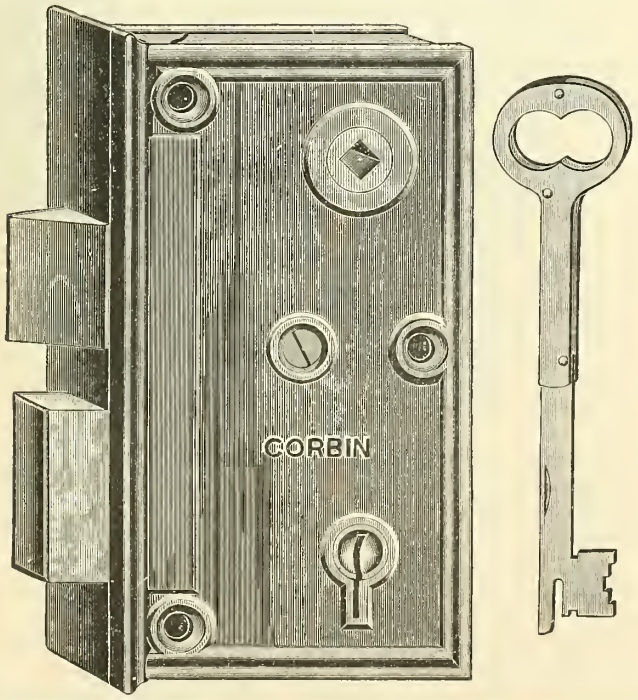
Size case, 4¼x3¼ inches.
Front to center of hub, 2½ inches.
Size hub, $\frac{5}{16}$ inch.
1 tumbler, 12 changes.

No. N3470 Corbin. Iron case, bronze-plated, cast brass bolts, dozen..... $11.85



No. 490

Number	Case: Size, Inches	Case: Material	Case: Finish	Front to Center of Hub Inches	Size Hub Inch	Number of Tumblers	Number of Changes	Bolts: Material	Bolts: Finish	Dozen
487 Reading	4½x3¼	Iron	Japanned	$2\frac{9}{16}$	$\frac{5}{16}$	1	12	Cast Brass	Plain	$7.60
490 Corbin	5 x3⅝	Iron	Japanned	$2\frac{3}{4}$	$\frac{5}{16}$	1	18	Cast Brass	Plain	12.15
493 Corbin	6¼x4	Iron	Japanned	3	$\frac{5}{16}$	1	18	Cast Brass	Plain	18.15

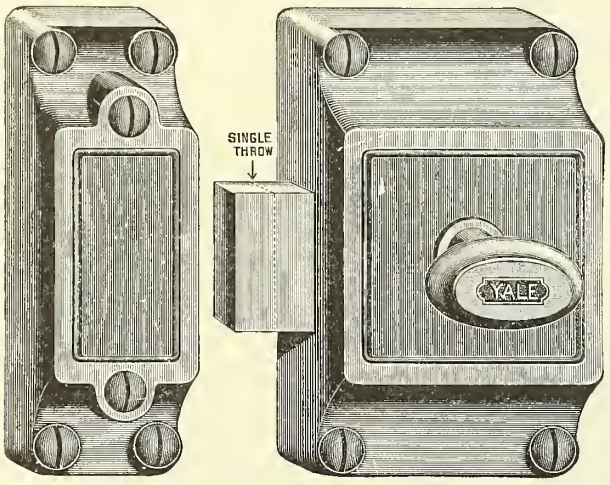


Size case, 6¾x3⅝ inches.
Front to center of hub, 2½ inches.
Size hub, $\frac{5}{16}$ inch.
3 tumblers, 16 changes.

No. 1678 Corbin. Iron case, japanned, cast iron bolts, dozen..$31.50

Upright Rim Dead Locks

Half Size Cuts



No. 7 Yale

This lock has double-throw bolt, giving extra engagement with strike, which is attached to jamb by six screws. Heavy construction and steel bolt. Especially available for doors of wood or metal, ⅞ to 2½ inches thick, having narrow stiles.

Operation: By key from outside, by turn knob from inside. A second turn of key or knob accomplishes the double-throw.

No. 7 Yale. Iron case, old copper finish, 4½x2¾x1⅜ inches; front to center of cylinder, 1⅜ inches; 5 pin tumblers, practically unlimited changes, bronze cylinder and bronze thumb-knob, dozen $62.35

Master keying in one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices upon application.





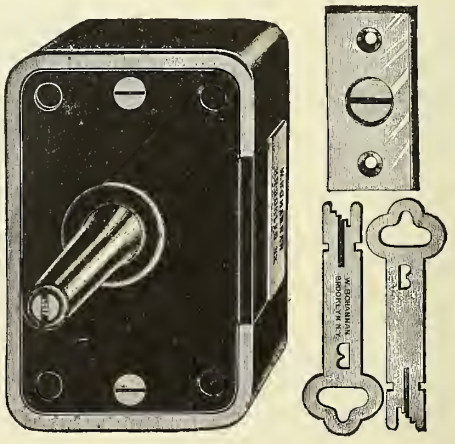
Iron case, japanned, 3⅞x2⅝ inches.

Front to center of keyhole, 1½ inches.

7 tumblers, 144 changes.

Bronze bolt and bronze knob.

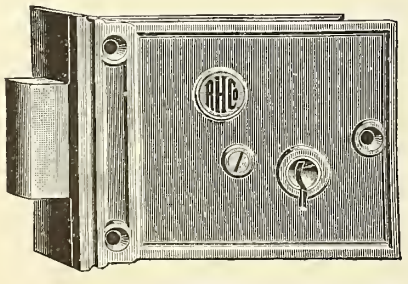
No. 198 Bohanan. Dozen $25.00



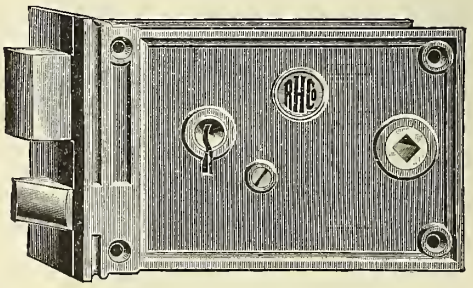
No. 198 Bohanan

Horizontal Rim Dead Locks

Half Size Cuts



No. 373



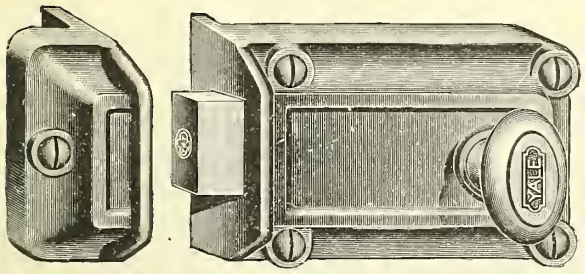
Nos. 378, 380, 402 and 426

Iron Cases, Japanned Finish; Iron Bolts

Number	Size, Case Inches	Front to Center of Keyhole Inches	Number of Tumblers	Number of Changes	Dozen
373 Reading	2½x3⅜	1⅝	1	6	$2.60
378 Reading	2¼x3	2	1	12	3.10
380 Reading	2½x3¾	2½	1	6	2.75
402 Reading	2½x3¾	2½	3	48	6.25
*426 Reading	4¾x7	3½	3	36	21.00

*With Flat Keys.

Horizontal Rim Dead Locks





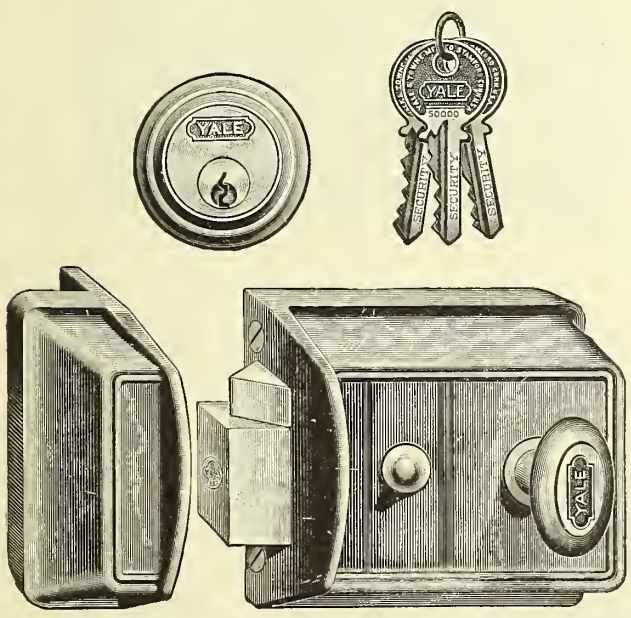


Number	Case: Size, Inches	Case: Material	Case: Finish	Front to Center of Cylinder Inches	Number of Tumblers	Number of Changes	Bolt, Cylinder and Thumb-knob: Material	Bolt, Cylinder and Thumb-knob: Finish	For Doors Thickness Inches	Dozen
2 Yale	2⅜x3⅝	Iron	Japanned	2⅜	5	Practically unlimited	Bronze	Polished	1 to 2½	$40.75
3536 Eagle	3⅝x2⅜	Iron	Japanned	2⅜	5	Practically unlimited	Bronze	Polished	1 to 2¼	13.20

Operation: By key from outside, by turn-knob from inside.

Master Keying

Master keying in one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices up on application.



No. 91 Yale

Iron case, old copper finish, 3x3½ inches.
Front to center of cylinder, 2⅜ inches.
5 pin tumblers, practically unlimited changes.
Bronze bolt, bronze cylinder and bronze thumb-knob.
For doors ⅞ to 2½ inches.

Operation: By key from outside, by turn-knob from inside. When unlocked by key or turn-knob both dead and trigger bolts are withdrawn and held back in case. When stop on case is pushed down, the trigger bolt is released and thrown out. When door is closed, the trigger bolt automatically releases the dead bolt, which is also thrown and locked.

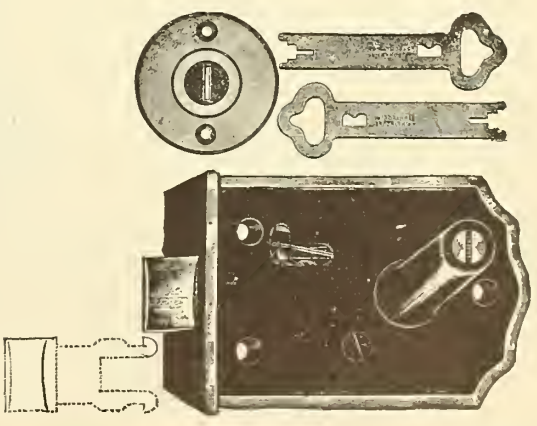
No. 91 Yale. Dozen..... $55.55

Master Keying: Same as Nos. 2 and 3536 listed above.

No. 262 Bohanan

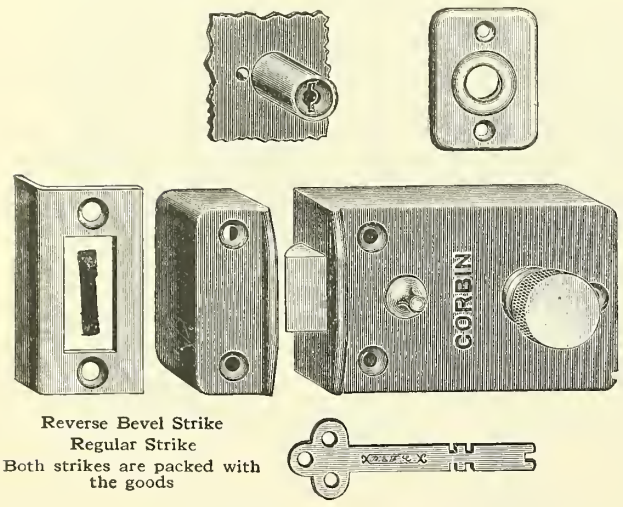
Iron case, japanned, 2⅝x3¾ inches.
Front to center of keyhole, 2¼ inches.
4 tumblers, 15 changes.
Operation: By key from outside, by turn-knob from inside.
Bronze bolt, brass knob, nickel-plated.

No. 262 Bohanan. Dozen..... $14.00



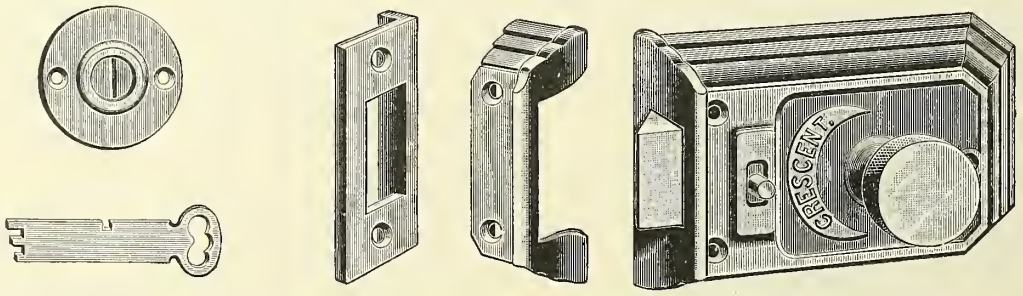
Rim Night Latches

Reversible



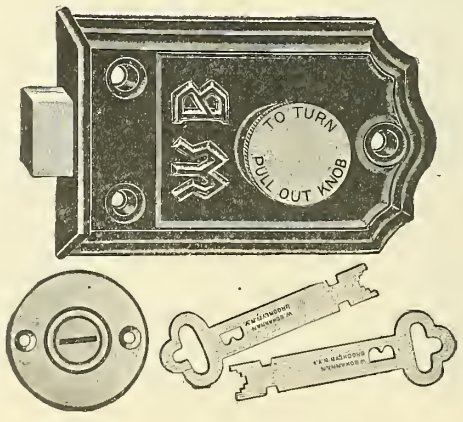
Reverse Bevel Strike
Regular Strike
Both strikes are packed with the goods

No. 353 Corbin. Size case, 2x3 inches; front to center of keyhole, 2⅛ inches; 12 changes. Cast iron bolt, brass-plated; wrought bronze escutcheon; iron turn-knob, bronze-plated, dozen $6.60



Reverse Bevel Strike. Regular Strike
Both strikes are packed with the goods

No. 4234 Sargent. Size case, 3¾x2¾ inches; front to center of keyhole, 1⅝ inches; 12 changes. Cast iron bolt, bronze-plated; wrought bronze escutcheon; bronze turn-knob, dozen $8.00

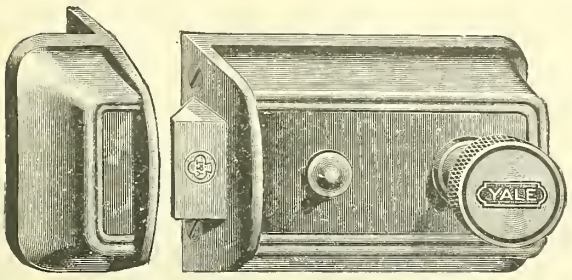


Cast Bronze Bolt, Bronze Escutcheon and Brass Draw-back Knob, Nickel-plated

Number	Size Case Inches	Front to Center of Keyhole Inches	Number of Tumblers	Number of Changes	Dozen
250 Bohannan	2½x3⅝	2⅛	4	15	$13.00
151 Bohannan	3 x4¼	2⅝	4	15	17.00

Rim Night Latches

Reversible



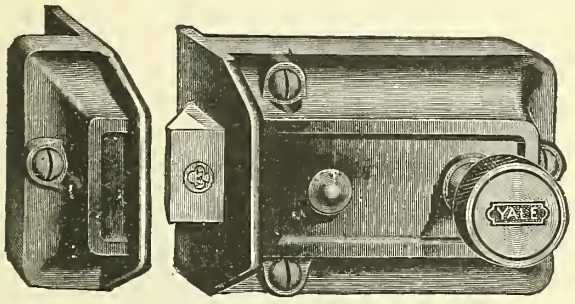




Operation: By key from outside, by turn-knob from inside. Bolt may be held back by stop.
For doors ⅞ to 2½ inches thick. Cast bronze bolts, bronze cylinder and bronze turn-knob.

Number	Case: Size, Inches	Case: Material	Case: Finish	Front to Center of Cylinder Inches	Number of Pin Tumblers	Number of Changes	Dozen
42 Yale	2⅜x3½	Iron	Old Copper	2⅜	5	Practically unlimited	$33.20
5042 Yale	2¼x3½	Bronze	Polished	2⅜	5	Practically unlimited	74.00

Master keying: In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with a master key to pass the locks in each set, and a grand master key to pass all the locks. Prices on application.



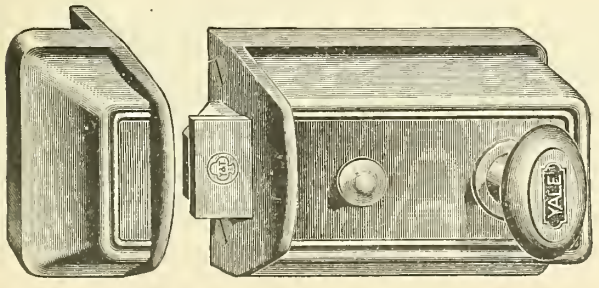




Cast Bronze Bolt, Bronze Cylinder, Bronze Turn-knob

Number	Case: Size, Inches	Case: Material	Case: Finish	Front to Center of Cylinder Inches	Number of Pin Tumblers	Number of Changes	For Doors Thickness Inches	Dozen
*042 Yale	2½x3⅝	Iron	Japanned	2⅜	...	Practically unlimited	⅞ to 2½	$30.90
*049 Yale	3 x4	Iron	Japanned	2¾	5	Practically unlimited	1⅛ to 3	46.30
‡1356 Corbin	2½x3	Iron	Japanned	2⅜	5	Practically unlimited	⅞ to 2¼	33.00
*3504 Eagle	3⅝x2½	Iron	Japanned	2⅜	5	Practically unlimited	⅞ to 2¼	10.00

* Operates by key from outside, by turn-knob from inside. Bolt may be held back by stop inside.
‡ Operates by key from outside, by turn-knob from inside. Bolt may be deadlocked or held back by the stop inside or by the key outside. Cylinder is ball bearing.
Master Keying: Same as Nos. 42 and 5042, listed above.







Iron case, old copper finish, 2⅜x3½ inches.

Front to center of cylinder, 2⅜ inches.

5 pin tumblers; practically unlimited changes.

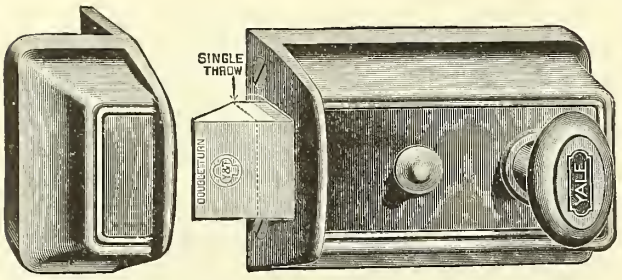
No. 44 Yale. Cast bronze bolt, bronze cylinder and bronze turn-knob. For doors ⅞ to 2½ inches thick. Dozen..... $37.80

Master Keying: Same as Nos. 42 and 5042, listed above.

Operation: By key from outside, by turn-knob from inside. Bolt may be held back by stop. When door is closed the protector on back of bolt is held retracted and operates to positively deadlock the bolt against end pressure.

Rim Night Latches

Half Size Cuts







Iron case, old copper finish, $2\frac{3}{8}$x$3\frac{1}{2}$ inches.

Front to center of cylinder, $2\frac{3}{8}$ inches.

5 pin tumblers, practically unlimited changes.

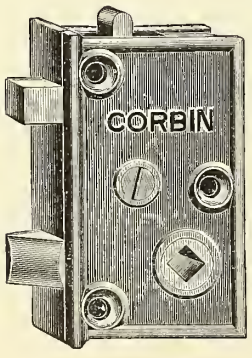
Operation: By key from outside, by turn-knob from inside. Bolt may be held back by stop. The bolt may be given a second throw by key from outside or turn-knob from inside which deadlocks, making it proof against end pressure.

No. 46 Yale. Cast bronze bolt, bronze cylinder, bronze turn-knob. For doors $\frac{7}{8}$ to $2\frac{1}{2}$ inches thick. Each..... $39.35

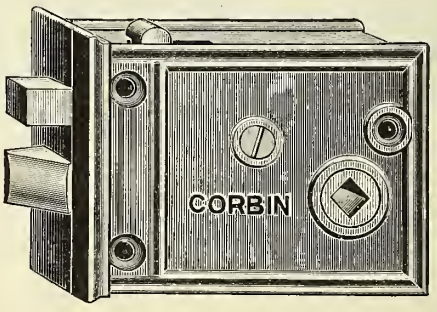
Master Keying: In one set of any number of changes usually required, all different, with a master key to pass all locks; or in any number of sets required, each set having any number of changes, all changes different, with master key to pass the locks in each set, and a grand master key to pass all the locks. Prices on application.

Rim Knob Latches

Reversible



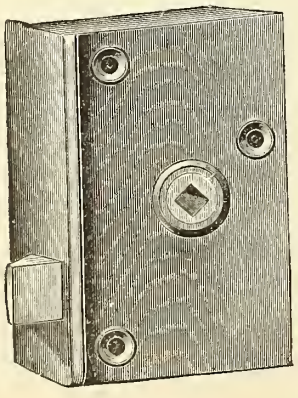
No. 355 Iron case, japanned, 3x$1\frac{3}{4}$ inches; front to center of cylinder, $1\frac{3}{16}$ inches; $\frac{5}{16}$-inch hub; cast iron bolt and thumb-piece. Dozen..... $3.00



No. 309

Iron case, japanned, $2\frac{5}{8}$x$3\frac{1}{2}$ inches.
Front to center of hub, $2\frac{3}{4}$ inches.
Furnished with reverse bevel strikes when so ordered.

No. 309 Corbin. Cast iron bolt and thumb-piece, dozen..... $3.00
No. 310 Corbin. Cast brass bolt, dozen..... 4.50

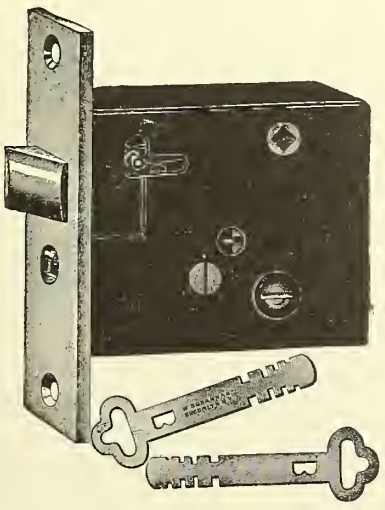


Iron case, japanned, $2\frac{3}{8}$x$3\frac{3}{4}$ inches. Front to center of hub, $1\frac{3}{8}$ inches. $\frac{5}{16}$-inch hub.

No. 110 Cast brass bolt, dozen..... $8.00

Iron Gate and Railing Latch

Reversible

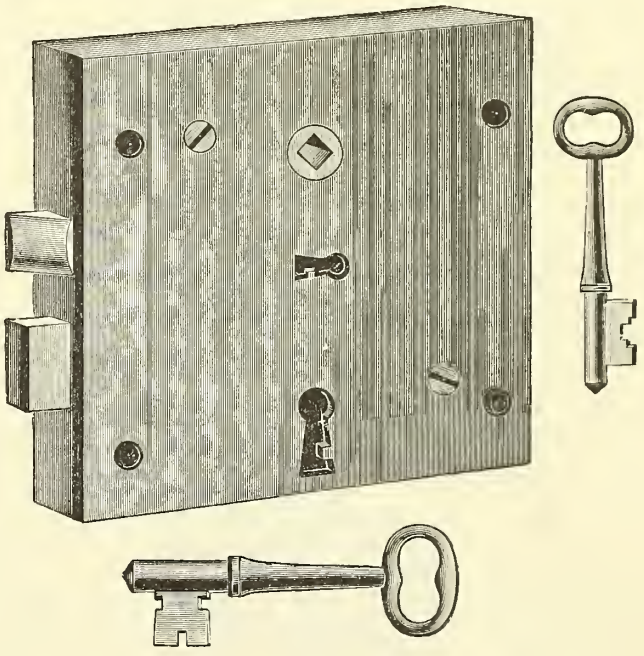


Size case, 3½x3½ inches.
Front to center of keyhole, 1½ inches.
4 tumblers, 15 changes.
Operation: Unlatched with key from outside, or knob inside. Can be deadlocked by key from inside.

No. 252 Cast brass bolt, brass, nickel-plated turn-knob, dozen $20.00

Iron Gate Locks

Reversible

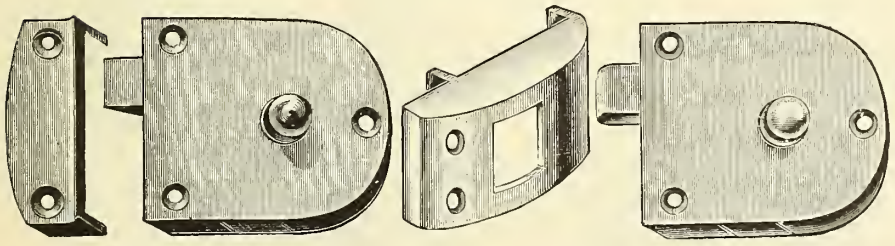


Size case, 5x5 inches.
Front to center of keyholes, 2½ inches.
4 changes on night key, 8 changes on main key.
Operation: Inside by knobs and either side by keys.
$\frac{5}{16}$-inch hub.

No. 1017½ Cast brass bolts, dozen $12.50

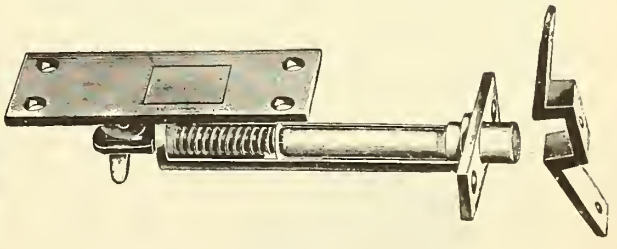
Secret Gate Latches

Reversible



Has secret spring under rim, which must be pressed in to open

Has secret spring under rim, which must be pressed in to open



No. 214

Size case, 2½x2½ inches.
For single acting doors.

No. 152 Japanned case, iron bolt, brass knob, dozen $5.00
No. 153 Cast bronze case, bronze bolt, bronze knob, dozen 10.00
No. OB153 Cast brass case, bolt and knob, old brass finish, dozen 10.00

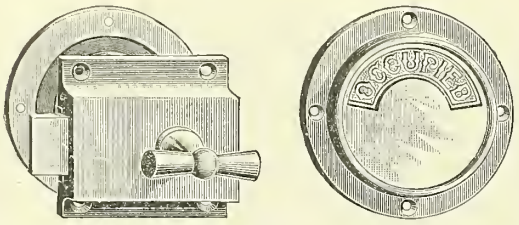
Size of case, 2½ x 2⅛ inches.
For double acting doors.

No. 156 Bronze metal throughout, dozen $12.50

Face plate, ⅝x1⅝ inches.
Trigger plate, 1⅜x3¼ inches.
For double acting doors.

No. 214 Bronze metal throughout, dozen $11.50

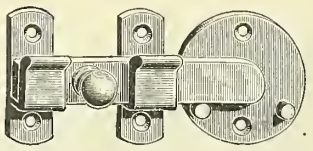
Lavatory Door Indicator Bolts



For doors 1 to 1¾ inches thick.
Size of case, 2½x2⅝ inches. Indicator, 3¼ inches.
Operated by T-handle from inside.

No. P1761–80 Cast bronze, nickel-plated, each $2.00

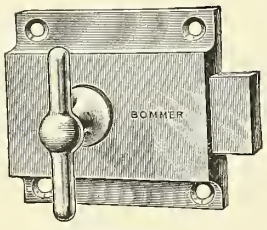
Lavatory Door Throw Latch



Length of Bar, 4 Inches

No. P1745 Cast bronze, polished, dozen ..... $ 9.00
No. P1745–80 Cast bronze, nickel-plated, dozen 10.00
No. 1745–37 Cast brass, old brass finish, dozen 10.00

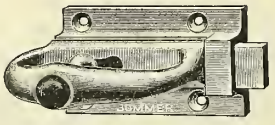
Lavatory Door Rim Bolts



No. 5009

Size of case, 2½x2⅝ inches.
Face to center of handle, 1⅝ inches.

Without Keeper, dozen $18.40
With Keeper, dozen 20.00



No. 5006

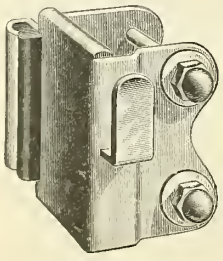
Has rubber bumper on handle. Size of bolt, 3½ inches.

Without Keeper, dozen $24.40
With Keeper, dozen 25.00

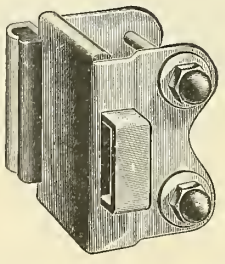
Strikes and Keepers for Lavatory Doors

The strikes have rubber bumpers. The box to clamp to the marble is adjustable. Suitable for marble or slate partitions of the following thicknesses: 1 inch, 1¼ inches, 1½ inches, 1¾ inches and 2 inches.

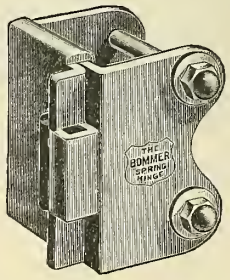
They are adjustable ⅛ inch over and under above sizes, to allow for variations from size in the thickness of the marble. Thickness of marble and door and finish desired must always be stated when ordering.



No. 1052 For throw latch, reversible, for right or left hand door opening in. Bronze, nickel-plated. Each. $1.40



No. 1055 For rim bolt, reversible, right or left hand door opening in. Bronze, nickel-plated. Each.... $1.40



No. 1056 For rim bolt or throw latch, reversible, for right or left hand door opening out. Bronze, nickel-plated. Each $1.40

Padlocks

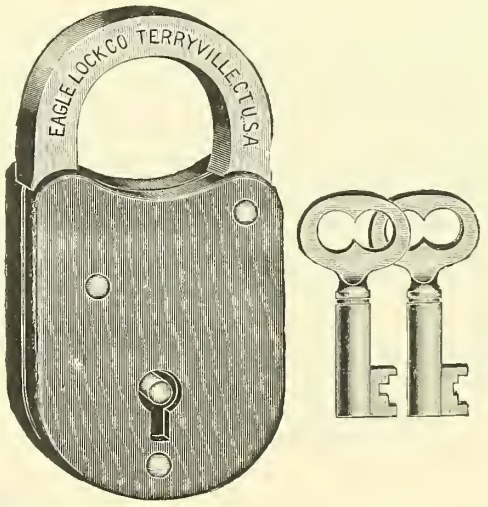
Eagle

Half Size Cuts



Brass case. Plain finish malleable iron. Spring shackle. Black nickeled. Self-locking. Two secure levers, 4 wards, 2 nickel-plated flat steel keys each. 36 changes of keys. One master key packed with each dozen locks.

No. 04233 1½ inches, per dozen..... $4.00
No. 04233 Same as above but with chain 9 inches long, dozen.. 5.00

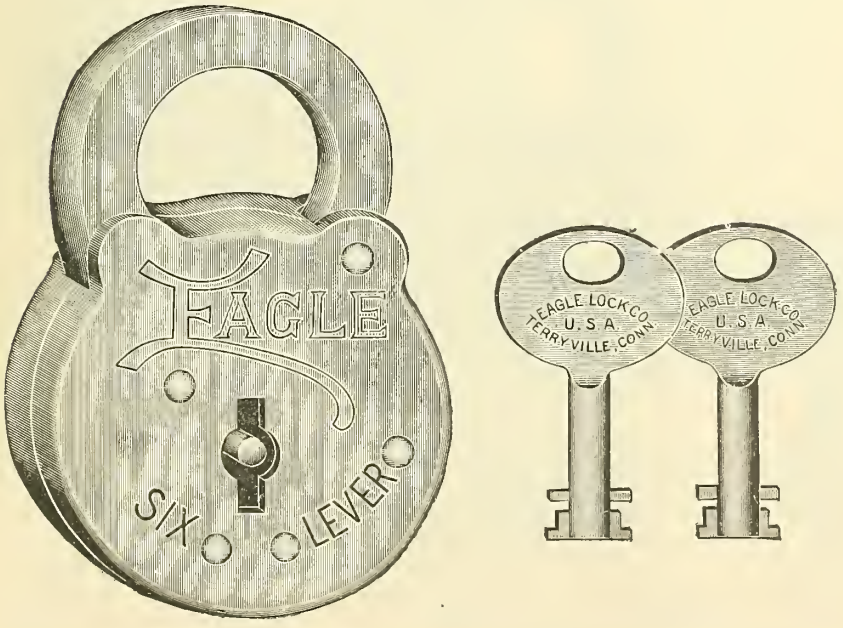


1¼ inches. Spring shackle. Self-locking. Five secure levers, Two fine flat bow keys each. All different in a dozen. 150 changes. Can be made with 720 changes of keys and 600 changes with master key. For making with more than 12 changes add 50 cents per dozen net. For making master keyed add $1 per dozen net. Master keys 25 cents each extra.

No. 4198¼ Iron, all brass-plated, per dozen..... $8.50

With Chain 9 Inches Long

No. 4198¼ Same as above but with chain, per dozen..... 10.50



1½ inches. Self-locking. Spring shackle. Six secure levers. Two double-bitted nickel-plated wrought steel keys each. All different in a dozen. 12 changes.

No. 4374¼ Iron, brass-plated, dozen..... $6.50

Self-locking. Malleable iron. Spring shackle. Six secure levers. Two double-bitted keys. All different in a dozen. 12 changes.

No. 4010G All galvanized, dozen..... $9.00

2 inches. Self-locking. Malleable iron spring shackle. Six secure levers. Two double-bitted brass-plated flat bow keys each. All different in a dozen. 12 changes.

No. 4127¼ Iron, all brass-plated, dozen.. $8.00

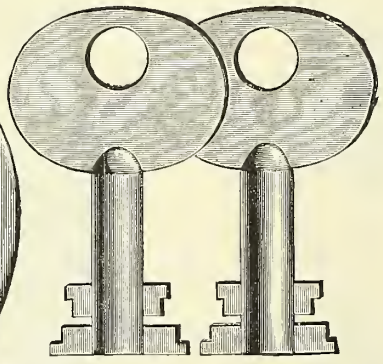
With Heavy Iron Chain 9 Inches Long

No. 4127¼C Same as above but with chain, dozen..... 10.00

Padlocks

Half Size Cuts

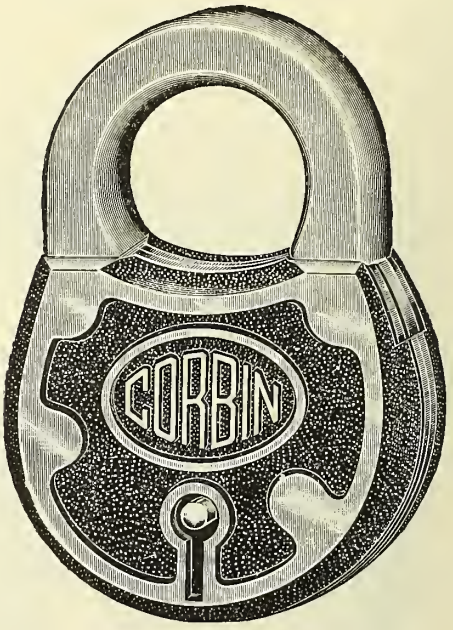


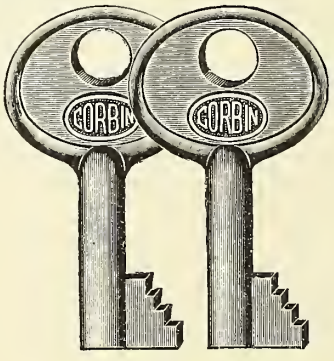


Eagle

2½ inches. Self-locking. Cast spring shackle. 8 secure levers. Two double-bitted brass-plated flat bow keys each. Made regular all different in a dozen. 12 changes. Can be made with 3,120 changes of keys and 780 changes all different to one master key, or 3,120 changes all different to four different master keys. For making with more than 12 changes add $1 per dozen net. For making master keyed add $1 per dozen net. Master keys 25 cents each extra.

No. 4133 Iron, ivory black case, brass-plated shackle, dozen..... $9.50



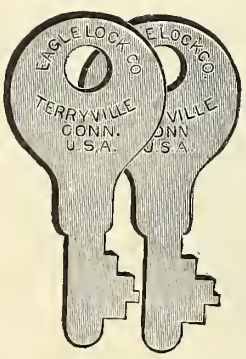


Corbin

2⅛ inches. Heavy spring shackle. Three wards. Two levers. Two nickel-plated malleable iron keys to each lock, all different in a dozen. 12 changes.

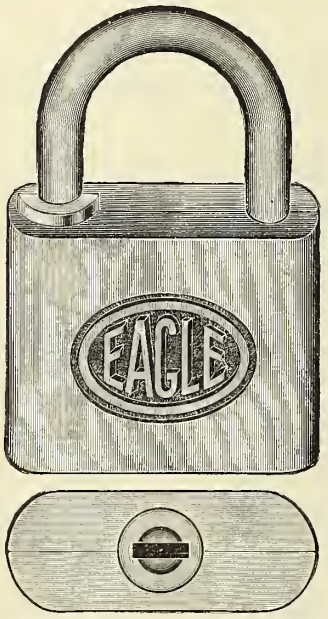
No. 02865½ Bronze case, polished, bronze shackle, dozen..... $7.80

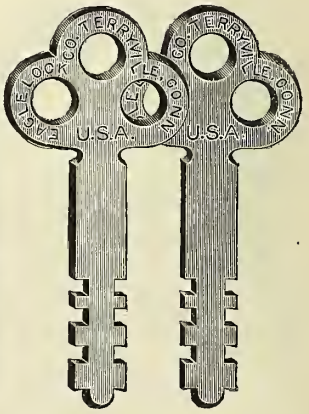




1⅞ inches. Self-locking. Spring shackle. Steel, ivory black case. Iron spring shackle, self-locking. Six changes with two steel keys.

No. 4448 Dozen..... $2.00





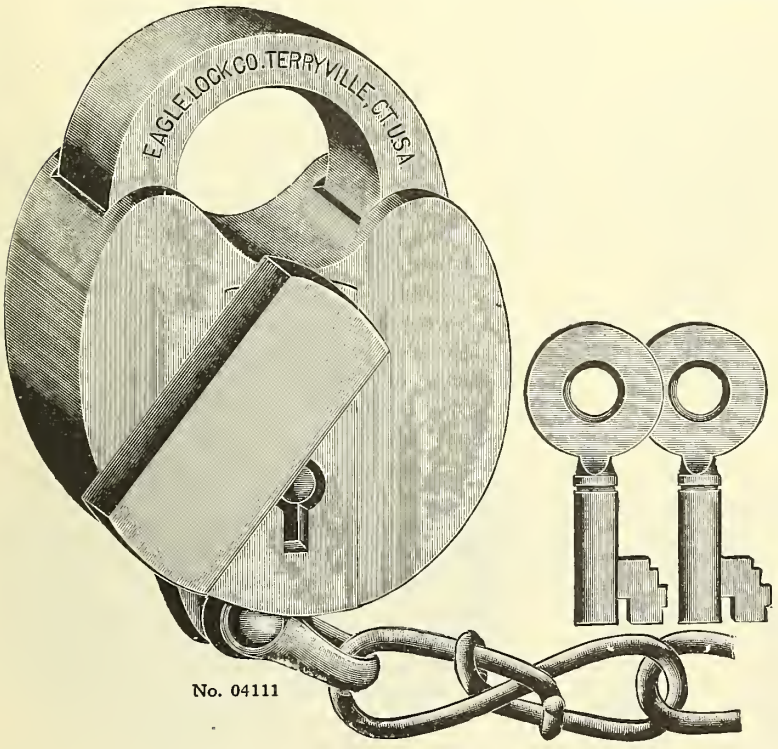
Eagle

Self-locking. Spring shackle. Cast brass case. Steel shackle. Six changes. Two flat steel keys each.

No. 04607 1⅝ inches, dozen..... $5.00
No. 04608 2⅛ inches, dozen..... 6.00

Padlocks

Full Size Cuts

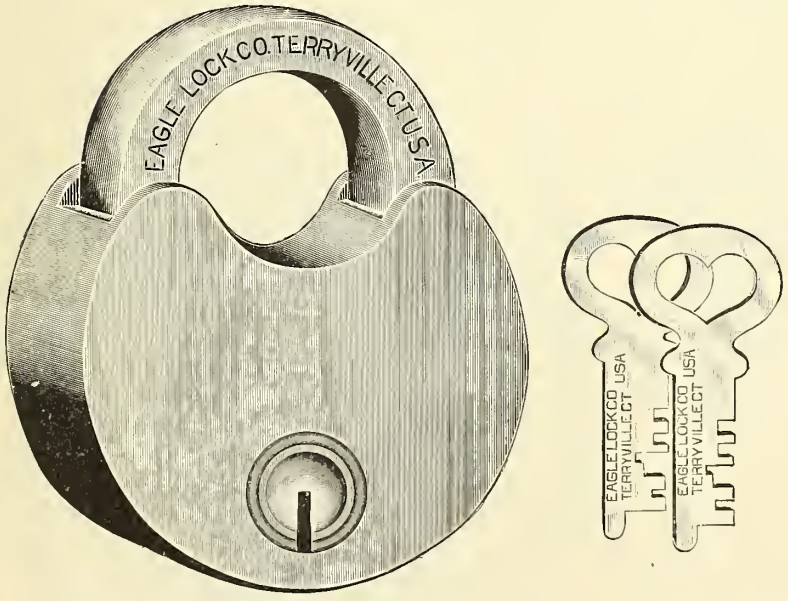


No. 04111

Eagle

2¼ inches. Self-locking. Spring shackle and drop. Secure lever and ward. Two bronze keys each. 12 changes in a dozen.

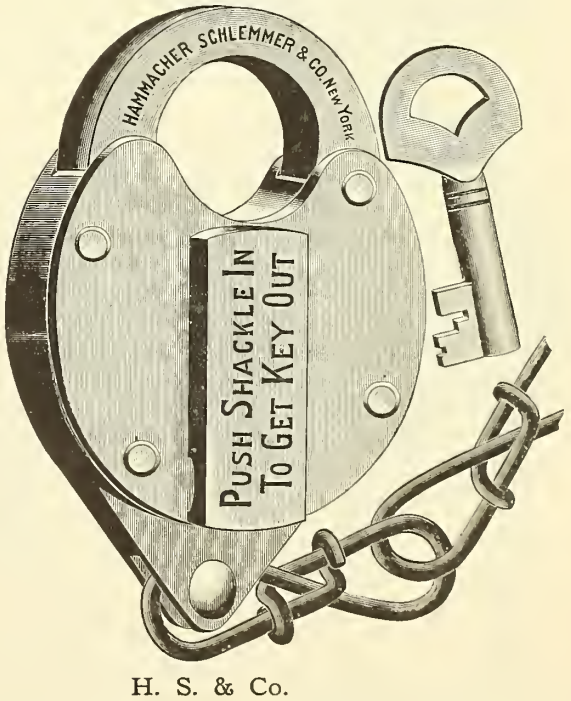
No. 04111 Cast bronze, polished finish, dozen $12.00



Eagle

Fine polished finish, all brass inside works. Self-locking. Spring shackle. Three secure levers. Two polished and nickel-plated flat steel keys each. Regularly made with 120 changes of keys. Can be made with 500 changes to master key. For making master keyed add $1 per dozen net. Master keys 25 cents each extra.

No. 04196 Cast bronze, 2¼ inches, dozen $18.00



H. S. & Co.

Key cannot be removed until it is locked, a most valuable feature for railroads, express and telegraph companies, contractors, etc. All brass inside works, heavy cast bronze metal case and bronze metal key. Regular with 12 changes; can be furnished with 120 changes. 9-inch Japanned "non-kinkable" steel chain.

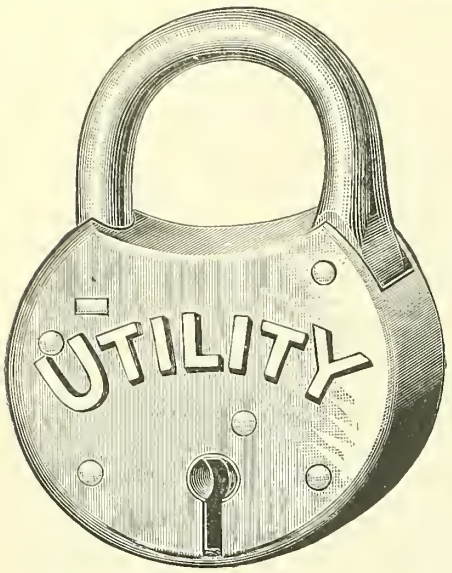
With two keys.

No. 11 Per dozen $15.00

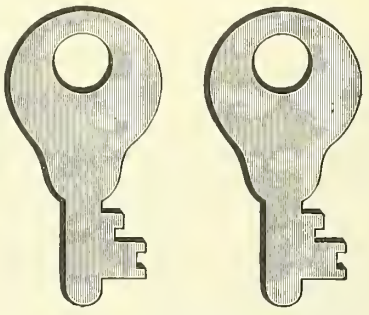
For customers using large quantities, we can reserve key changes for their exclusive use. Correspondence invited.

Padlocks

Full Size Cuts



No. 214



Two Keys to each Lock

H. S. & Co.—Utility

Iron black japanned case, brass-plated shackle. Self-locking spring shackle.

Number	161	182	193	214
Diameter, inches	1¼	1½	1¾	2
Changes	12	12	12	12
Dozen	$2.00	2.50	3.00	3.50

Brass case, brass-plated shackle. Self-locking spring shackle.

Number	1601	1802	1903	2104
Diameter, inches	1¼	1½	1¾	2
Changes	12	12	12	12
Dozen	$3.50	4.00	4.50	5.00

Above padlocks can be furnished keyed alike.

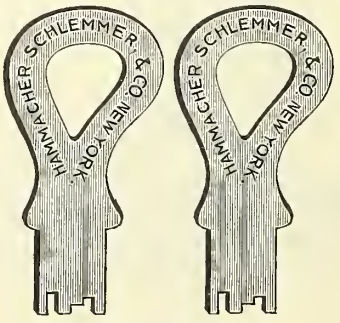
H. S. & Co.

Cast bronze case and shackle. Self-locking spring shackle. 6 levers. Practically unlimited changes.

No. 127 2¼ inches diameter, without chain, dozen $10.00

No. 127C 2¼ inches diameter, with heavy galvanized chain 9 inches long, dozen .. 12.00

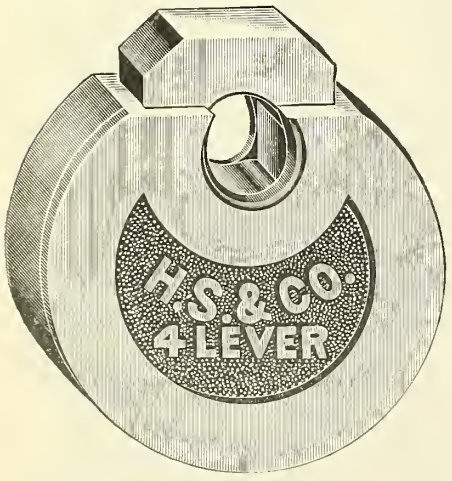
Above padlocks can be furnished keyed alike.



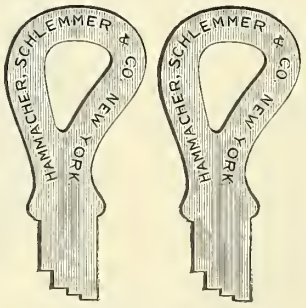
Two Keys to each Lock



No. 127



No. 131



Two Keys to each Lock

H. S. & Co.

Cast bronze case and shackle. Self-locking spring shackle. 4 levers. 120 changes.

No. 131 2 inches diameter, without chain, dozen .. $8.00

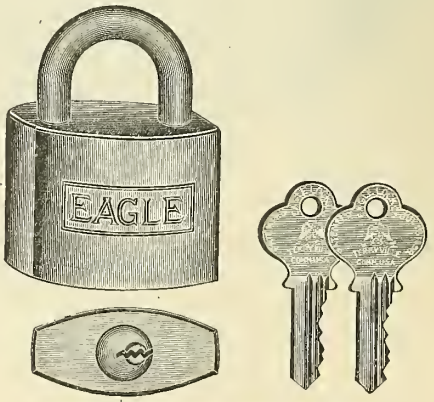
No. 131C 2 inches diameter, with brass chain, 9 inches long, dozen 10.00

Above padlocks can be furnished keyed alike.

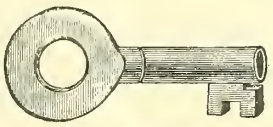
Eagle—All Brass

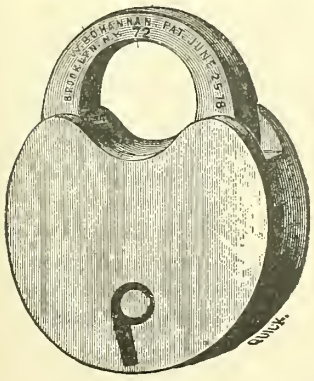
Solid extruded metal case. Self-locking spring shackle. Pin tumbler mechanism. Two embossed, gold-plated, corrugated German silver keys each. No two locks alike. Can be master keyed to an unlimited number of changes without affecting the security of the locks.

Number	Size Inches	Dozen
04279	1	$20.00
04280	1⅜	22.50
04281	1½	25.00
04282	1¾	27.50
04283	2	30.00
04285	2½	35.00



Half size Cut of No. 04283—2-inch size





No. 72

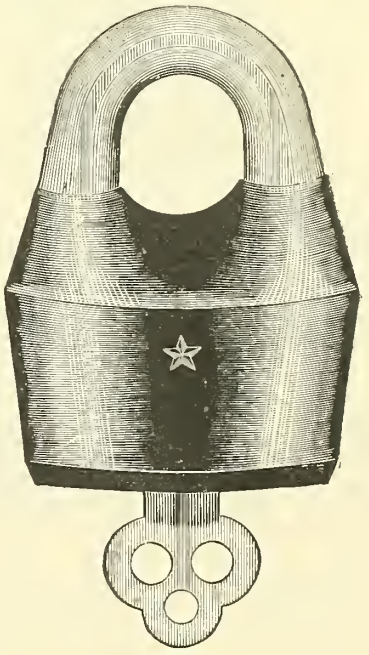
Padlocks

Bohannan

Full Size Cuts

Cast Brass Base and Shackle, Self-locking Spring Shackle

Number	A	0	1	70	71	72	73	74	80
Diameter, inches	1	¾	⅝	1⅛	1¼	1½	1¾	2	2¼
Changes	48	....	....	48	48	96	144	144	240
Per dozen	$3.80	3.55	3.45	4.30	5.00	7.25	8.25	9.50	11.25



No. 226

Scandinavian

Malleable iron, 2 flat steel keys to each lock, all different in a dozen.

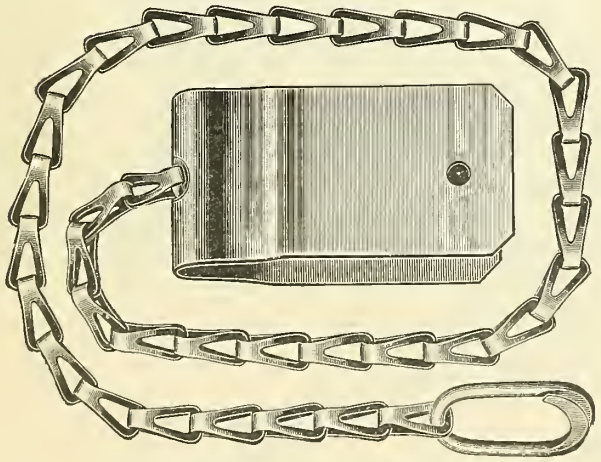
No. 226 2½ inches, dozen $10.00
No. 0226 2½ inches. Wide shackle. Dozen 11.00
No. 227 3 inches, dozen 13.00
No. 228 3½ inches, dozen 16.00

With Chain

No. 226½ 2½ inches, dozen $11.50
No. 227½ 3 inches, dozen 14.50

Mat Guard

Half Size Cut



For attaching to mats, runners, rugs, etc. The plate is riveted to the article and the eye on end of chain is fastened with padlock to a staple in the wall or on the floor.

Mat Guard, coppered iron, dozen $3.50

Phone Padlocks

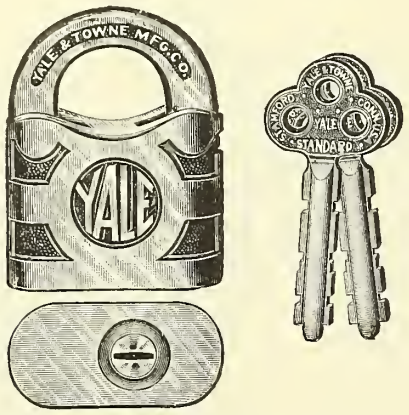
For locking the receiver to the phone. Will avoid tampering and unauthorized telephone calls. "Phone Lock." Dozen...$9.00



Padlocks

Yale

Full Size Cuts



No. 813

Master Keying: In one set not exceeding 4000 all different with a master key to pass all locks; or a somewhat less quantity may be divided into sets, with master key to pass the locks in each set and a grand master key to pass all the locks. This applies to all except No. 830, which can only be master keyed up to 350 sets.

Cast Bronze Case, Steel Shackle. Self-locking Spring Shackle

5 Pin Tumblers, Practically Unlimited Changes

Number	830	840	850	870
Size, inches	1½	1¾	2	2½
Per dozen	$28.80	35.75	43.70	65.50

Prices for master keyed locks on application

Cast Bronze Case and Shackle

Self-locking Spring Shackle

Number	813	823	833	843	853	863
Size, inches	1	1¼	1½	1¾	2	2¼
Changes	48	48	48	72	144	144
Per dozen	$20.00	22.00	25.00	28.05	31.00	38.50

With Chain 9 Inches Long

Number	813½	843½	863½
Size, inches	1	1¾	2¼
Changes	48	72	144
Per dozen	$22.40	32.25	42.70



No. 830



No. 743S

Steel Case and Shackle, Self-locking Spring Shackle

No. 743S 1½ inches, 36 changes, dozen $19.85
No. 745S 2 inches, 144 changes, dozen 21.85

No. 745S can be master keyed as follows:

In 60 sets of 6 to 14 locks each, each set having its own master key but cannot be grand master keyed. Prices on application.



No. 8434

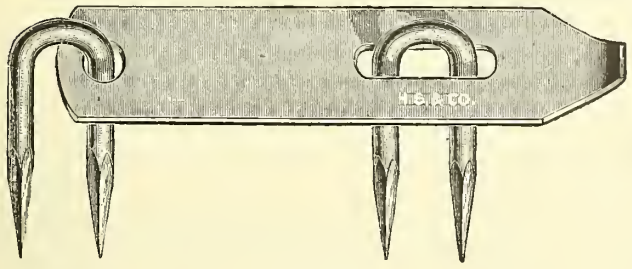
Steel Case and Shackle, Self-locking Spring Shackle

No. 8434 1½ inches, 48 changes, dozen $16.90
No. 8454 2 inches, 144 changes, dozen 20.85

With Chain 9 Inches Long

No. 8434½ Same as above, but with chain, dozen $19.90
No. 8454½ Same as above, but with chain, dozen 23.85

Wrought Steel Hasps and Staples



No. 106

No. 106

Price complete with two staples.

Length is measured over all.

4 inches, dozen	$ .84
5 inches, dozen	.90
6 inches, dozen	1.00
8 inches, dozen	1.30

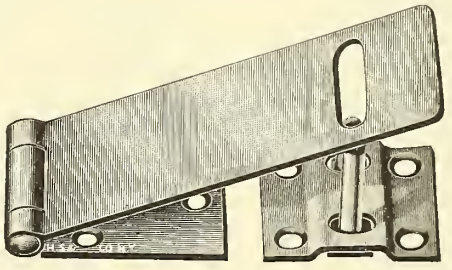
Wrought Steel Hinge Hasps



No. 912

Size, length of strap, inches	3	4½	6	8	10
Width at joint, inches	1⅛	1⅛	1½	1⅞	2 3/16
Size screw number	6	7	9	10	10
No. 912 Plain steel, dozen	$ .50	.60	.80	1.05	1.50
No. 1308 Galvanized, dozen	.75	1.00	1.35	1.80	2.70

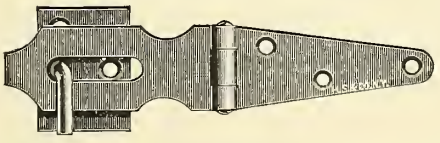
Safety



No. 915

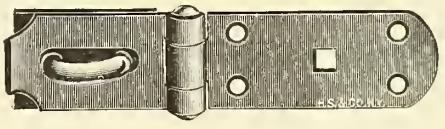
Size, length of strap, inches	3	4½	6
No. 915 Bright, without screws, dozen	$ .90	1.20	1.70
No. 1310 Galvanized, with screws, dozen	1.80	2.25	3.50

Crate



No. 920 Length of strap 3 inches, width at joint 1⅛ inches, dozen ..... $ .40

Extra Heavy

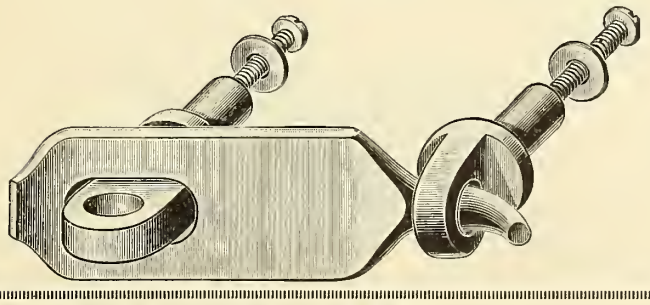


Wrought steel, extreme length 7½ inches, width 1¾ inches, thickness ⅛ inch.

No. 941J Japanned, with screws, dozen	$7.75
No. 941G Galvanized, brass pin, with screws, dozen	10.00

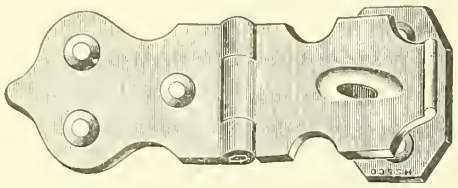
Bronze Hinge Hasps

Half Size Cut

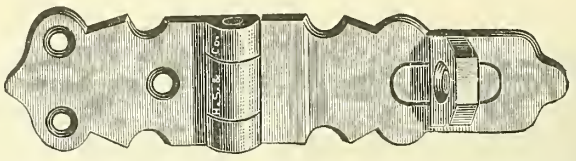


No. 870P 5⅜ inches full length. Cast bronze, polished, with machine screws, dozen $17.80

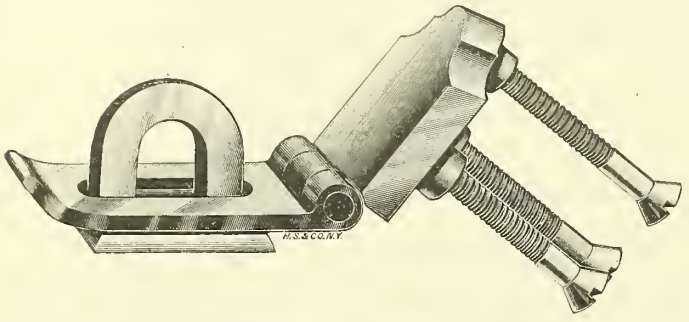
Brass and Bronze Hinge Hasps



No. 4 Cast brass, polished, 5 inches full length, stationary staple, dozen $6.00



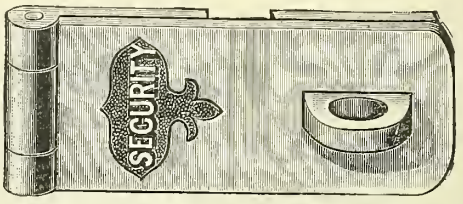
No. 2 Cast brass, polished, 5½ inches full length, swivel staple, dozen $7.30



Complete, with screws

No. P1704 Cast bronze, polished, 1¼x2¼ inches, each $1.35
No. P1704 Cast bronze, polished, 1¾x3 inches, each 1.65

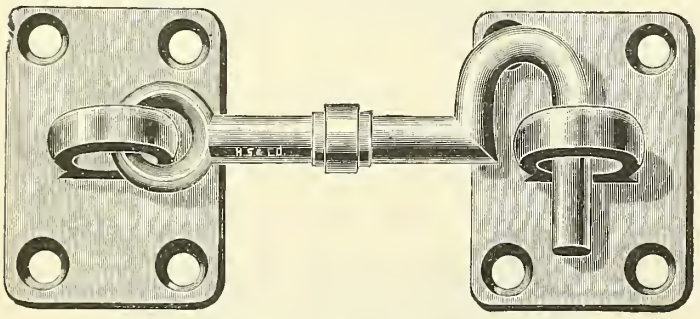
Bronze Hinge Hasps



"Security"

No. 8705 Cast brass, polished, heavy, for store doors, 4½ inches full length, dozen $13.40

Cabin Door Hooks



Cast Brass, Polished. Wrought Plates, with Screws

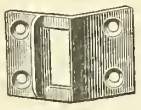
No. 762 3 inches, light, dozen $3.20
No. 773 2½ inches, heavy, dozen 4.00
No. 773 4 inches, heavy, dozen 4.80
No. 773 6 inches, heavy, dozen 7.50



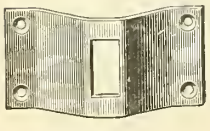
Cast Bronze, Polished. Heavy

No. 674 4 inches, with screws, dozen $9.80
No. 676 6 inches, with screws, dozen 11.90
No. 678 8 inches, with screws, dozen 14.70

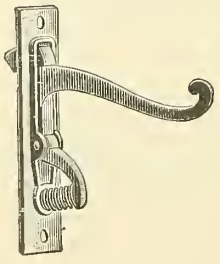
Outside Gate Latches

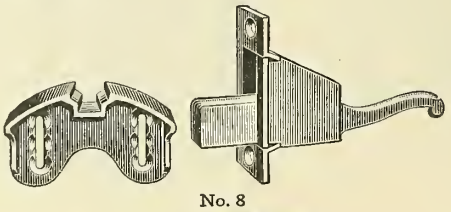


Strike for No. 1

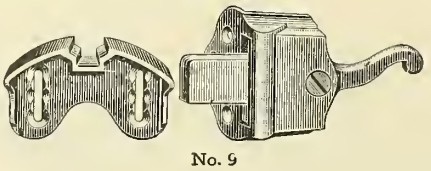


Strike for No. 3





No. 8



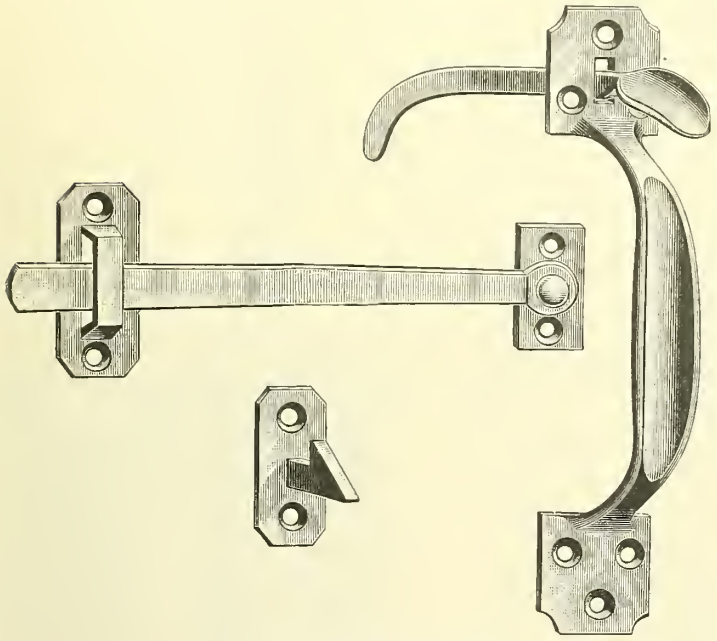
No. 9

To swing gate both ways.

No. 1 Riveted Latch; to swing one way, per dozen $1.30
No. 3 Riveted Latch; to swing both ways, per dozen 1.60

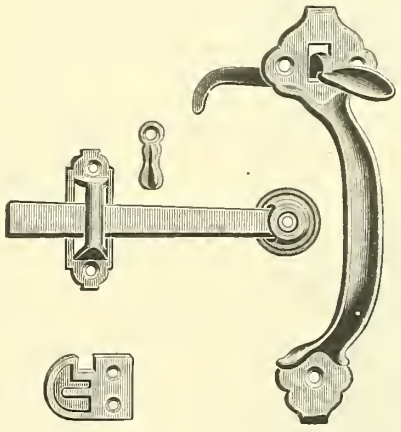
No. 8 Mortise, per dozen $1.65
No. 9 Surface, per dozen 2.00

Thumb Latches



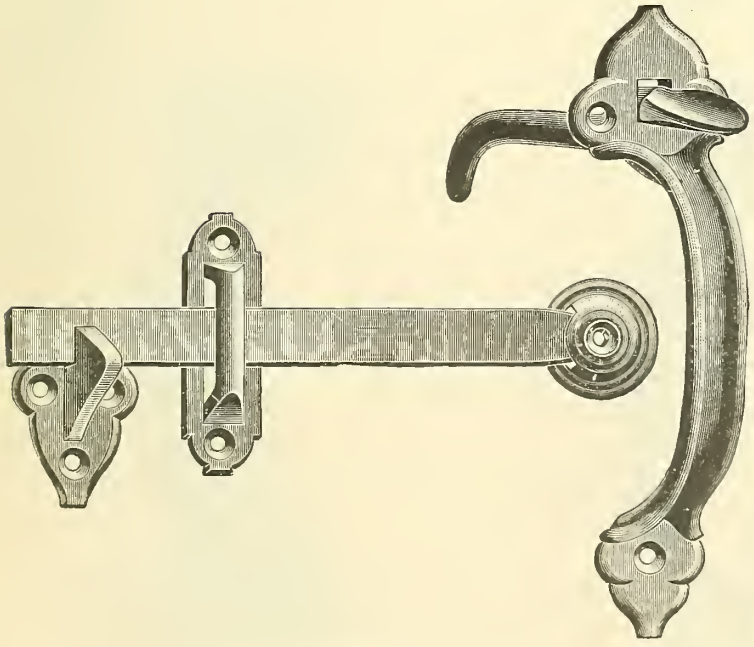
Length of handle 6½ inches

No. OB484 Cast brass, old brass finish, dozen..... $19.20



Length of handle 7⅛ inches

No. 3 Cast iron japanned handle, wrought iron japanned latch, dozen..... $1.30



Length of handle 10 inches

No. 5 Cast iron japanned handle, wrought iron latch, dozen.... $2.52

All Wrought Iron, Extra Heavy

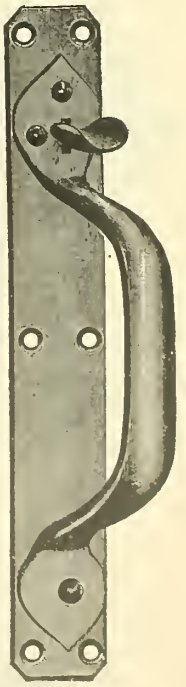
In ordering, state thickness of door, so that correct size thumb-piece can be supplied; also in ordering latches with offset handles, the hand must be specified.

No. 20

Plate, 11½x2x$\frac{3}{16}$ inches. Latch, 12½x1¼x$\frac{5}{16}$ inches

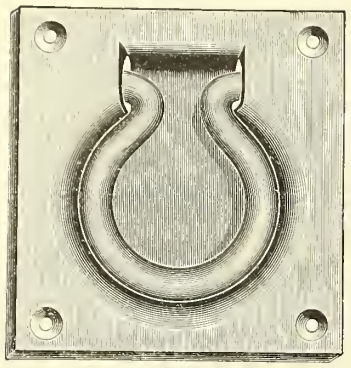
Per Dozen Sets, with Screws

Japanned	$51.00
Japanned, with offset handle	55.00
Galvanized	57.00
Galvanized, with offset handle	63.00





Flush Trap Door Rings

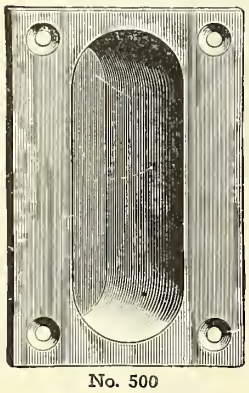


Wrought steel. Size of plate 3⅜ x 3⅝ inches.

No. 2001 Japanned, dozen..... $1.85

No. YT2001 Bronze plated, bright finish, unpolished, with screws, dozen..... 2.50

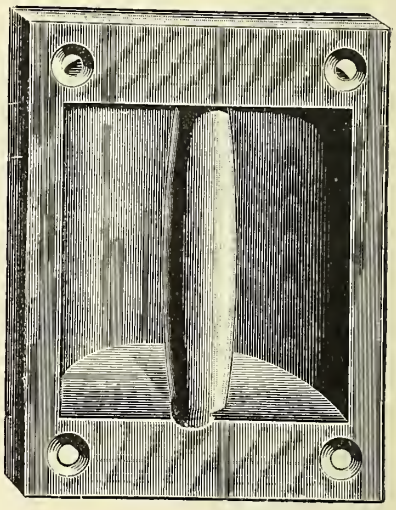
Flush Barn Door Pulls



No. 500

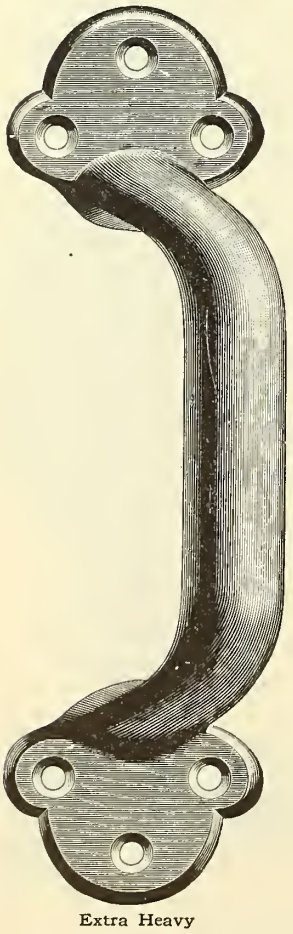
No. 500 2½ x 3¾ inches, cast iron, japanned, dozen... $ .80

No. 1400 3½ x 4⅝ inches, cast iron, japanned, dozen.. 5.00



No. 1400

Door Pulls



Extra Heavy

No. 1417 Length 9½ inches, cast iron, japanned, dozen.... $3.60



No. 502 Length 6 inches, cast iron, japanned, dozen..... $ .50



Heavy

No. 504 Length 6⅛ inches, cast iron, japanned, dozen..... $ .90

No. 505 Length 6⅛ inches, cast iron, galvanized, dozen..... 1.60

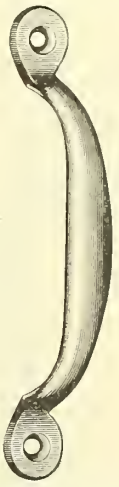
Door Pulls



No. 550 Length 3½ inches, cast bronze, polished, dozen..... $1.80



No. 1137 Length 3½ inches, cast bronze, polished, dozen..... $2.25
No. OB1137 Length 3½ inches, cast brass, old brass finish, dozen.... 2.25



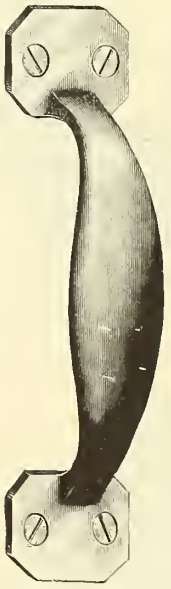
No. 2145½ Length 5 inches, wrought steel, bronze plated, gross..... $5.60
No. AC2145½ Length 5 inches, wrought steel, antique copper finish, gross..... 5.60
No. OB2145 Length 5 inches, wrought brass, old brass finish, gross..... 9.10



No. 1 Length 4¾ inches, cast brass, polished, dozen..... $ .83
No. P1144 Length 4¾ inches, cast bronze, polished, dozen..... 1.80
No. P1145 Length 6 inches, cast bronze, polished, dozen..... 2.80



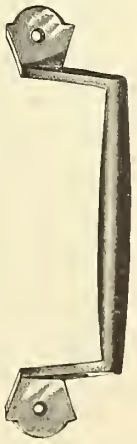
No. 2 Length 6 inches, cast brass, polished, dozen..... $2.70
No. 3 Length 6½ inches, cast brass, polished, dozen..... 3.30



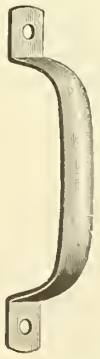
No. 510 Length 5⅞ inches, cast bronze, polished, dozen..... $8.35
No. BY65-510 Length 5⅞ inches, cast bronze, statuary bronze finish, dozen..... 9.35



No. 12250 Length 4¼ inches, cast bronze, polished, dozen..... $2.60
No. N12250 Length 4¼ inches, cast bronze, nickel-plated, dozen..... 2.60
No. 5 Length 5¾ inches, cast brass, polished, dozen..... 4.80
No. P01155 Length 5¾ inches, cast bronze, polished, dozen..... 5.60
No. OB01155 Length 5¾ inches, cast brass, old brass finish, dozen. 5.60

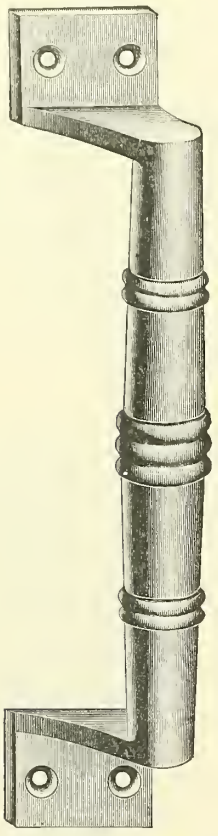


No. 6075½ Length 4½ inches, cast bronze, polished, dozen..... $3.00

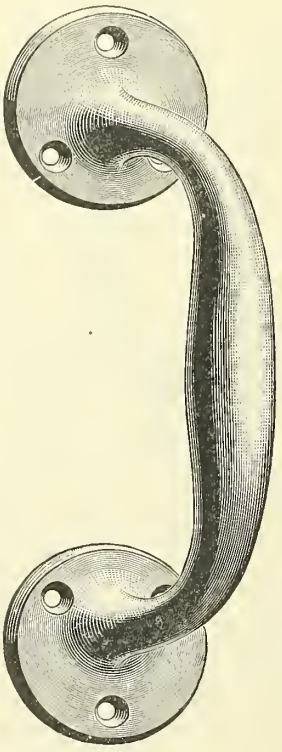


No. DA2400 Length 3⅝ inches, wrought steel, antique copper finish, gross..... $4.80
No. 2700 Length 3⅝ inches, wrought brass, natural color, gross..... 7.30

Door Pulls

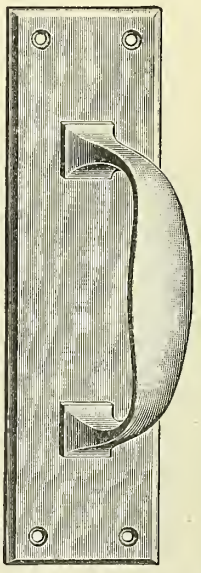


No. P1160 Length 8¼ inches, cast bronze, polished, dozen..... $17.50



No. 1535 Length 7½ inches, cast bronze, polished, dozen..... $15.40

No. OB1535 Length 7½ inches, cast brass, old brass finish, dozen..... 16.90



No. 2209 2½ x 9 inches; plate, wrought bronze, polished; grip, cast bronze, polished, dozen..... $22.41



No. 298

Plate 2¾ x 10 inches, with 5½ inch grip

No. 8362 Cast bronze grip, wrought bronze plate, polished, dozen..... $18.05

No. 8362-2 Cast bronze grip, wrought bronze plate, statuary bronze finish, dozen..... 20.45

No. 8362-K Cast brass grip, wrought brass plate, old brass finish, dozen..... 20.45

No. 8362-O Cast bronze grip, wrought bronze plate, antique copper finish, dozen..... 20.45

Plate 3 x 12 inches with 5¾ inch grip

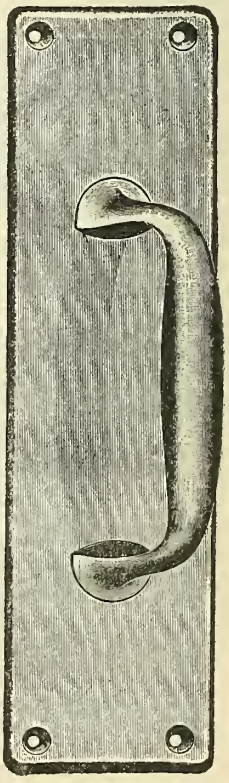
No. 298 Grip and plate, cast bronze, polished, dozen..... 50.40

Plate 3 x 12 inches, with 7⅛ inch grip

No. 8363 Cast bronze grip, wrought bronze plate, polished, dozen..... 30.40

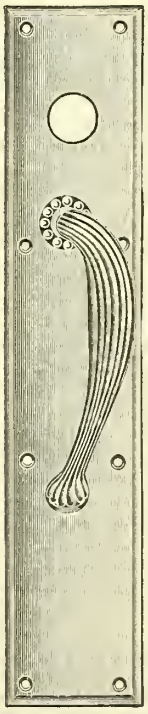
No. 8363-2 Cast bronze grip, wrought bronze plate, statuary bronze finish, dozen..... 33.60

No. 8363K Cast brass grip, wrought brass plate, old brass finish, dozen..... 33.60

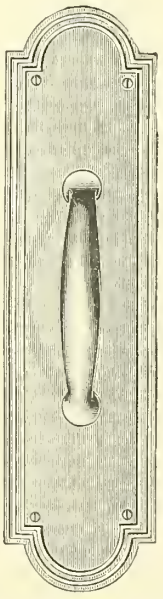


Nos. 8362 and 8363

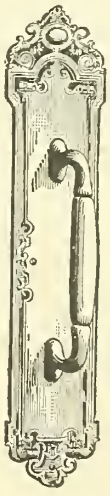
Door Pulls



No. 735PX2S30P 3½ x 18 inches; wrought bronze plate, polished; cast bronze grip, polished; with hole cut for cylinder, each..... $6.40
With dummy cylinder, each..... 7.20

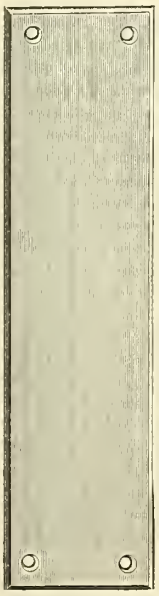


No. KA97486 3¼ x 16½ inches, cast brass plate and grip, old brass finish, each..... $6.93



No. A3B1892AD 3⅜ x 15 inches, cast bronze plate and grip, statuary bronze finish, each..... $6.40

Push Plates



No. 2325½ 3½ x 18 inches, wrought bronze, polished plate, each..... $2.08
With hole for cylinder, add..... .60
With dummy cylinder, add..... .90



No. KA97490 3¼ x 16½ inches, cast brass plate, old brass finish, each. $4.98

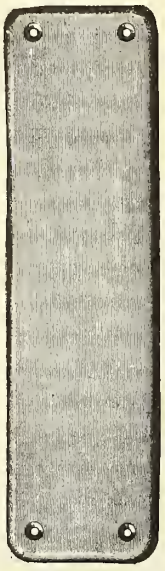


No. A3B892AD 3⅜ x 15 inches, cast bronze plate, statuary bronze finish, each..... $4.80

Push Plates



No. 3 3 x 12 inches, cast bronze, polished, dozen $24.00

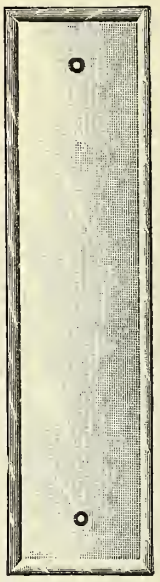


2¾ x 10 Inches

No. Y392 M.R. Steel, bronze plated, dozen $3.70
No. A.B.392 Steel, antique copper finish, dozen 3.85
No. 4000¾ Wrought bronze, polished, dozen 6.00
No. 4000¾K Wrought brass, old brass finish, dozen 7.20
No. 4000¾-2 Wrought bronze, statuary bronze finish, dozen 7.20
No. 4000¾O Wrought bronze, antique copper finish, dozen 7.20

3 x 12 Inches

No. 4001¾ Wrought bronze, polished, dozen 8.40
No. 4001¾K Wrought brass, old brass finish, dozen 9.60
No. 4001¾-2 Wrought bronze, statuary bronze finish, dozen 9.60



Polished Clear Glass

No. 14 3 x 12 inches, dozen $8.00
No. 15 3½ x 18 inches, dozen 15.00

Polished White Porcelain

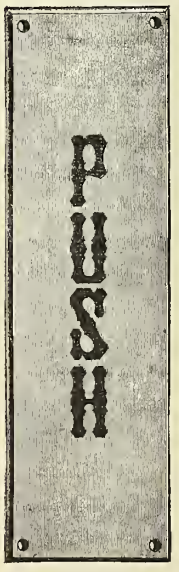
No. 16 3 x 12 inches, dozen 12.00



No. 2333 3 x 12 inches, cast bronze, polished, dozen $27.00

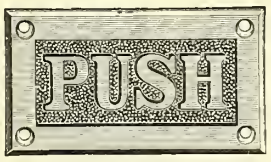


No. 1 2½ x 8 inches, wrought bronze, polished, dozen $5.76

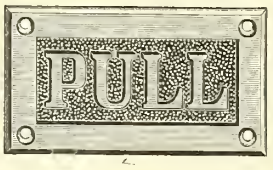


No. 841 Push, 2½ x 10½ inches.
No. 851 Pull, 2½ x 10½ inches.
wrought bronze, polished, dozen $20.20

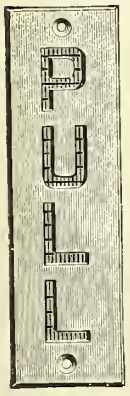
Push Plates

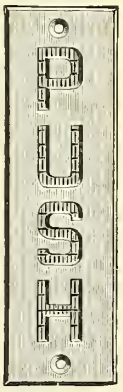


No. 9341 2¼ x 4 inches, cast bronze, polished, each..... $ .70



No. 9341½ 2¼ x 4 inches, cast bronze, polished, each..... $ .70





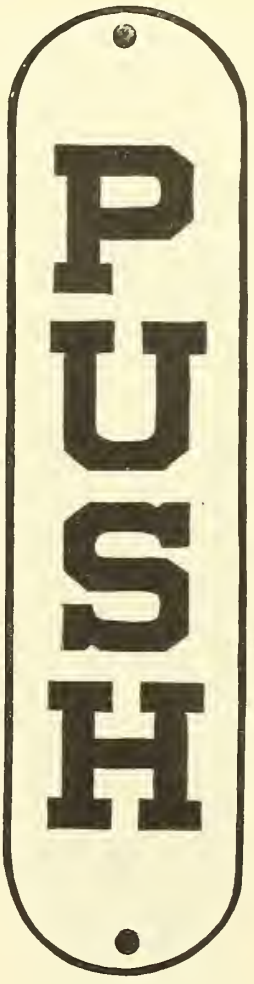
No. 846 Push, 1¼ x 4 inches.
No. 856 Pull, 1¼ x 4 inches.
Cast bronze, polished, dozen.....$5.00

2⅛ x 7 Inches

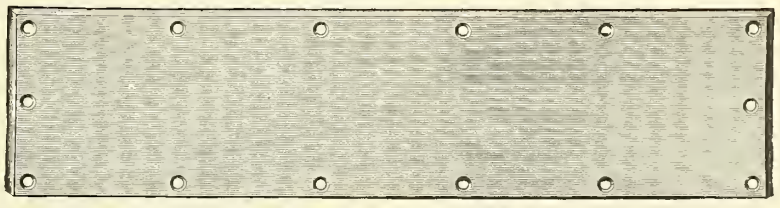
No. 11 Push, iron, enameled white, blue letters.
No. 11½ Pull, iron, enameled white, blue letters.
Dozen..... $6.40

2½ x 10 Inches

No. 12 Push, iron, enameled white, blue letters.
No. 12½ Pull, iron, enameled white, blue letters.
Dozen..... $8.00



Kick Plates



Made of polished bronze sheet metal. Top edge and two side edges beveled.
Thickness, 14 gauge, B. & S. Price each, including Oval Head Screws:

Length, inches.....	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Width 6 inches.....	$2.16	2.40	2.64	2.88	3.12	3.36	3.60	3.84	4.08	4.32	4.56	4.80	5.04	5.28	5.52	5.76
Width 7 inches.....	2.52	2.80	3.08	3.36	3.64	3.92	4.20	4.48	4.76	5.04	5.32	5.60	5.88	6.16	6.44	6.72
Width 8 inches.....	2.88	3.20	3.52	3.84	4.16	4.48	4.80	5.12	5.44	5.76	6.08	6.40	6.72	7.04	7.36	7.68
Width 9 inches.....	3.24	3.60	3.96	4.32	4.68	5.04	5.40	5.76	6.12	6.48	6.84	7.20	7.56	7.92	8.28	8.64
Width 10 inches....	3.60	4.00	4.40	4.80	5.20	5.60	6.00	6.40	6.80	7.20	7.60	8.00	8.40	8.80	9.20	9.60
Width 11 inches....	3.96	4.40	4.84	5.28	5.72	6.16	6.60	7.04	7.48	7.92	8.36	8.80	9.24	9.68	10.12	10.56
Width 12 inches....	4.32	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16	8.64	9.12	9.60	10.08	10.56	11.04	11.52
Width 14 inches....	5.44	6.04	6.65	7.25	7.86	8.46	9.07	9.67	10.28	10.88	11.49	12.09	12.70	13.30	13.91	14.51
Width 16 inches....	6.68	7.42	8.16	8.90	9.64	10.38	11.13	11.87	12.61	13.35	14.10	14.84	15.58	16.32	17.07	17.81
Width 18 inches....	8.03	8.92	9.82	10.71	11.60	12.49	13.39	14.28	15.17	16.07	16.96	17.85	18.74	19.64	20.53	21.42

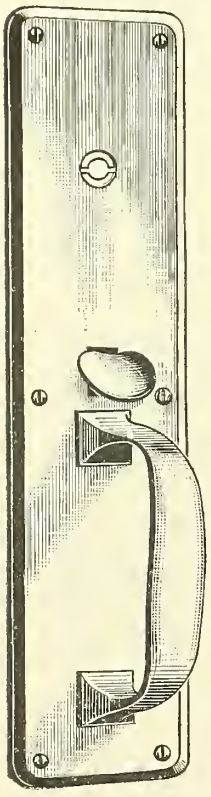
Intermediate sizes not listed take price of next larger size.

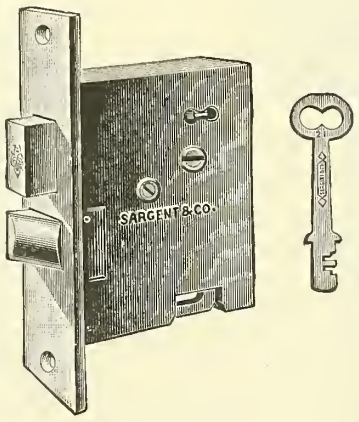
List for Other Finishes

For polished brass deduct 10 per cent from list prices.
For dull brass, antique copper, antique brass, statuary bronze, or nickel finish, add 25 per cent. to list prices.
For sand blast finish in antique copper or antique brass or dead black add 33⅓ per cent. to list prices.
For verde antique finish add 40 per cent to list prices.
Genuine Bower-Barff finish on steel, same price as polished bronze.
We carry in stock 8 x 28, 8 x 30 and 8 x 32 inches, polished bronze. Other sizes and finishes to order.

Store Door Lock Sets

Third Size Cuts





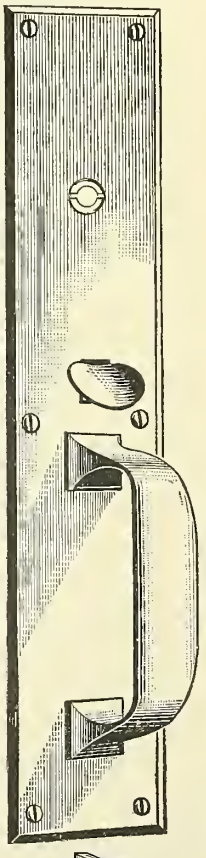
Lock No. AB403, reversible.

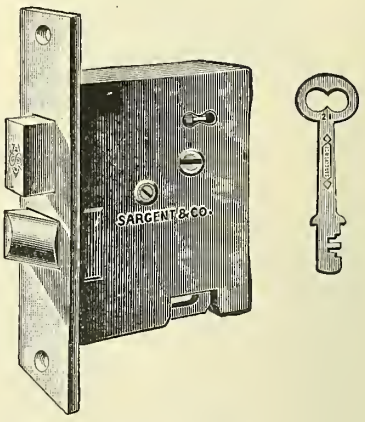
Japanned case, 4¼ x 3 x ¾ inches; backset, face to key hole, 2 3/16 inches; front, 1⅛ x 6⅜ inches; 4 tumblers, 48 changes.

Plate 3 x 12 inches.

Set No. Y7403SB Wrought steel, bronze plated, with Lock No. 403, cast iron face bronze plated, set $4.30

Set No. AB7403SB Wrought steel, bronze plated, with Lock No. AB403, cast iron face, antique copper, set..... 4.60



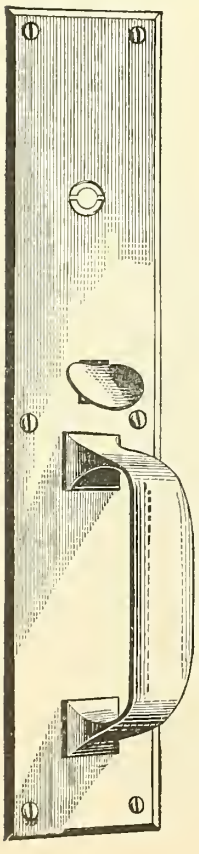


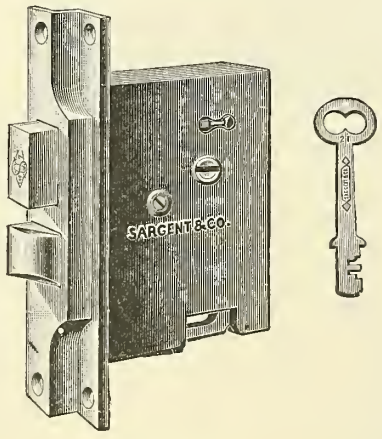
Lock No. 803P, reversible.

Japanned case, 4¼ x 3 x ¾ inches; backset, face to key hole, 2 3/16 inches; front, 1⅛ x 6⅜ inches; 4 tumblers, 48 changes.

Plate 2¾ x 14 inches.

Set No. 6803P Wrought bronze, polished, with Lock No. 803P, cast bronze, polished face, set..... $8.50



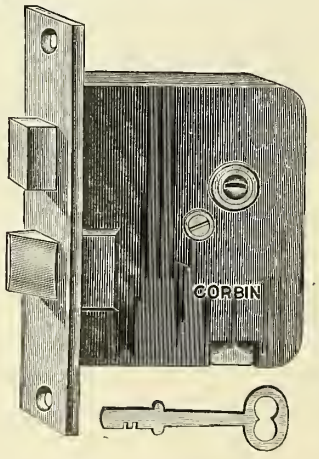


Lock No. 809P, not reversible, state hand desired.

Japanned case, 4¼ x 3 x ¾ inches; backset, face to key hole, 1 11/16 and 2 3/16 inches; front, 1¼ x 6½ inches; 4 tumblers, 48 changes.

Plate 2¾ x 14 inches.

Set No. 6809P Wrought bronze, polished, with Lock No. 809P, cast bronze, polished face, set..... $10.30



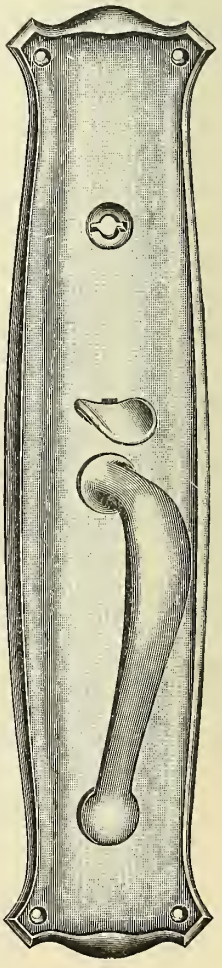
Lock No. 0186½, reversible.

Japanned case, 4½ x 3¾ x 11/16 inches; backset, face to keyhole, 2¾ inches; front, 1 x 6½ inches; 4 tumblers, 36 changes.

Plate 3¼ x 15 inches.

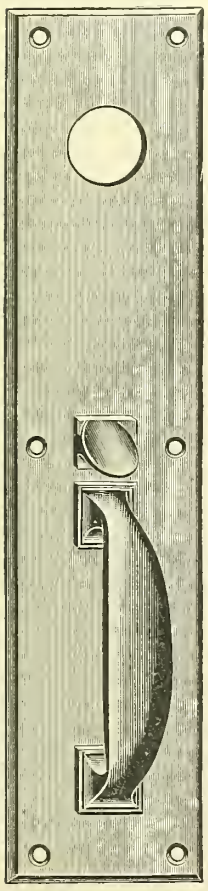
Set No. 721–952 Wrought bronze, polished, with Lock No. 0186½, cast bronze, polished face, set.... $ 9.75

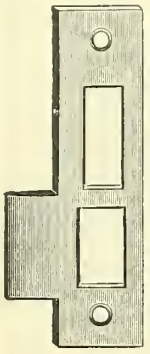
Set No. DA721–952 Wrought brass, old brass finish, with Lock No. DA0186½, cast brass, old brass finish face, set..... 10.50



Store Door Lock Sets

One-third Size Cuts



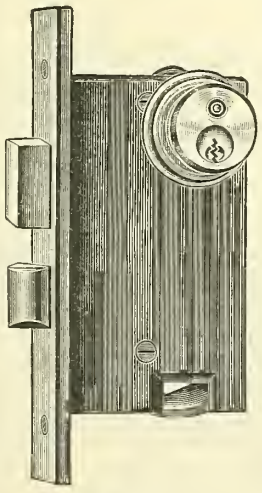


Lock No. 3551, reversible.

Japanned case, 5⅛ x 3 x 1 inches; back-set, 2¼ inches; front, 1⅜ x 7⅜ inches; 5 pin tumblers; changes practically unlimited.

Plate 3 x 13½ inches.

Set No. 3551 Cast bronze, polished, with Lock No. 3551, cast bronze, polished face, set..... $12.00





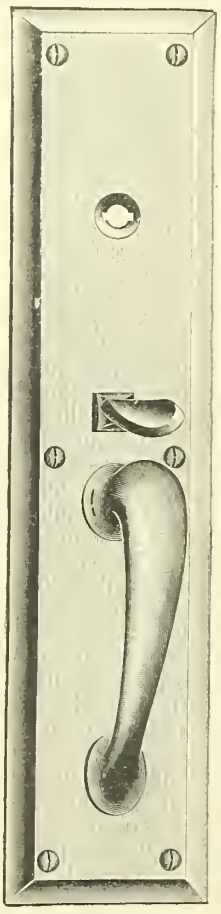


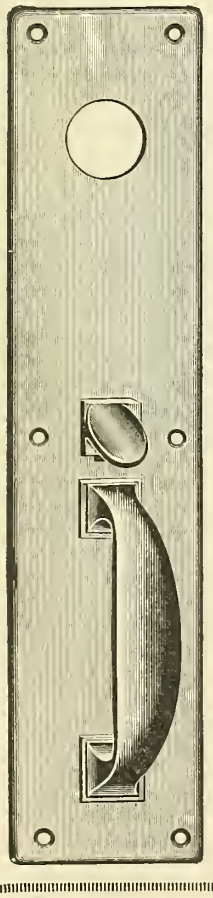
Lock No. 453, reversible.

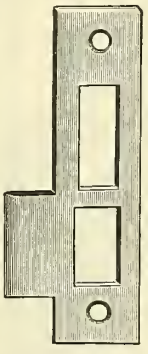
Japanned case, 4½ x 3¼ x 11/16 inches; backset, 2⅜ inches; front, 6⅞ x 1 3/16 inches; 3 tumblers; 24 changes.

Plate 3¼ x 14 inches.

Set No. 8152 Wrought bronze, polished, with Lock No. 453, cast bronze, polished face, set..... $6.50





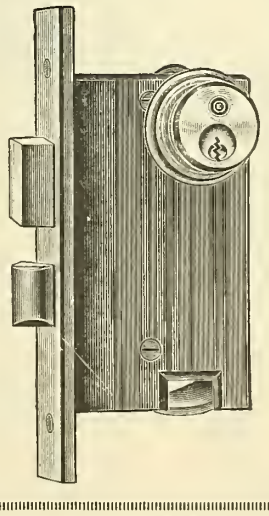


Lock No. 3552, reversible.

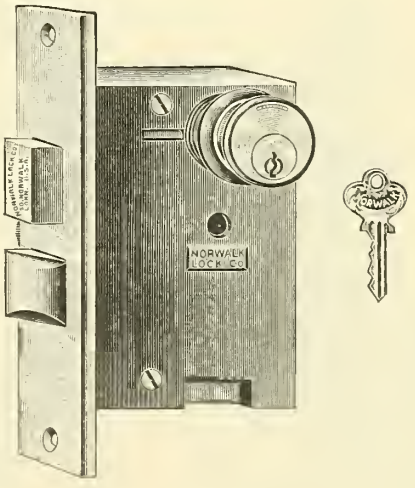
Japanned case, 5⅛ x 3 x 1 inches; back-set, 2¼ inches; front, 1⅜ x 7⅜ inches; 5 pin tumblers; changes practically unlimited.

Plate 3 x 13½ inches.

Set No. 3552 Wrought bronze, polished, with Lock No. 3552, cast bronze, polished face, set..... $10.66





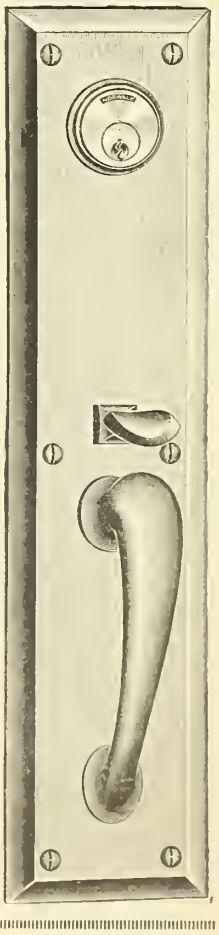


Lock No. 700⅛, reversible.

Japanned case, 5 x 4 x 1 1/16 inches; backset, 2¾ inches; front, 1 3/16 x 7⅜ inches; 5 pin tumblers; changes practically unlimited.

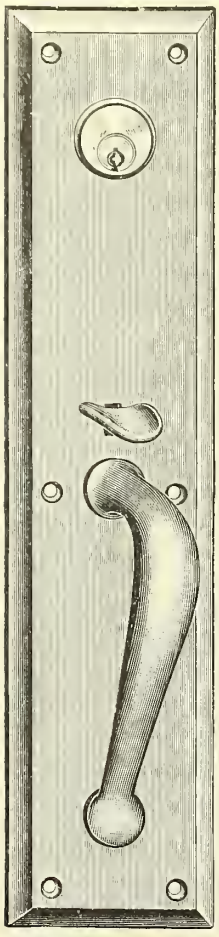
Plate 3½ x 16 inches.

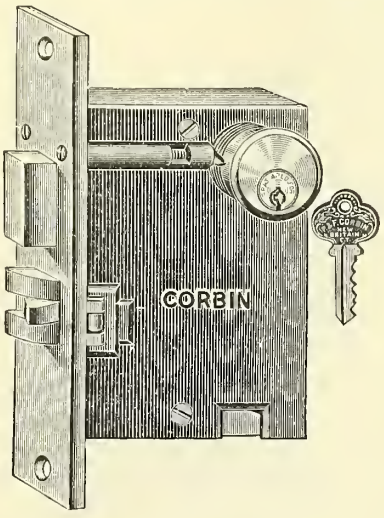
Set No. 8140 Cast bronze, polished, with Lock No. 700⅛, cast bronze, polished face, set..... $14.55



Store Door Lock Sets

One-third Size Cuts



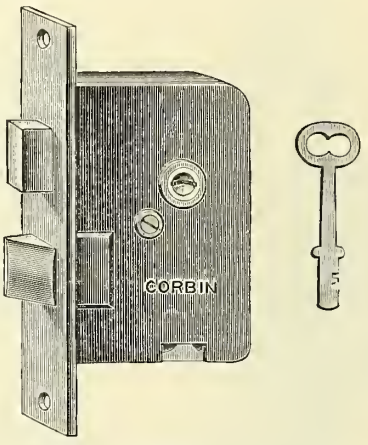


Lock No. DA0288, reversible.

Japanned case 5 x 3¾ x 1 inches; backset 2¾ inches; front 1 5/16 x 7⅜ inches; 5 pin tumblers; changes practically unlimited.

Plate 3⅛ x 14⅛ inches.

Set No. DA720–991 Wrought brass, old brass finish, with Lock No. DA0288, cast brass, old brass finish face, set..... $17.25

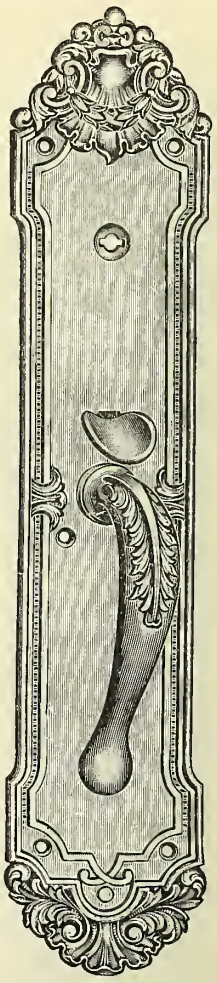


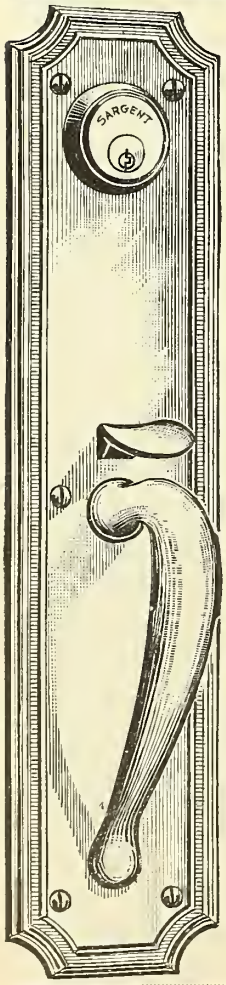
Lock No. R0386¼, reversible.

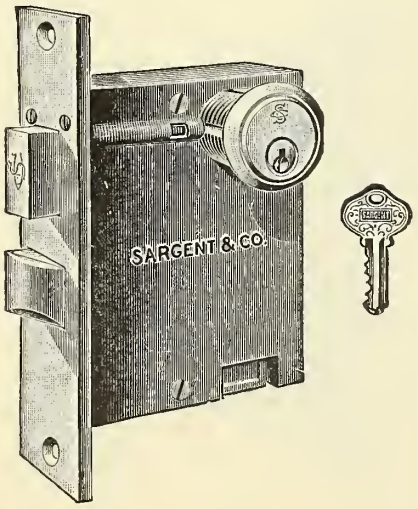
Japanned case 4½ x 3 x 11/16 inches; backset 2 inches; front 1 x 6½ inches; 4 tumblers; 36 changes.

Plate 3 x 15½ inches.

Set No. R652922 Cast iron, antique copper finish, with Lock No. R0386-¼, cast iron, antique copper finish face, set..... $ 5.25





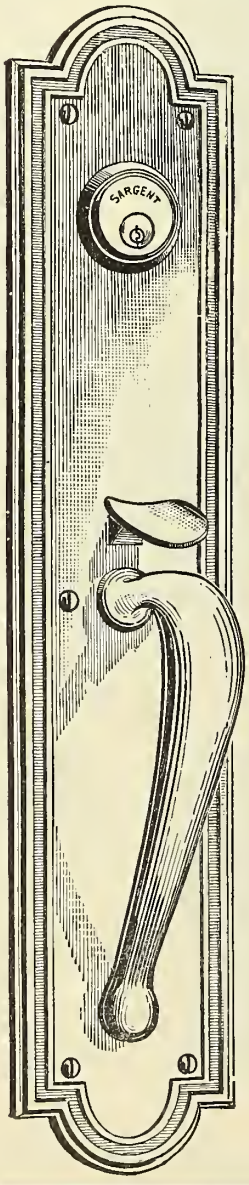


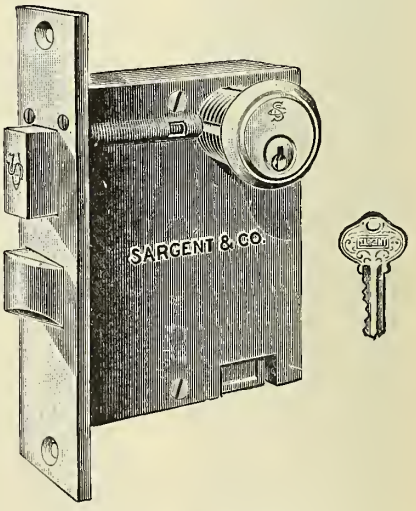
Lock No. 933P, reversible.

Japanned case 5¼ x 3⅝ x 1 1/16 inches; backset 2¾ inches; front 1⅜ x 7½ inches; 5 pin tumblers; changes practically unlimited.

Plate 3½ x 15 inches.

Set No. R7D7933SE Antique brass, depressed surface oxidized black, and relieved with edges of escutcheons buffed to show bright brass, set.... $22.80





Lock No. 933P, reversible.

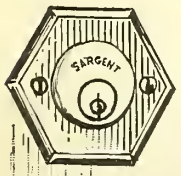
Japanned case 5¼ x 3⅝ x 1 1/16 inches; backset 2¾ inches; front 1⅜ x 7½ inches; 5 pin tumblers; changes practically unlimited.

Plate 3½ x 18 inches.

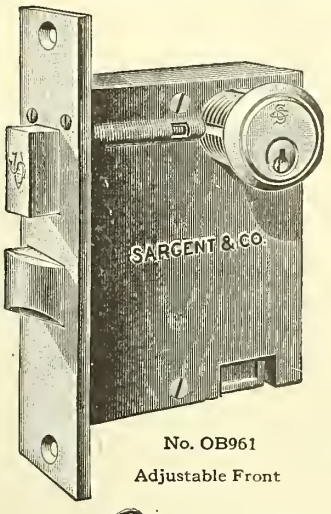
Set No. R7D9933BA Antique brass, depressed surface oxidized black, and relieved with edges of escutcheons buffed to show bright brass, set $22.80

Dutch Door Lock Sets

One-third Size Cuts





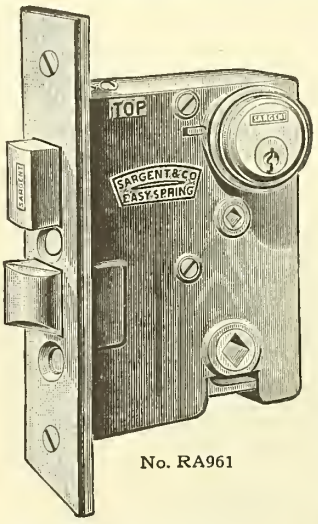


No. OB961

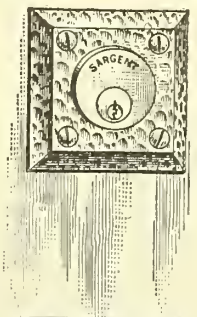
Adjustable Front

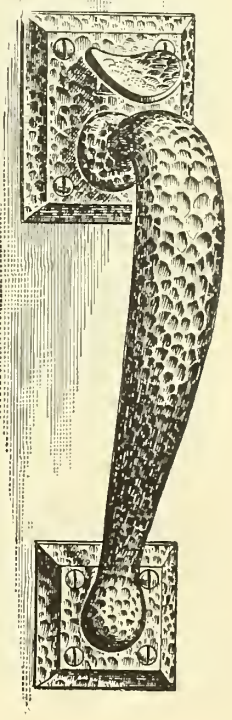


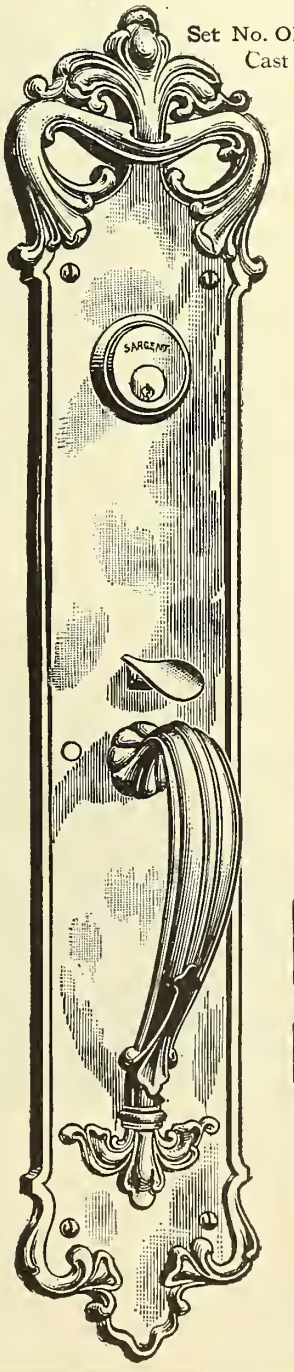




No. RA961







Set No. OB2961xOB1622½ Model F. Cast brass, old brass finish, with Lock No. OB961, cast brass, old brass finish face, set. $19.00

Set No. RA4361xRA 1622½ Model F. Cast bronze, statuary bronze finish, set.....$20.00

These locks permit the use of a handle on the outside of the front or vestibule door, while the inside is trimmed with a knob and rose.

Both bolts are operated from the outside by the key. Dead bolt is operated from inside of thumb knob. Latch bolt is operated from outside by the store door handle thumb piece; from inside by knob. The outside thumb piece of the store door handle is set by the stop in face of lock.

Reversible.

Japanned case, 5½ x 4 x ⅞ inches; backset, 2¾ inches; front, 1¼ x 7¾ inches; 5 pin tumblers; changes practically unlimited.

No. OB2961 x OB1622½, Handle size over all including cylinder, 2¾ x 14½ inches. Knob, 2¼ inches.

No. RA4361 x RA1622½, Handle size over all including cylinder, 2¾ x 14½ inches. Knob, 2¼ inches.

Store Door Lock Sets

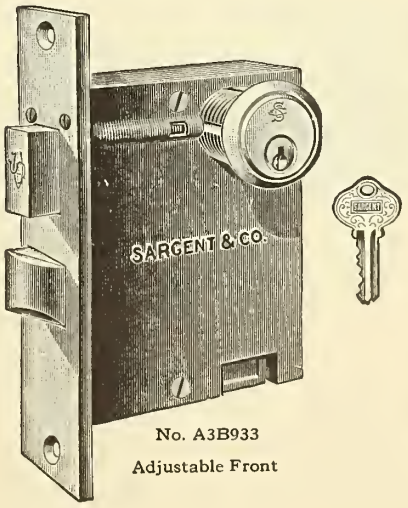
One-third Size Cuts

Lock No. A3B 933, reversible.

Japanned case, 5¼ x 3⅝ x 1 1/16 inches; backset, 2¾ inches; front, 1⅜ x 7½ inches; 5 pin tumblers; changes practically unlimited.

Plate 4⅜ x 21 inches.

Set No. A3B7933 GF. Cast bronze, statuary bronze finish, with Lock No. A3B933, cast bronze face, statuary bronze finish, set.....$32.90

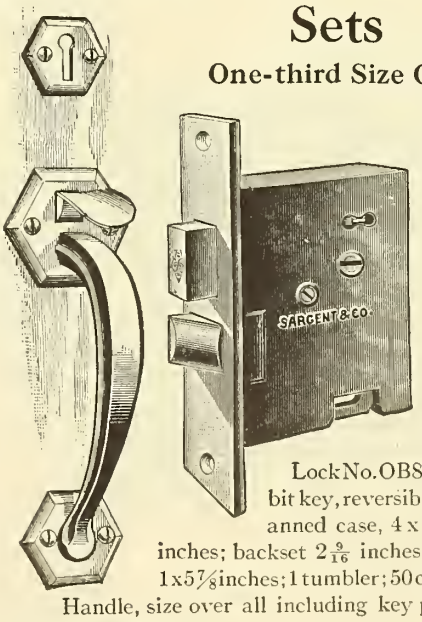


No. A3B933

Adjustable Front

Dutch Door Lock Sets

One-third Size Cut



Lock No. OB802, with bit key, reversible. Japanned case, 4 x 3¼ x ⅝ inches; backset 2 9/16 inches; front, 1 x 5⅞ inches; 1 tumbler; 50 changes.

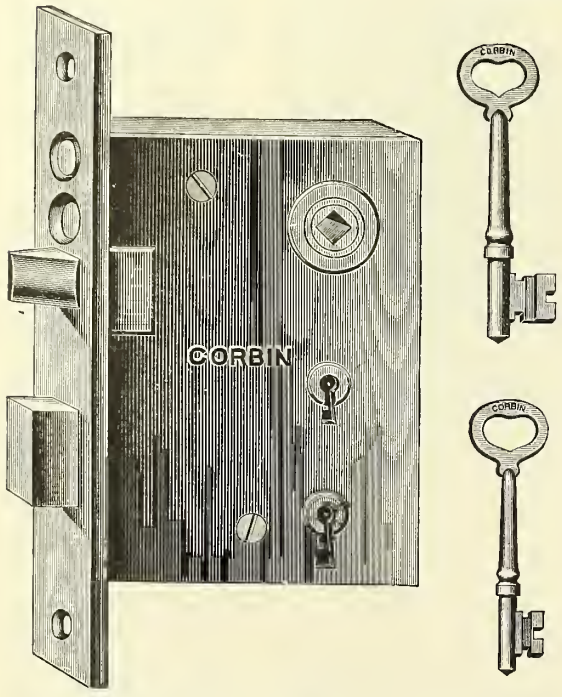
Handle, size over all including key plate, 2¼ x 9½ inches.

Set No. OB2902DC Cast brass, old brass finish, with Lock No. OB802, cast brass, old brass finish face, set.....$10.60

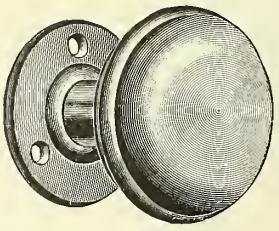
Front Door Lock Sets

Design Columbia

Half Size Cuts



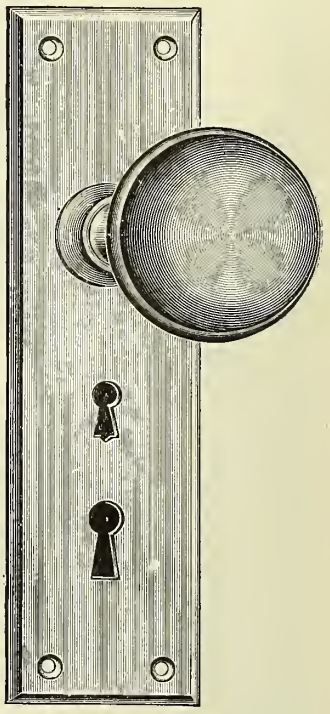
Lock No. 1230¼B, reversible.
Case, 4⅝ x 3⅝ x 11/16 inches; front to center of hub, 2⅝ inches; hub 5/16 inch for swivel spindle; cast bronze front 1 x 6¾ inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob No. 01583, 2¼ inches, with one rose. Wrought bronze, polished.



Inside Escutcheon No. 2596½, 1¼ x 1¾ inches. Wrought bronze, polished.



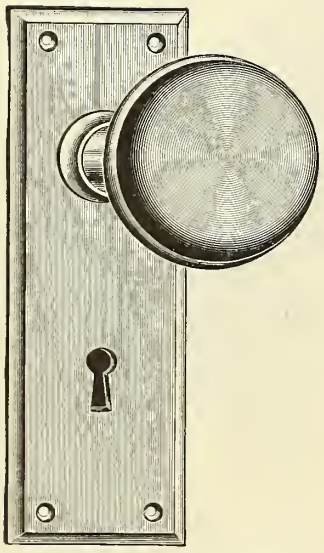
Outside Knob No. 01583, 2¼ inches. Escutcheon No. 2424, 2 x 7 inches. Wrought bronze, polished.

Lock No. 1230¼, each	$2.70	Outside Escutcheon No. 2424, each	.40
Knobs No. 01583, with one rose, pair	.98	Inside Escutcheon No. 2596½, dozen	.90

Set No. F100 Complete set for single door, dozen sets.... $41.40

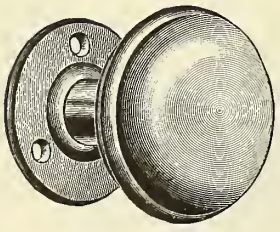
Vestibule Door Lock Sets

Design Columbia



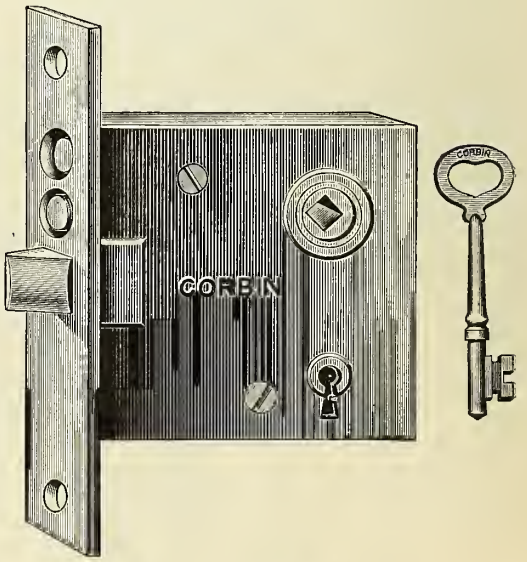
Outside Knob No. 01583, 2¼ inches. Wrought bronze, polished.

Outside Escutcheon No. 2422, 2 x 5¾ inches. Wrought bronze, polished.



Inside Knob No. 01583, 2¼ inches. with one rose. Wrought bronze, polished.

Lock No. 1220¼, each	$2.25
Knobs No. 01583, with one rose, pair	.98
Outside Escutcheon No. 2422, each	.32
Inside Escutcheon, none.	
Set No. V150 Complete set for single door, dozen sets	36.00

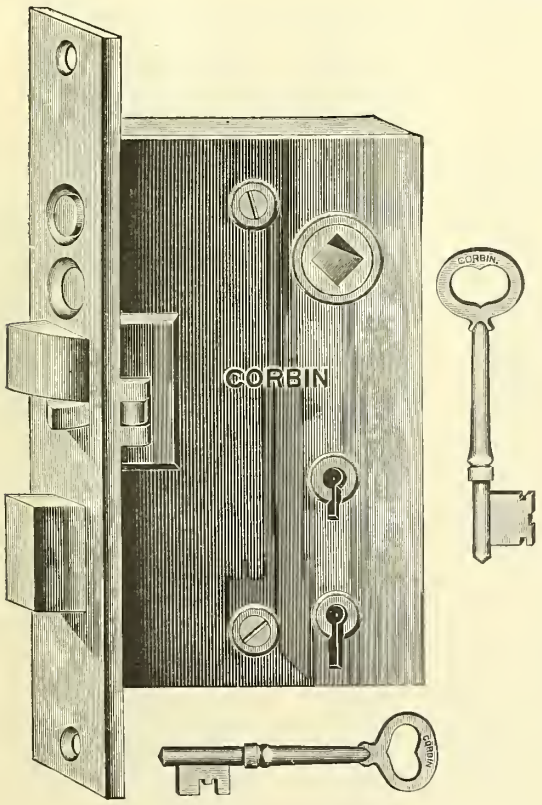


Lock No. 1220¼B, reversible.
Case, 3⅜ x 3⅝ x 11/16 inches; front to center of hub, 2⅝ inches; hub 5/16 inch for swivel spindle; cast bronze front, 1 x 5½ inches; 1 tumbler, 16 changes.

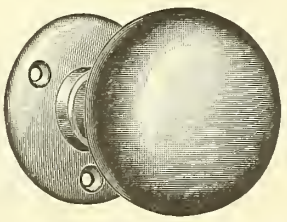
Front Door Lock Sets

Design Columbia

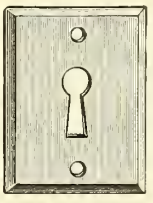
Half Size Cuts



Lock No. 1350B, not reversible, state hand.
Case 5¾ x 3⅜ x ¾ inches; front to center of hub 2⅝ inches; hub ⅜ inch for swivel spindles; cast bronze front 1¼ x 8 inches; 3 tumblers, 40 changes on latch bolt; 1 tumbler, 24 changes on main bolt.

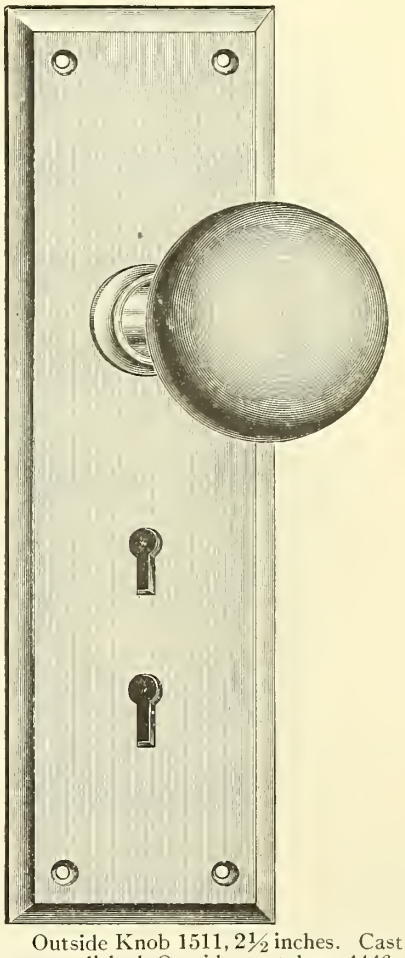


Inside Knob 1512, 2¼ inches,. with one rose. Cast bronze, polished.



Inside Escutcheon 2590½ 2 x 1⅜ inches. Wrought bronze, polished.

Lock No. 1350B, each	$ 6.00
Knobs, 1511 x 1512, with one rose, pair	2.59
Outside Escutcheon 4446, each	1.95
Inside Escutcheon 2590½, dozen	1.08
Set No. F600 Complete set for single door, set	10.77

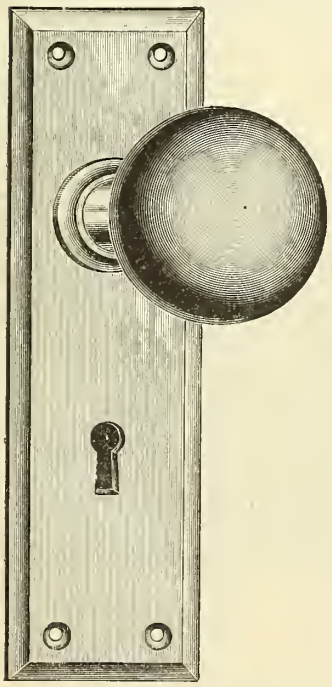


Outside Knob 1511, 2½ inches. Cast bronze, polished. Outside escutcheon 4446–2¾ x 9½ inches. Cast bronze, polished.

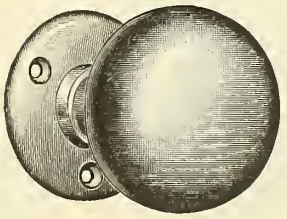
Vestibule Door Lock Sets

Design Columbia

Half Size Cuts

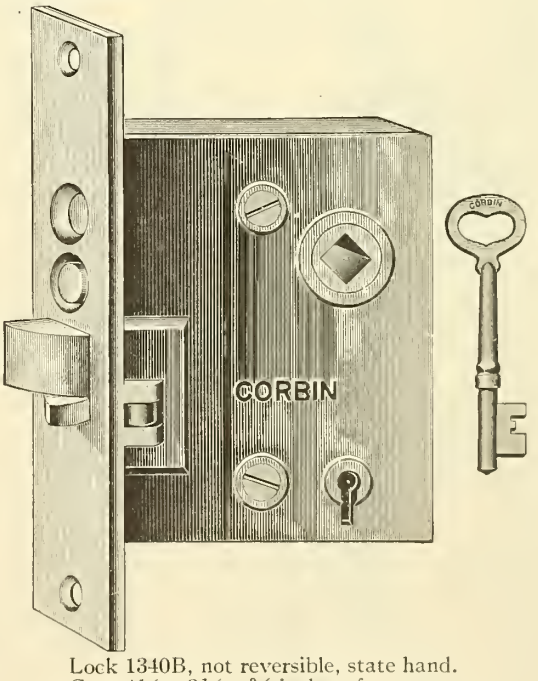


Outside Knob 1512, 2¼ inches. Cast bronze, polished.
Outside Escutcheon 4424, 2 x 7 inches. Cast bronze, polished.



Inside knob 1512, 2¼ inches with one rose. Cast bronze, polished.

Lock No. 1340B, each	$4.50
Knob 1512, with one rose, pair	2.29
Outside Escutcheon 4424, each	.90
Inside Escutcheon, none.	
Set No. V650 Complete set for single door, set	7.34



Lock 1340B, not reversible, state hand.
Case 4¼ x 3½ x ¾ inches; front to center of hub 2⅝ inches; hub ⅜ inch for swivel spindles; cast bronze front 1¼ x 6⅜ inches; 3 tumblers, 40 changes.

Front Door Lock Sets

Design Tarlton

Half Size Cuts

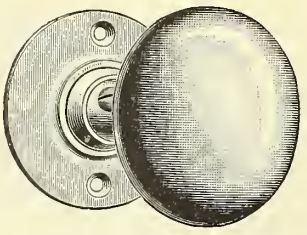






Lock No. OB6354, reversible.

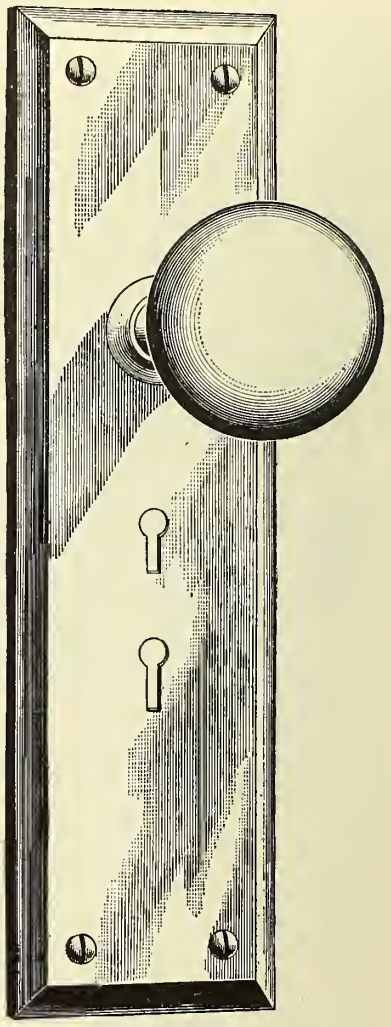
Case, 4¾ x 3½ x ¾ inches; front to center of hub, 2⅞ inches; hub $\frac{5}{16}$ inch for swivel spindle; cast brass, old brass finish; front 1⅛ x 7 inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob No. OB1763, with one rose, 2¼ inches. Wrought brass, old brass finish.



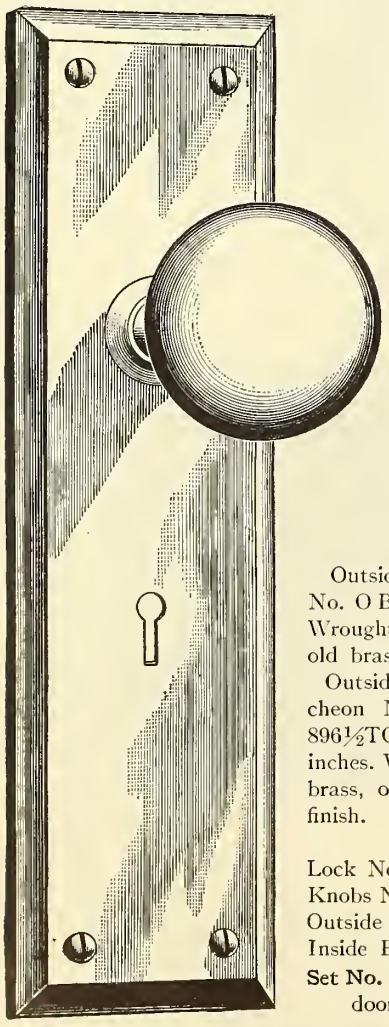
Inside Escutcheon No. OB 870TC, 1¼ x 2 inches. Wrought brass, old brass finish.



Outside Knob No. OB1763, 2¼ inches. Wrought brass, old brass finish.

Outside Escutcheon No. OB896TC, 3 x 10 inches. Wrought brass, old brass finish.

Lock No. OB6354, each	$1.90
Knobs No. OB1763, with one rose, pair	1.20
Outside Escutcheon No. OB896TC, each	.94
Inside Escutcheons No. OB870TC, dozen	.96
Set No. OB4249TC Old brass, complete set for single door, set	3.10



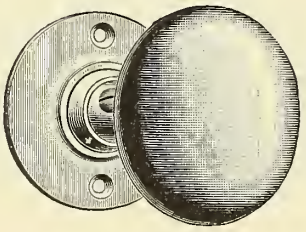
Vestibule Door Lock Set

Design Tarlton

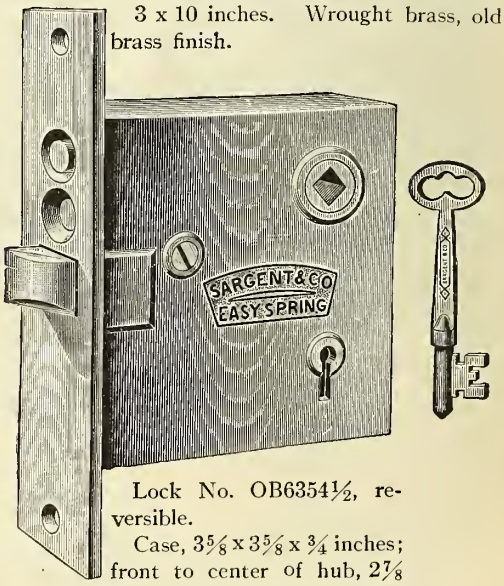
Half Size Cuts

Outside Knob No. OB1763. Wrought brass, old brass finish.

Outside Escutcheon No. OB 896½TC, 3 x 10 inches. Wrought brass, old brass finish.



Inside Knob No. OB1763, 2¼ inches, with one rose. Wrought brass, old brass finish.



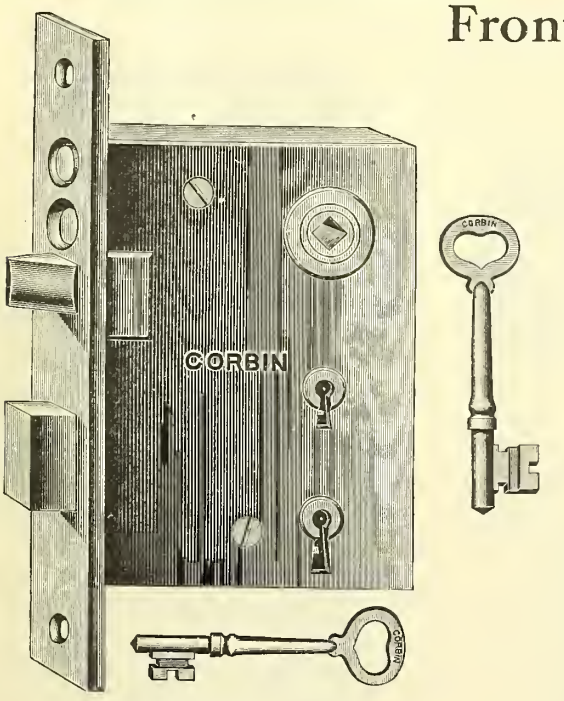
Lock No. OB6354½, reversible.

Case, 3⅝ x 3⅝ x ¾ inches; front to center of hub, 2⅞ inches; hub $\frac{5}{16}$ inch for swivel spindle; cast brass, old brass finish; front 1⅛ x 6 inches; 1 tumbler, 16 changes.

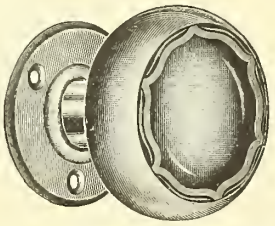
Lock No. OB6354½, each	$1.60
Knobs No. OB1763, with one rose, pair	1.20
Outside Escutcheon No. OB896½TC, each	.94
Inside Escutcheon, none.	
Set No. OB4249½TC Old brass, complete set for single door, set	2.80

Front Door Lock Sets

Design Wakefield
Half Size Cuts



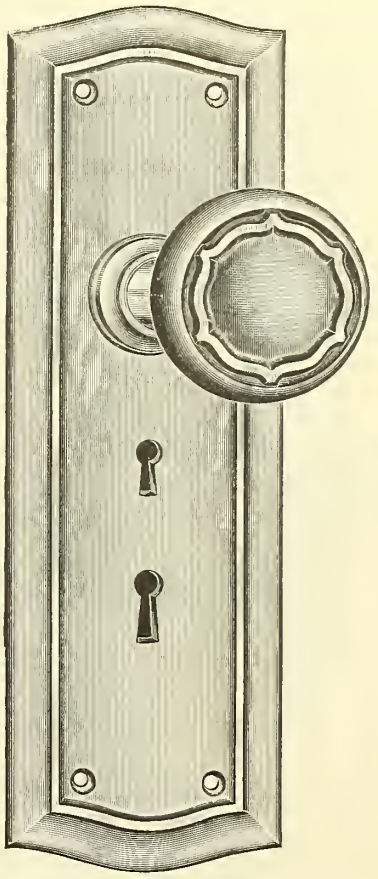
Lock KA1230¼, reversible.
Case 4⅝ x 3⅝ x 11/16 inches; front to center of hub 2⅝ inches; hub 5/16 inch for swivel spindle; cast brass, old brass finish, front 1 x 6¾ inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob KA72622, 2¼ inches. Wrought brass, old brass finish, with one rose.



Inside Escutcheon KA72640 1¼ x 2 inches. Wrought brass, old brass finish.



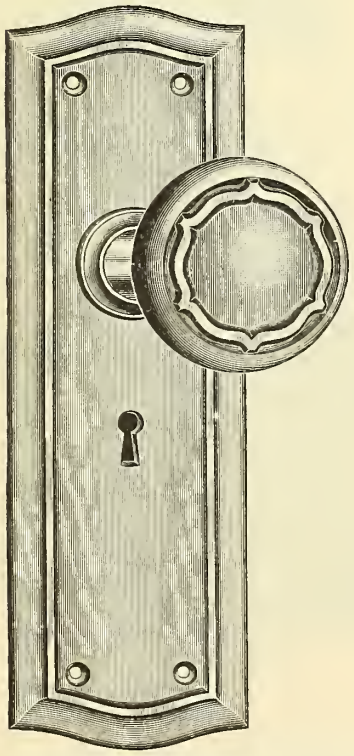
Outside Knob KA72622, 2¼ inches.
Outside Escutcheon KA72630, 2⅞ x 9 inches.
Wrought brass, old brass finish.

Lock KA1230¼, each	$2.85	Outside Escutcheon KA72630, each	$ .67
Knob KA72622, with one rose, pair	2.90	Inside Escutcheon KA72640, dozen	1.80

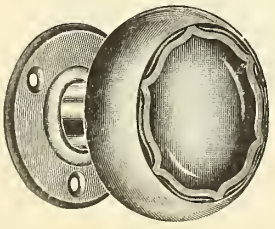
Set KA726816 Old brass finish, complete set for single doors, dozen sets 56.25

Vestibule Door Lock Sets

Design Wakefield
Half Size Cuts



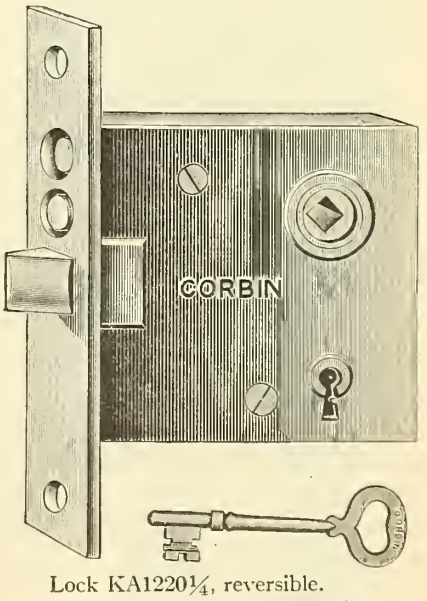
Outside Knob KA72622, 2¼ inches
Outside Escutcheon KA72631 2½ x 7¾ inches.
Wrought brass, old brass finish.



Inside Knob KA72622, 2¼ inches. Wrought brass, old brass finish, with one rose.

Lock KA1220¼, each	$2.40
Knob KA72622, with one rose, pair	2.90
Outside Escutcheon KA72631, each	.67
Inside Escutcheon, none.	

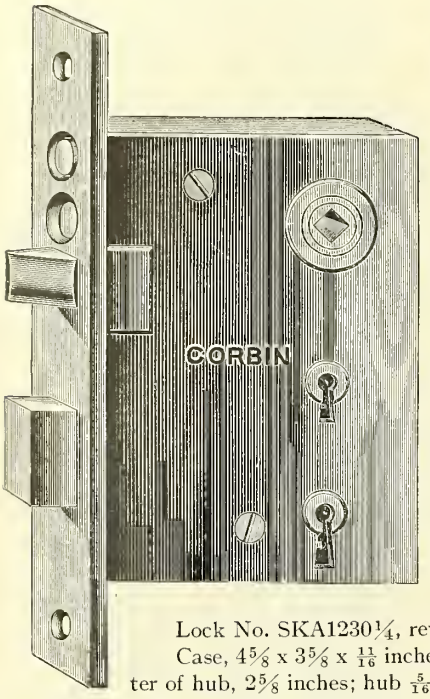
Set KA726716 Old brass finish, complete set for single door, dozen sets 50.85



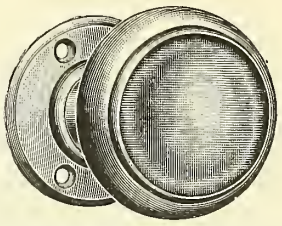
Lock KA1220¼, reversible.
Case 3⅜ x 3⅝ x 11/16 inches; front to center of hub 2⅝ inches, hub 5/16 inch; for swivel spindle; wrought brass, old brass finish, front 1 x 5½ inches; 1 tumbler, 16 changes.

Front Door Lock Sets

Design Princeton
Half Size Cuts



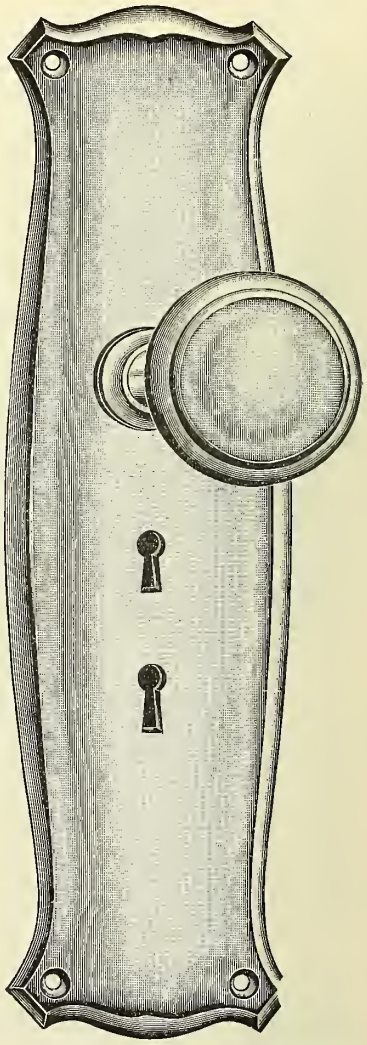
Lock No. SKA1230¼, reversible. Case, 4⅝ x 3⅝ x 11/16 inches; front to center of hub, 2⅝ inches; hub 5/16 inch for swivel spindle; cast brass sanded, old brass finish front, 1 x 6¾ inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob No. SKA72122, with one rose, 2¼ inches. Wrought brass sanded, old brass finish.



Inside Escutcheon No. SKA72140, 1¼ x 2 inches. Wrought brass sanded, old brass finish.



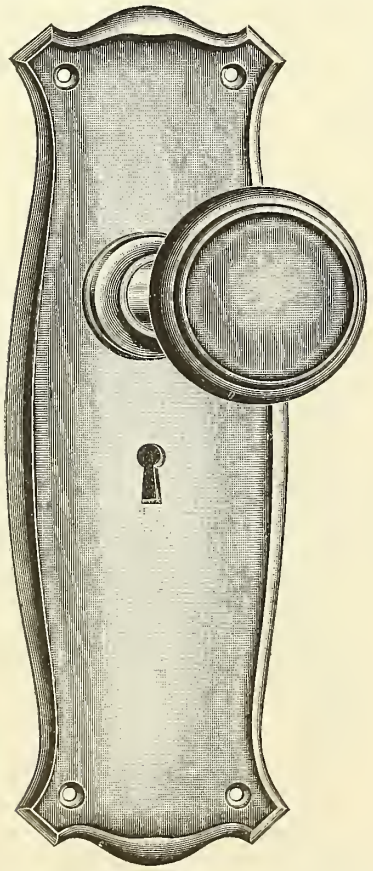
Outside Knob No. SKA72122, 2¼ inches. Outside Escutcheon No. 72129, 3 x 11 inches. Wrought brass sanded, old brass finish.

Lock No. SKA1230¼, each	$2.85	Outside Escutcheon No. SKA72129, each	$1.27
Knob No. SKA72122, with one rose, pair	2.90	Inside Escutcheon No. SKA72140, dozen	1.80

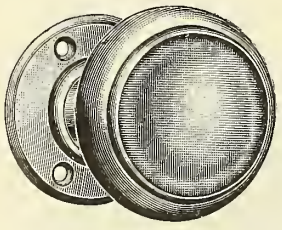
Set No. SKA721820 Sanded, old brass, complete set for single door, dozen sets 61.65

Vestibule Door Lock Sets

Design Princeton
Half Size Cuts

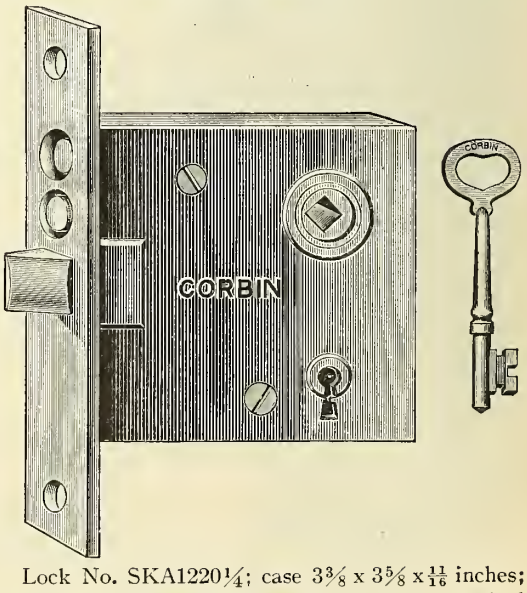


Outside Knob No. SKA72122, 2¼ inches. Outside Escutcheon No. 72130, 2⅞ x 9 inches. Wrought brass sanded, old brass finish.



Inside Knob No. SKA72122, with one rose, 2¼ inches. Wrought brass sanded, old brass finish.

Lock No. SKA1220¼, each	$2.40
Knobs No. SKA72122, with one rose, pair	2.90
Outside Escutcheon No. SKA72130, each	.67
Inside Escutcheon, none.	
Set No. SKA721720 Sanded old brass finish, complete set for single door	50.85

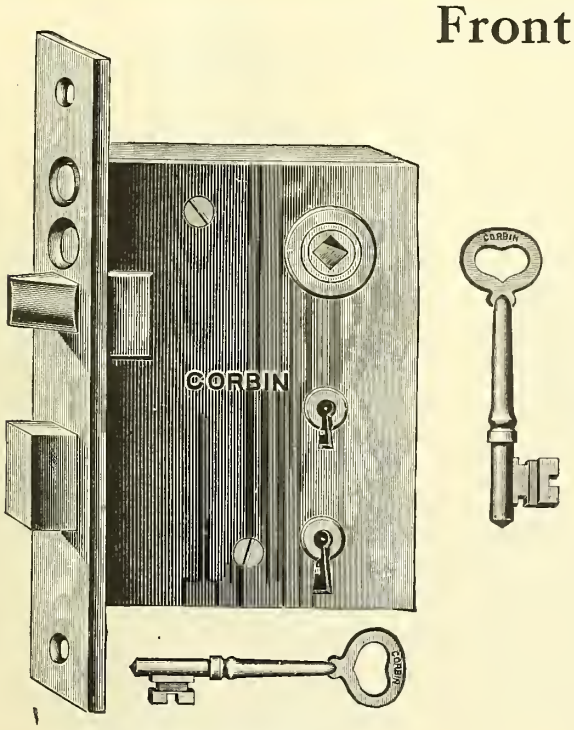


Lock No. SKA1220¼; case 3⅜ x 3⅝ x 11/16 inches; front to center of hub 2⅝ inches; hub 5/16 inch for swivel spindle; cast brass sanded, old brass finish, front 1 x 5½ inches; 1 tumbler, 16 changes.

Front Door Lock Sets

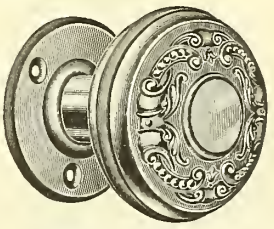
Design Holland

Half Size Cuts



Lock R1230¼, reversible.

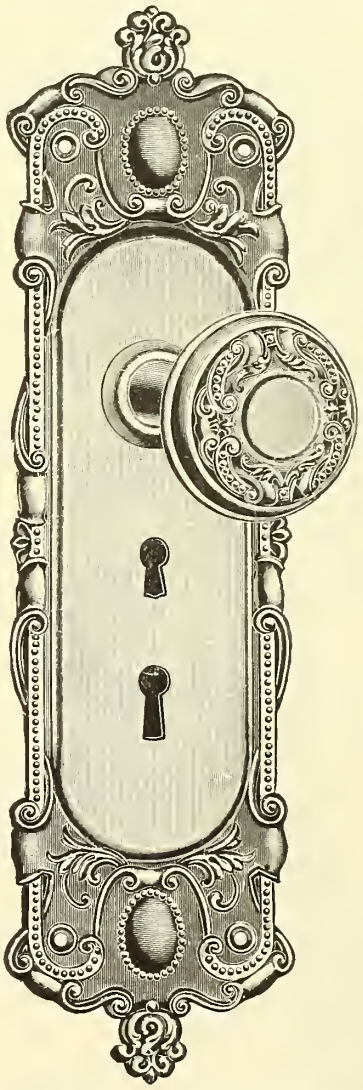
Case 4⅝ x 3⅝ x 11/16 inches; front to center of hub 2⅝ inches; hub 5/16 inch for swivel spindle; cast bronze, antique copper finish, front 1 x 6¾ inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob ERxRR71722 2¼ inches, with one rose. Wrought bronze, royal copper finish; depressed surface, antique copper finish.



Inside Escutcheon ERxRR-71740, 1¼ x 2½ inches. Wrought bronze, royal copper finish; depressed surface, antique copper finish.



Outside Knob ERxRR71722, 2¼ inches.

Outside Escutcheon ERxRR 71729, 3⅛x11⅜ inches.

Wrought bronze, royal copper finish; depressed surface, antique copper finish.

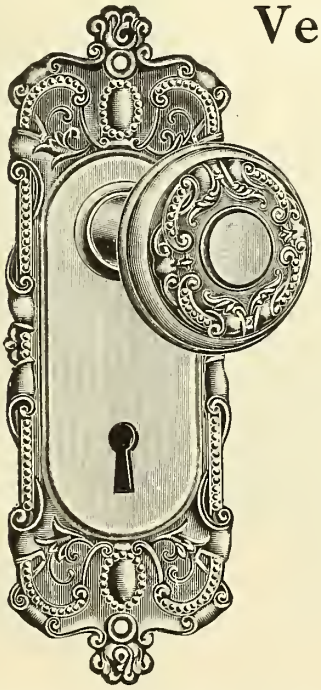
Lock R1230¼	$2.40	Outside Escutcheon ERxRR71729, each	$1.14
Knobs ERxRR71722, with one rose	2.90	Inside Escutcheon ERxRR71740, dozen	1.80

Set No. F1200 Royal copper finish, depressed surface, antique copper. Complete set for single door, dozen sets 54.00

Vestibule Door Lock Sets

Design Holland

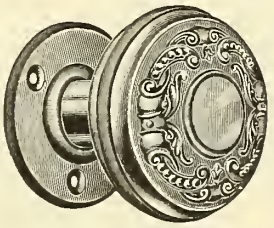
Half Size Cuts



Outside Knob ERxRR71722, 2¼ inches.

Outside Escutcheon 71731, 2½ x 7⅛ inches.

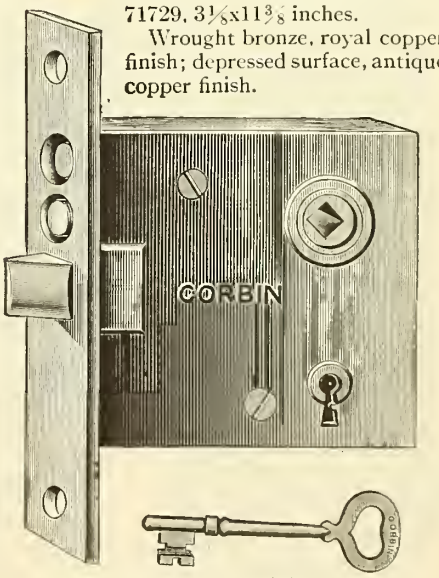
Wrought bronze, royal copper finish; depressed surface, antique copper finish.



Inside Knob ERxRR71722, 2¼ inches, with one rose. Wrought bronze, royal copper finish; depressed surface, antique copper finish.

Lock R1220¼	$2.40
Knob ERxRR71722, with one rose, pair	2.90
Outside Escutcheon ERxRR71729, each	1.14
Inside Escutcheon, none.	

Set No. V1250 Royal copper finish, depressed surface antique copper. Complete set for single door, dozen sets ... 51.45

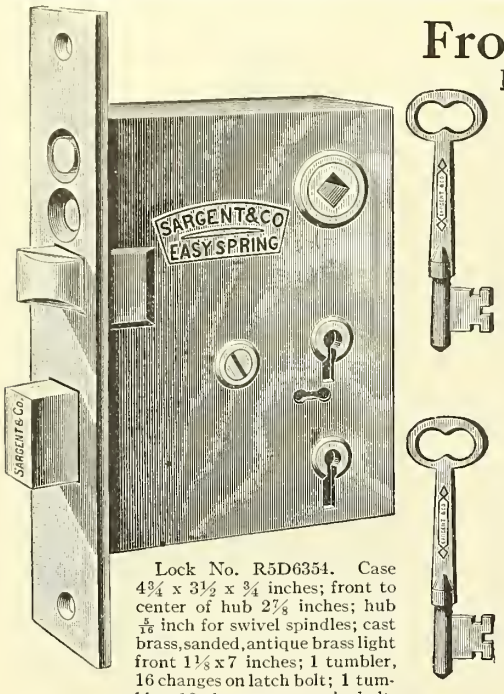


Lock R1220¼, reversible.

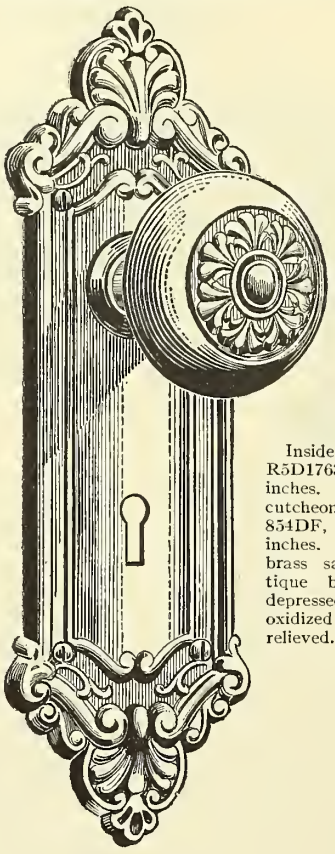
Case 3⅜ x 3⅝ x 11/16 inches; front to center of hub 2⅝ inches; hub 5/16 inch; for swivel spindle; cast bronze, antique copper finish, front 1 x 5½ inches; 1 tumbler, 16 changes.

Front Door Lock Sets

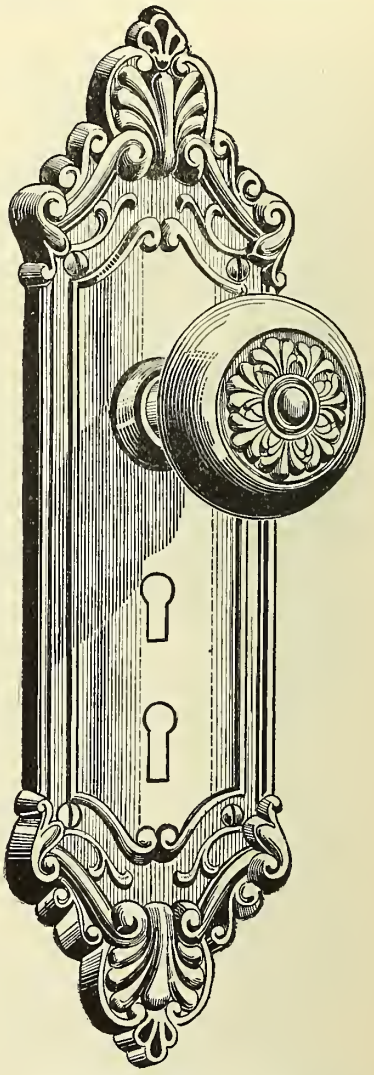
Design Dunkirk. Half Size Cuts



Lock No. R5D6354. Case 4¾ x 3½ x ¾ inches; front to center of hub 2⅞ inches; hub $\frac{5}{16}$ inch for swivel spindles; cast brass, sanded, antique brass light front 1⅛ x 7 inches; 1 tumbler, 16 changes on latch bolt; 1 tumbler, 16 changes on main bolt.



Inside Knob No. R5D1763DF, 2¼ inches. Inside Escutcheon No. R5D-854DF, 2⅝ x 8½ inches. Wrought brass sanded, antique brass light depressed surface, oxidized black and relieved.

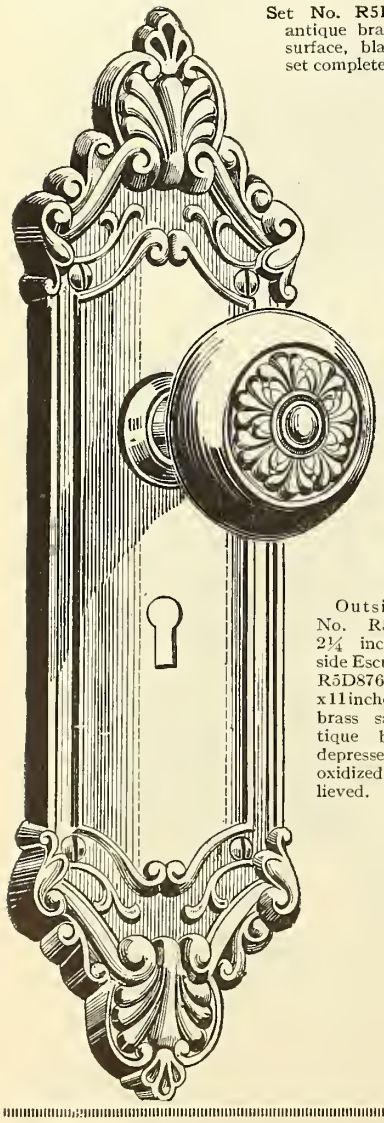


Outside Knob No. R5D1763DF, 2¼ inches. Outside Escutcheon No. R5D876-DF, 3⅛ x 11 inches. Wrought brass sanded, antique brass light depressed surface, oxidized black and relieved.

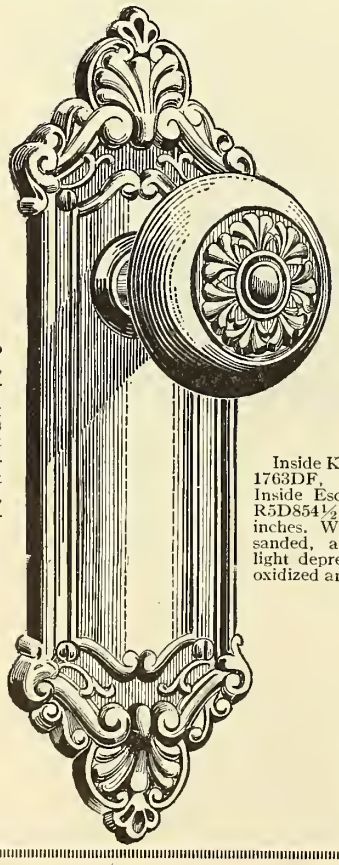
Lock No. R5D6354, each	$1.90
Knobs No. R5D1763DF, without roses, pair	.95
Outside Escutcheon No. R5D876DF, each	.85
Inside Escutcheon No. R5D854DF, each	.45
Set No. R5D4245DF Sanded antique brass light depressed surface, black and relieved, set complete for single door	3.85

Vestibule Door Lock Sets

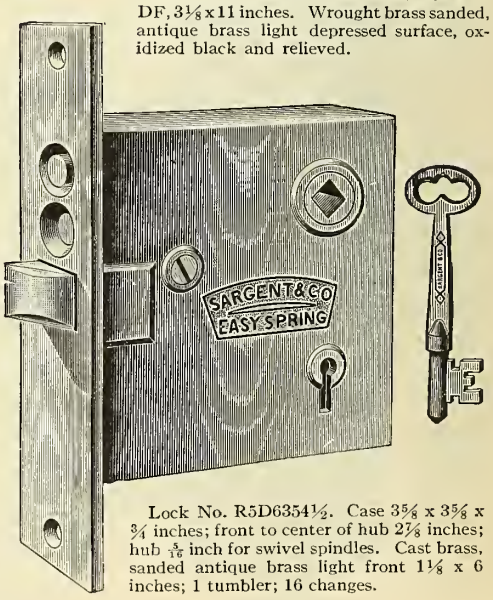
Design Dunkirk. Half Size Cuts



Outside Knob No. R5D1763DF, 2¼ inches. Outside Escutcheon No. R5D876½DF, 3⅛ x 11 inches. Wrought brass sanded, antique brass light depressed surface, oxidized and relieved.



Inside Knob No. R5D 1763DF, 2¼ inches. Inside Escutcheon No. R5D854½DF, 2⅝ x 8½ inches. Wrought brass sanded, antique brass light depressed surface, oxidized and relieved.



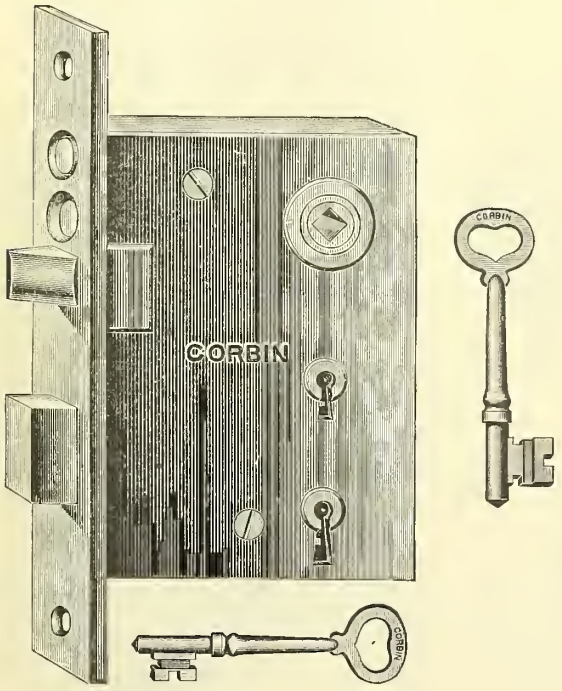
Lock No. R5D6354½. Case 3⅝ x 3⅝ x ¾ inches; front to center of hub 2⅞ inches; hub $\frac{5}{16}$ inch for swivel spindles. Cast brass, sanded antique brass light front 1⅛ x 6 inches; 1 tumbler; 16 changes.

Lock No. R5D6354½, each	$1.60
Knobs No. R5D1763DF, without roses, pair	.95
Outside Escutcheon No. R5D876½DF, each	.85
Inside Escutcheon No. R5D854½DF, each	.45
Set No. R5D4245½DF Sanded antique brass, light depressed surface, black and relieved, set complete for single door	3.55

Front Door Lock Sets

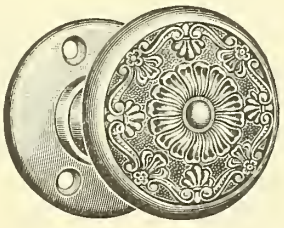
Design Parthenon

Half Size Cuts



Lock R1230¼, reversible.

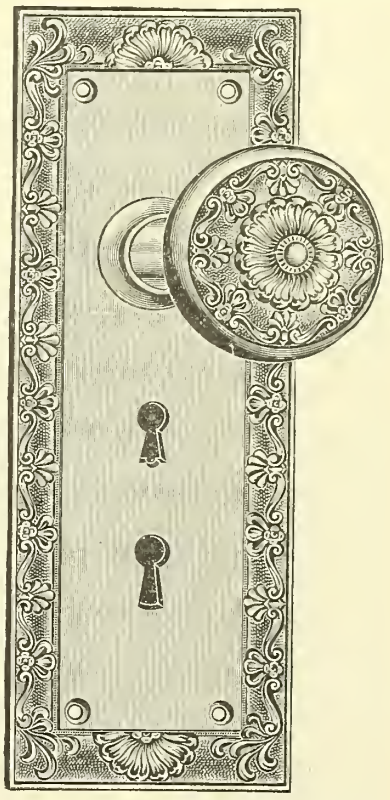
Case 4⅝ x 3⅝ x 11/16 inches; front to center of hub 2⅝ inches; hub 5/16 inch for swivel spindle; cast bronze, antique copper finish; front 1 x 6¾ inches; 1 tumbler, 16 changes on latch bolt. 1 tumbler, 16 changes on main bolt.



Inside Knob R81022, 2¼ inches, with one rose. Cast bronze, antique copper finish.



Inside Escutcheon R81040, 1⅛ x 2 inches. Cast bronze, antique copper finish.



Outside Knob R81022, 2¼ inches. Cast bronze, antique copper finish.

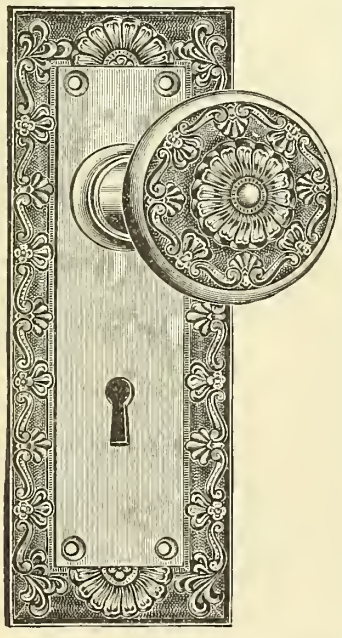
Outside Escutcheon R81030, 2⅞ x 8 inches; cast bronze, antique copper finish.

Lock R1230¼, each	$2.85	Outside Escutcheon R81030, each	$2.19
Knobs R81022, with one rose, pair	2.48	Inside Escutcheon R81040, each	.42
Set No. F400 Antique copper finish. Complete set for single door, set	8.07		

Vestibule Door Lock Sets

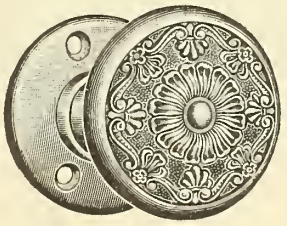
Design Parthenon

Half Size Cuts



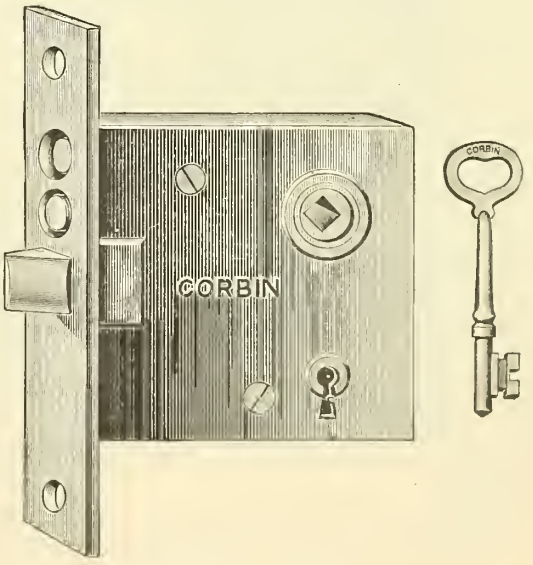
Outside Knob R81022, 2¼ inches. Cast bronze, antique copper finish.

Outside Escutcheon R81031, 2⅜x6½ inches. Cast bronze, antique copper finish.



Inside Knob R81022, 2¼ inches, with one rose. Cast bronze, antique copper finish.

Lock R1220¼, each	$2.40
Knobs R81022, with one rose, pair	2.48
Outside Escutcheon R81031, each	1.47
Inside Escutcheon, none.	
Set No. V450 Antique copper finish. Complete set for single door, set	6.49



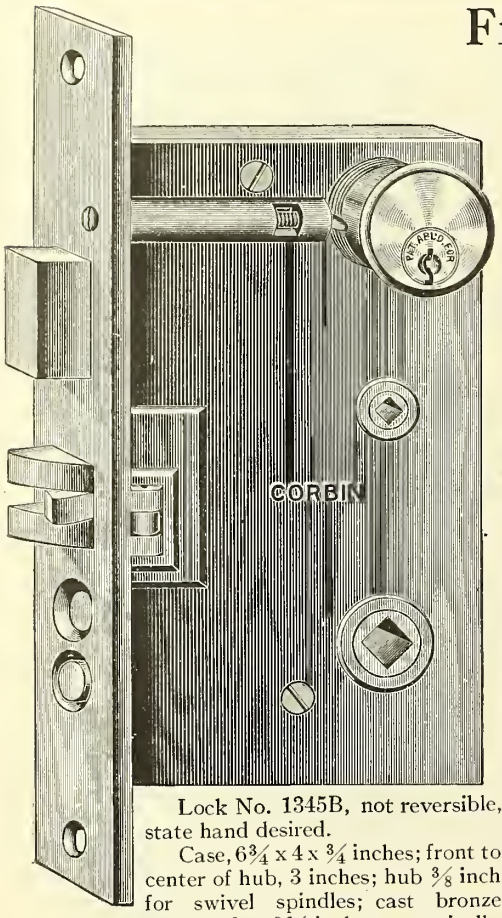
Lock R1220¼, reversible.

Case 3⅜ x 3⅝ x 11/16 inches; front to center of hub 2⅝ inches; hub 5/16 inch for swivel spindle; cast bronze, antique copper finish, front 1 x 5½ inches; 1 tumbler, 16 changes.

Front Door Lock Sets

Design Columbia

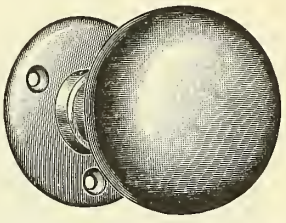
Half Size Cuts



Lock No. 1345B, not reversible, state hand desired.

Case, 6¾ x 4 x ¾ inches; front to center of hub, 3 inches; hub ⅜ inch for swivel spindles; cast bronze front, 9 1/16 x 9¼ inches; practically unlimited changes.

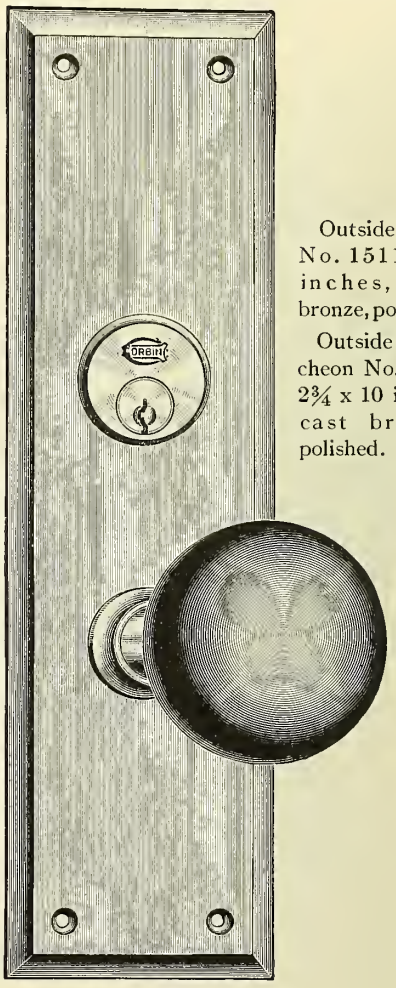




Inside Knob No. 1512, 2¼ inches with one rose. Cast bronze, polished.



Inside Thumb Knob No. 2149, cast bronze polished.



Outside Knob No. 1511, 2½ inches, cast bronze, polished.

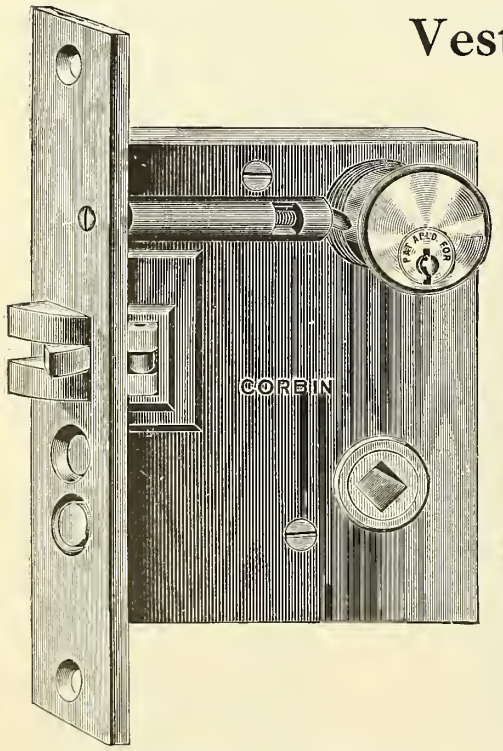
Outside Escutcheon No. 4448, 2¾ x 10 inches, cast bronze, polished.

Lock No. 1345B, each	$12.00
Knobs No. 1511x1512, with one rose, pair	2.59
Outside Escutcheon No. 4448, each	2.07
Inside Escutcheon, none.	
Set No. F700 Complete set for single door, set	16.36

Vestibule Door Lock Sets

Design Columbia

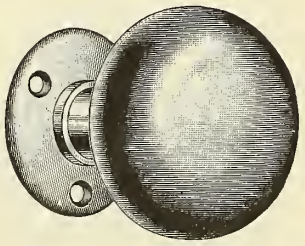
Half Size Cuts



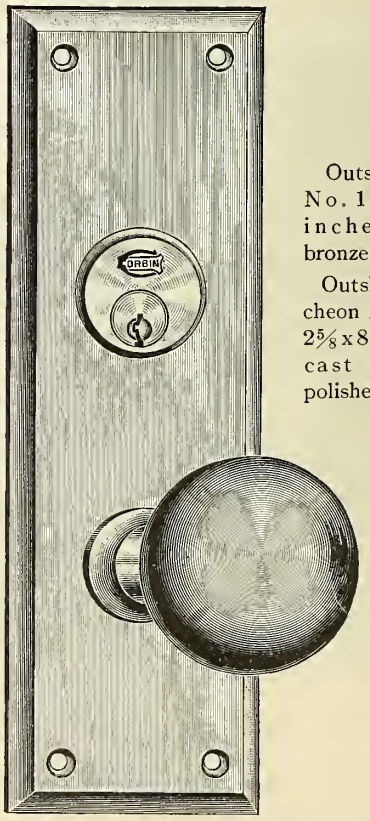
Lock No. 1339B, not reversible, state hand desired.

Case, 5 x 4 x ¾ inches; front to center of hub, 3 inches; hub ⅜ inch for swivel spindle; cast bronze front, 7⅜ x 1¼ inches; practically unlimited changes.





Inside Knob No. 1512, 2¼ inches, with one rose. Cast bronze, polished.



Outside Knob No. 1512, 2¼ inches, cast bronze, polished.

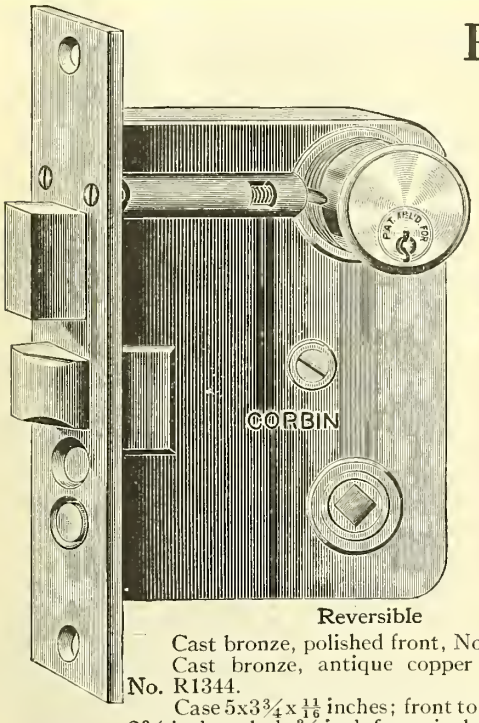
Outside Escutcheon No. 4442, 2⅝ x 8⅜ inches, cast bronze, polished.

Lock No. 1339B, each	$8.25
Knobs No. 1512, with one rose, pair	2.29
Outside Escutcheon No. 4442	1.65
Inside Escutcheon, none.	
Set No. V750 Complete set for single door, set	12.34

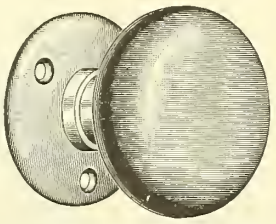
Front Door Lock Sets

Design Washington

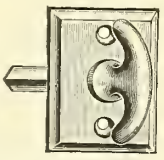
Half Size Cuts



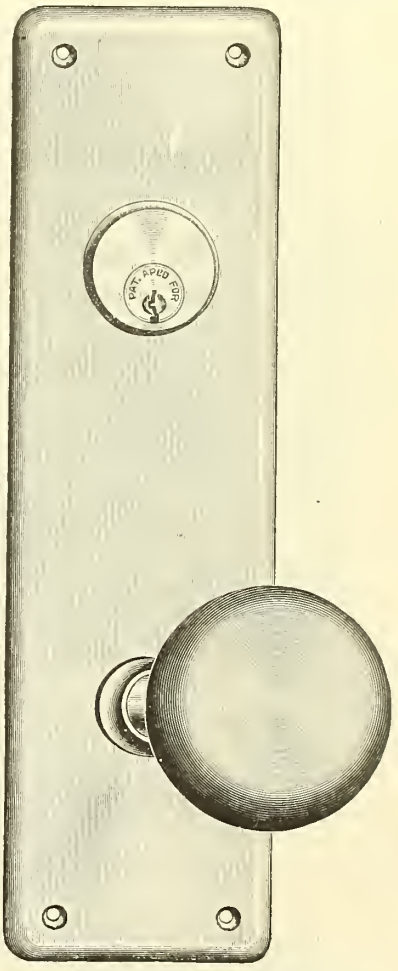




Inside Knob 2¼ inches, with rose. Cast bronze, polished, No. 1519½. Cast bronze, antique copper finish, No. R1519½.



Inside Thumb Knob. Cast bronze, polished, No. 2149. Cast bronze, antique copper finish, No. R2149.



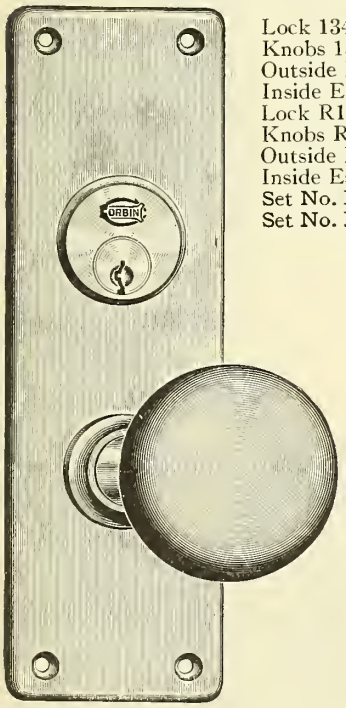
Outside Knob 2½ inches. Cast bronze, polished, No. 1518½. Cast bronze, antique copper finish, No. R1518½.

Outside Escutcheon, 2¾ x 10 inches. Wrought bronze, polished, No. 2448½. Wrought bronze, antique copper finish, No. R2448½.

Reversible

Cast bronze, polished front, No. 1344B.
Cast bronze, antique copper finish front, No. R1344.

Case 5x3¾x$\frac{11}{16}$ inches; front to center of hub 2¾ inches; hub ⅜ inch for swivel spindle; front $1\frac{1}{16}$ x 7⅛ inches. Practically unlimited changes.

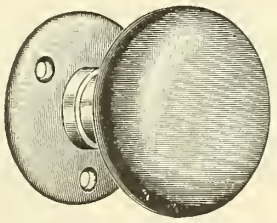


Lock 1344B, polished bronze, each	$10.05
Knobs 1518½x1519½, with one rose, pair	1.69
Outside Escutcheon 2448½, each	1.10
Inside Escutcheon, none.	
Lock R1344, antique copper, each	10.50
Knobs R1518½xR1519½, with one rose, pair	1.90
Outside Escutcheon R2448½, each	1.20
Inside Escutcheon, none.	
Set No. F1100 Polished bronze. Complete set for single door, set	13.20
Set No. F1000 Antique copper. Complete set for single door, set	13.92

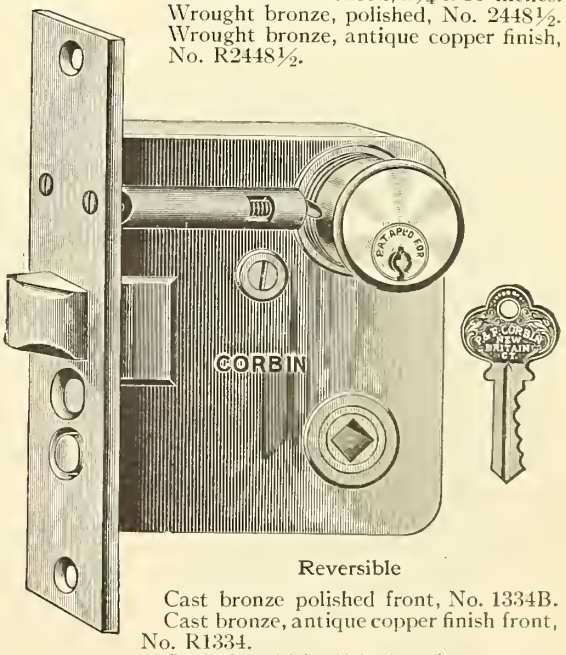
Vestibule Door Lock Sets

Design Washington

Half Size Cuts



Inside Knob, 2¼ inches, with rose. Cast bronze, polished, No. 1519½. Cast bronze, antique copper finish, No. R1519½.



Reversible

Cast bronze polished front, No. 1334B.
Cast bronze, antique copper finish front, No. R1334.

Case 4⅛ x 3¾ x $\frac{11}{16}$ inches: front to center of hub 2¾ inches; hub ⅜ inch for swivel spindle. Practically unlimited changes; front $1\frac{1}{16}$ x 6¼ inches.

Outside Knob, 2¼ inches. Cast bronze, polished, No. 1519½. Cast bronze, antique copper finish, No. R1519½.

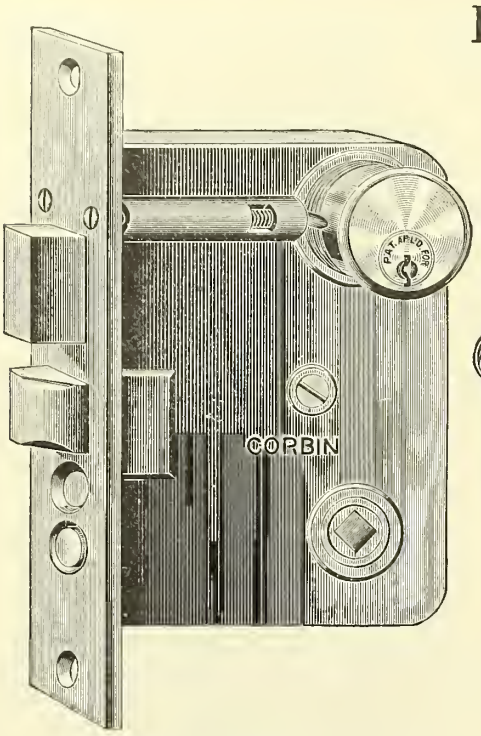
Outside Escutcheon, 2¼ x 7¼ inches. Wrought bronze, polished, No. 2430½. Wrought bronze, antique copper finish, No. R2430½.

Lock 1334B, polished bronze, each	$7.50
Knob 1519½, with one rose, pair	1.69
Outside Escutcheon 2430½, each	.50
Inside Escutcheon, none.	
Lock R1334, antique copper, each	7.95
Knob R1519½, with one rose, pair	1.90
Outside Escutcheon R2430½, each	.55
Inside Escutcheon, none.	
Set No. V1150 Polished bronze. Complete set for single door, set	$12.67
Set No. V1050 Antique copper. Complete set for single door, set	14.07

Front Door Lock Set

Design Victor

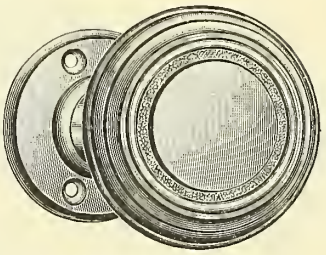
Half Size Cuts





Lock KA1344, reversible.

Case 5 x 3¾ x 11/16 inches; front to center of hub 2¾ inches; hub ⅜ inch for swivel spindles; cast brass, old brass finish, front 1 1/16 x 7⅛ inches. Practically unlimited changes.

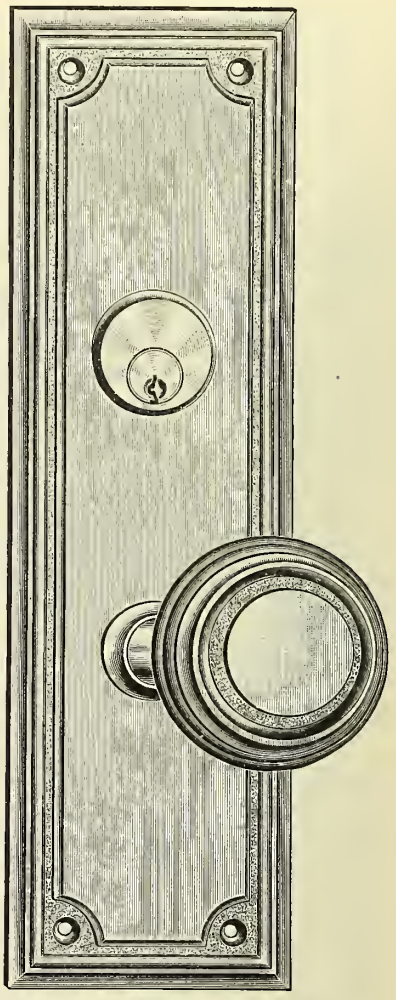


Inside Knob KA71822, 2¼ inches, with one rose. Wrought brass, old brass finish.



Inside Thumb Knob KA2149, cast brass, old brass finish.

Lock KA1344, each	$10.50
Knob KA71821, 2½ x 2¼, with one rose, pair	1.50
Outside Escutcheon KA71829, each	1.14
Inside Escutcheon, none.	
Set No. KA718840 old brass finish. Complete set for single door, set	13.29

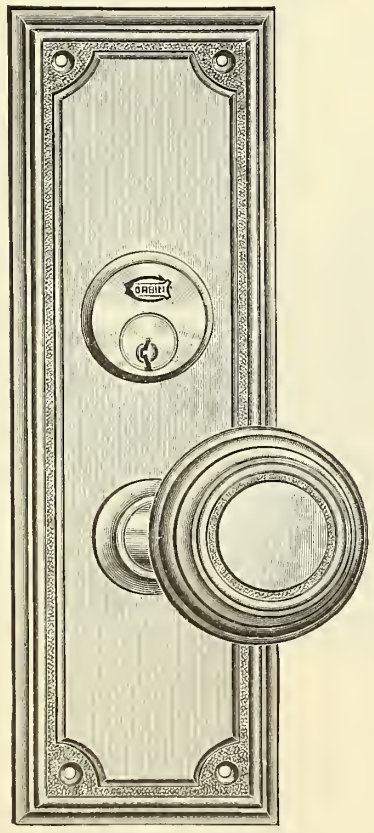


Outside Knob KA71821, 2½ inches. Outside Escutcheon KA71829, 3 x 10½ inches. Wrought brass, old brass finish.

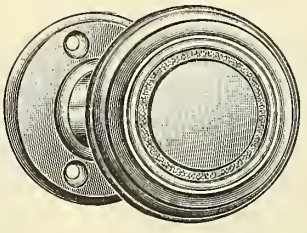
Vestibule Door Lock Set

Design Victor

Half Size Cuts

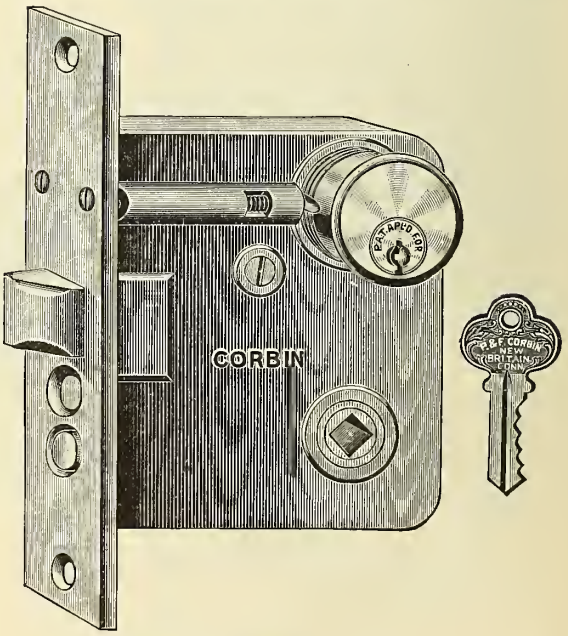


Outside Knob KA71822, 2¼ inches. Outside Escutcheon KA71830, 2¾ x 8½ inches. Wrought brass, old brass finish.



Inside Knob KA71822, 2¼ inches, with one rose. Wrought brass, old brass finish.

Lock KA1334, each	$7.95
Knob KA71822, with one rose, pair	1.20
Outside Escutcheon KA71830, each	.54
Inside Escutcheon, none.	
Set No. KA718740, old brass finish. Complete set for single door, set	9.84



Lock KA1334, reversible.

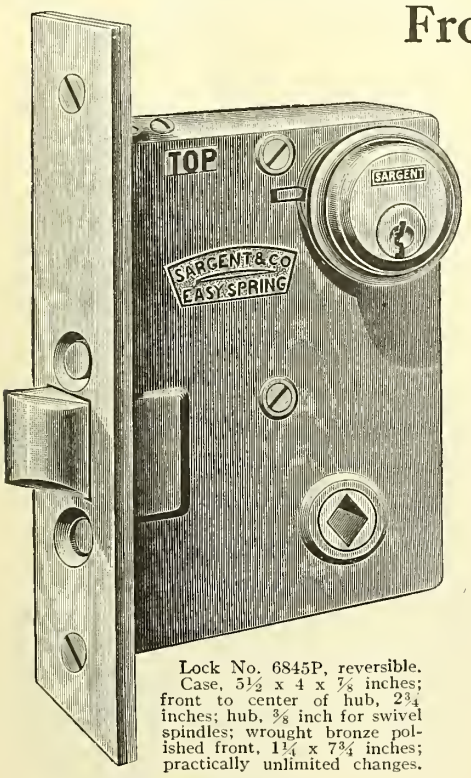
Case 4⅛ x 3¾ x 11/16 inches; front to center of hub 2¾ inches; hub ⅜ inch for swivel spindles. Practically unlimited changes.

Cast brass, old brass finish, front 1 1/16 x 6¼ inches.

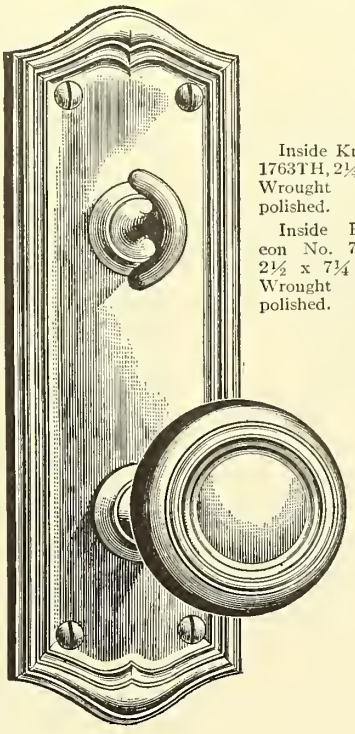
Front Door Lock Set

Design Hudson

Half Size Cuts

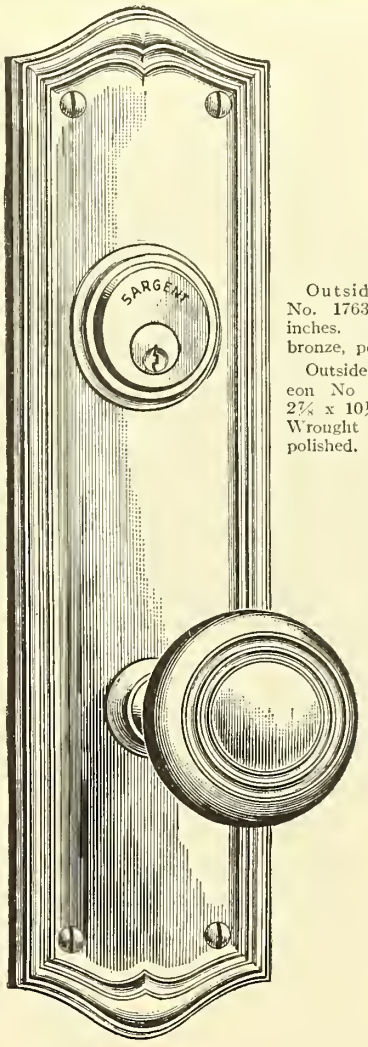


Lock No. 6845P, reversible. Case, 5½ x 4 x ⅞ inches; front to center of hub, 2¾ inches; hub, ⅜ inch for swivel spindles; wrought bronze polished front, 1¼ x 7¾ inches; practically unlimited changes.



Inside Knob No. 1763TH, 2¼ inches. Wrought bronze, polished.

Inside Escutcheon No. 7855TH, 2½ x 7¼ inches. Wrought bronze, polished.



Outside Knob No. 1763TH, 2¼ inches. Wrought bronze, polished.

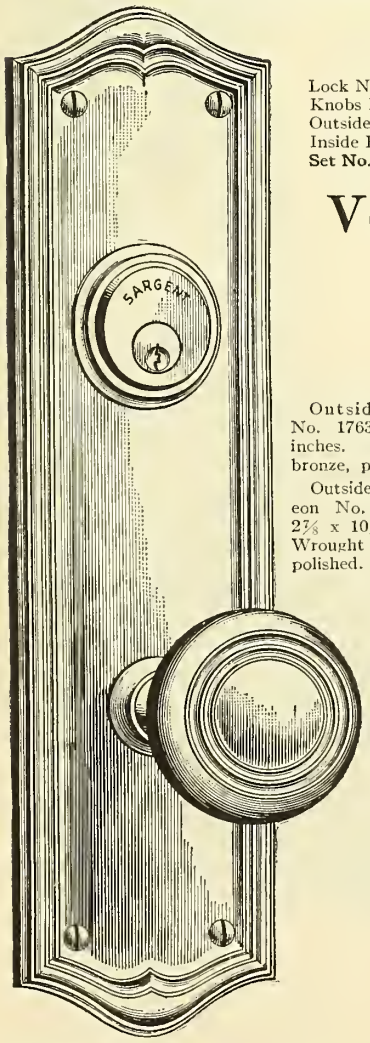
Outside Escutcheon No 7876TH, 2⅞ x 10½ inches. Wrought bronze, polished.

Lock No. 6845P, each	$6.70
Knobs No. 1763TH, without roses, pair	.80
Outside Escutcheon No. 7876TH, each	.75
Inside Escutcheon No. 7855TH, each	.35
Set No. 5045TH Polished bronze, complete set for single door	8.70

Vestibule Door Lock Set

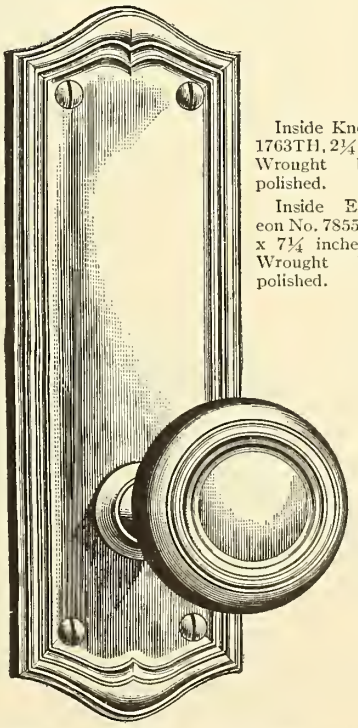
Design Hudson

Half Size Cuts



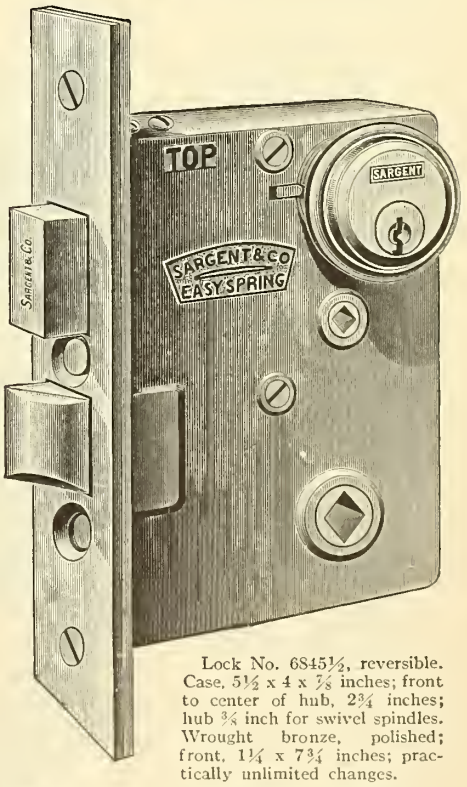
Outside Knob No. 1763TH, 2¼ inches. Wrought bronze, polished.

Outside Escutcheon No. 7876TH, 2⅞ x 10½ inches. Wrought bronze, polished.



Inside Knob No. 1763TH, 2¼ inches. Wrought bronze, polished.

Inside Escutcheon No. 7855½, 2½ x 7¼ inches. Wrought bronze, polished.



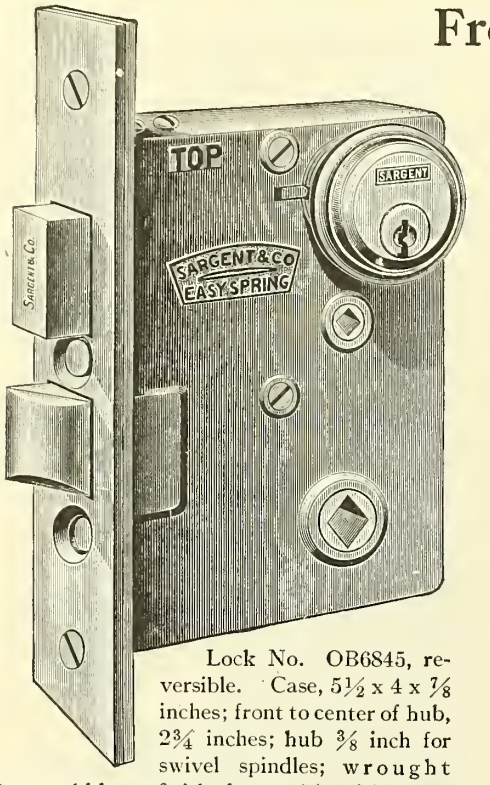
Lock No. 6845½, reversible. Case, 5½ x 4 x ⅞ inches; front to center of hub, 2¾ inches; hub ¾ inch for swivel spindles. Wrought bronze, polished; front, 1¼ x 7¾ inches; practically unlimited changes.

Lock No. 6845½, each	$5.50	Outside Escutcheon No. 7876TH, each	$ .75	Set No. 5045½TH Polished bronze, complete set for single door	$7.70
Knobs No. 1763TH, without roses, pair	.80	Inside Escutcheon No. 7855½TH, each	.35		

Front Door Lock Sets

Design Fairfax

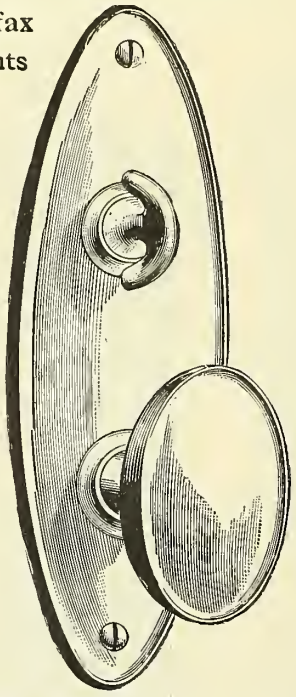
Half Size Cuts





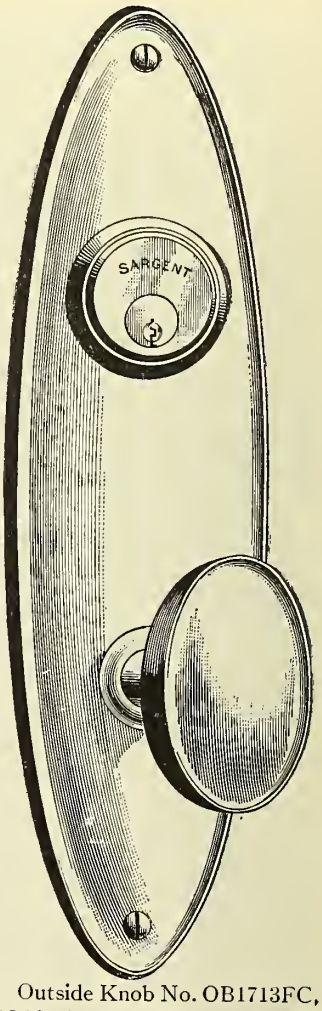
Lock No. OB6845, reversible. Case, 5½ x 4 x ⅞ inches; front to center of hub, 2¾ inches; hub ⅜ inch for swivel spindles; wrought brass, old brass finish; front, 1¼ x 7¾ inches; practically unlimited changes.

Lock No. OB6845, each	$7.00
Knobs No. OB1713FC, without roses, pair	.95
Outside Escutcheon No. OB7876FC, each	.65
Inside Escutcheon No. OB7855FC, each	.45
Set No. **OB5085FC** Old brass, complete set for single door	9.00



Inside Knob No. OB1713FC, 2⅝ inches. Wrought brass, old brass finish.

Inside Escutcheon No. OB7855FC, 2⅜ x 7 inches. Wrought brass, old brass finish.



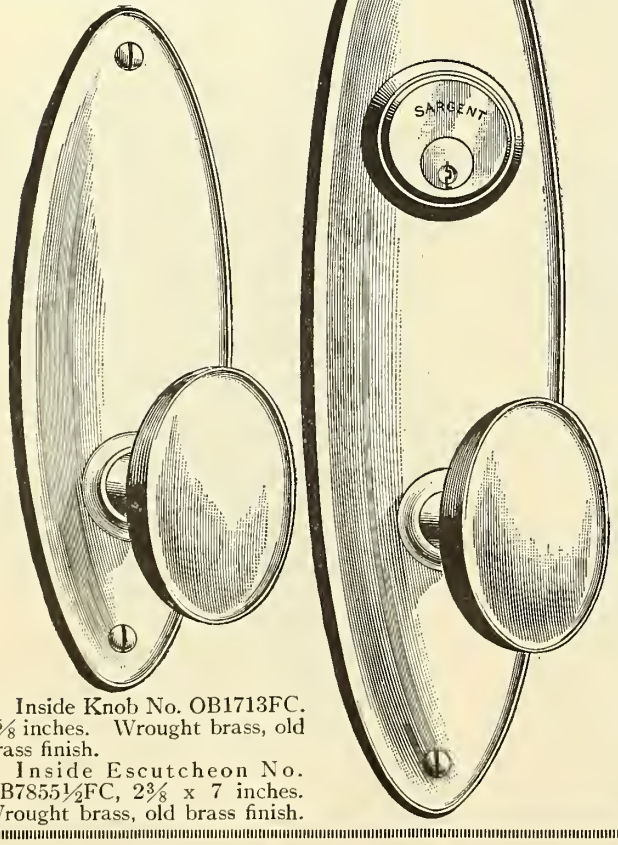
Outside Knob No. OB1713FC, 2⅝ inches. Wrought brass, old brass finish.

Outside Escutcheon No. OB7876FC, 2⅞ x 10 inches. Wrought brass, old brass finish.

Vestibule Door Sets

Design Fairfax

Cuts Half Size



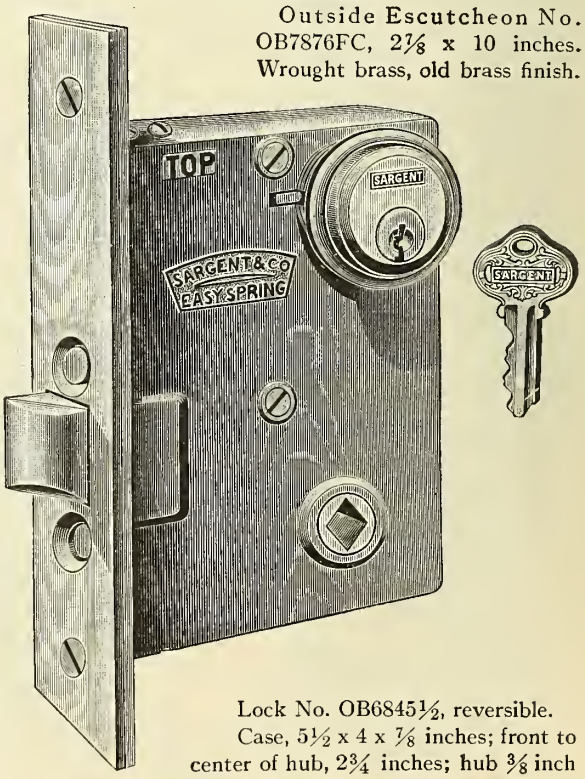
Inside Knob No. OB1713FC. 2⅝ inches. Wrought brass, old brass finish.

Inside Escutcheon No. OB7855½FC, 2⅜ x 7 inches. Wrought brass, old brass finish.

Outside Knob No. OB1713FC, 2⅝ inches. Wrought brass, old brass finish.

Outside Escutcheon No. OB7876FC, 2⅞ x 10 inches. Wrought brass, old brass finish.

Lock No. OB6845½, each	$5.80
Knobs No. OB1713FC, without roses, pair	$ .95
Outside Escutcheon No. OB7876FC, each	$ .65
Inside Escutcheon No. OB7855½FC, each	$ .45
Set No. **OB5085½FC.** Old brass, complete set for single door each	$7.80



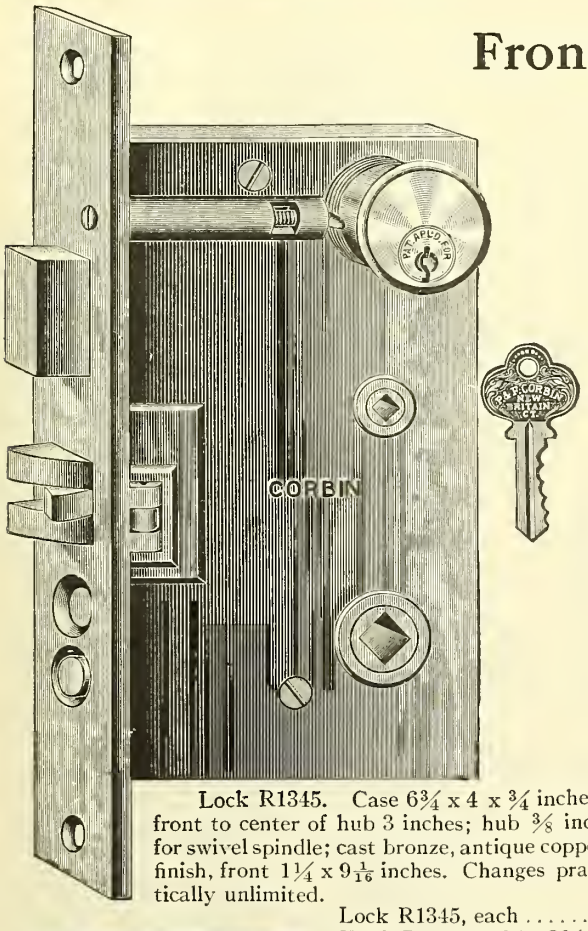
Lock No. OB6845½, reversible. Case, 5½ x 4 x ⅞ inches; front to center of hub, 2¾ inches; hub ⅜ inch for swivel spindles; wrought brass, old brass finish; front, 1¼ x 7¾ inches; practically unlimited changes.

SEE DISCOUNT SHEET

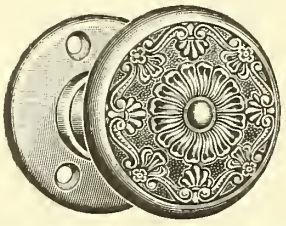
Front Door Lock Sets

Design Parthenon

Half Size Cuts



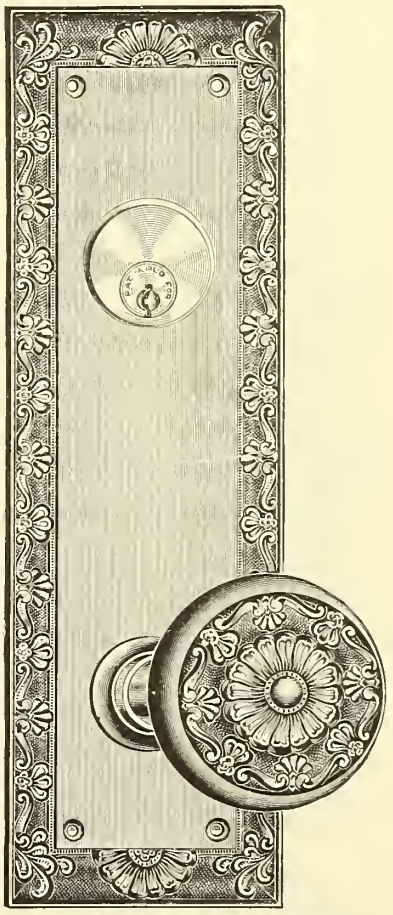
Lock R1345. Case 6¾ x 4 x ¾ inches; front to center of hub 3 inches; hub ⅜ inch for swivel spindle; cast bronze, antique copper finish, front 1¼ x 9 1/16 inches. Changes practically unlimited.



Inside Knob R81022, 2¼ inches, with one rose; cast bronze, antique copper finish.



Inside Thumb Knob R2149, cast bronze, antique copper finish.



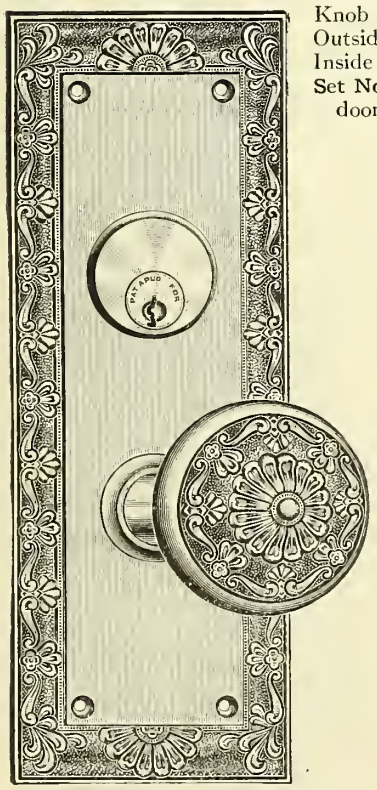
Outside Knob R81020, 2½ inches. Outside Escutcheon R81029, 2⅞ x 9½ inches. Cast bronze, antique copper finish.

Lock R1345, each $12.00
Knob R81021, 2½ x 2¼, with one rose, pair 2.78
Outside Escutcheon R81029, each 2.55
Inside Escutcheon, none.
Set No. F800 Antique copper finish. Complete set for single door, set 17.47

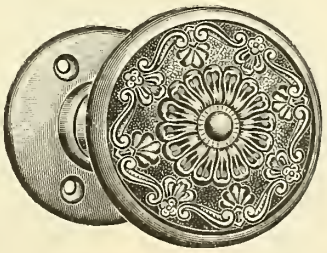
Vestibule Door Lock Set

Design Parthenon

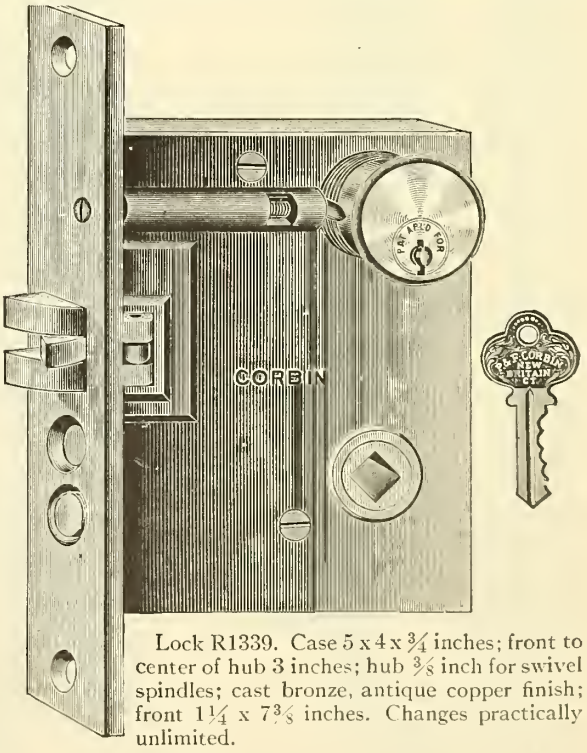
Half Size Cuts



Outside Knob R81022, 2¼ inches. Outside Escutcheon R81030, 2⅞ x 8 inches. Cast bronze, antique copper finish.



Inside Knob R81022, 2¼ inches, with one rose; cast bronze, antique copper finish.



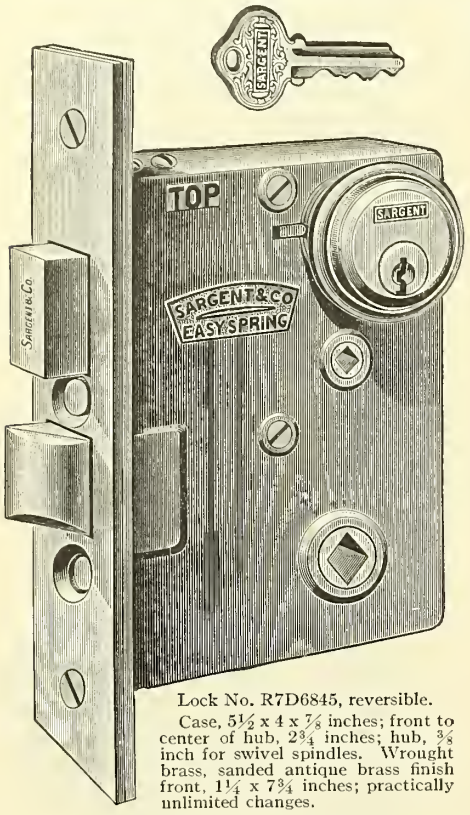
Lock R1339. Case 5 x 4 x ¾ inches; front to center of hub 3 inches; hub ⅜ inch for swivel spindles; cast bronze, antique copper finish; front 1¼ x 7⅜ inches. Changes practically unlimited.

Lock R1339, each $8.70
Knob R81022, with one rose, pair 2.48
Outside Escutcheon R81030, each $2.19
Inside Escutcheon, none.
Set No. V850 Antique copper finish. Complete set for single door, set 13.51

Front Door Lock Set

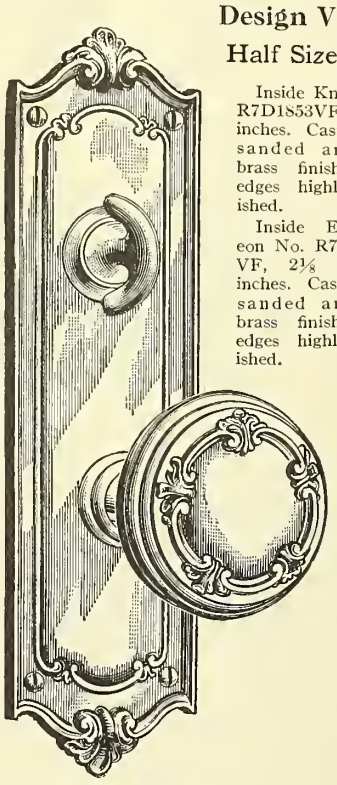
Design Vernon

Half Size Cuts



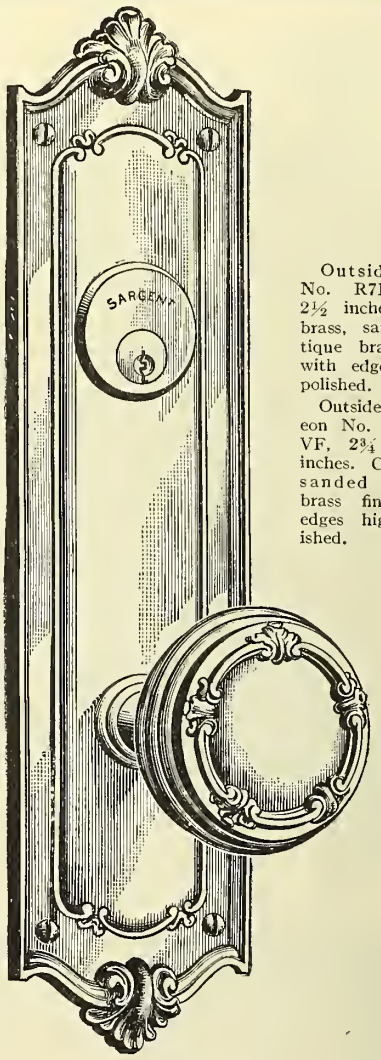
Lock No. R7D6845, reversible.

Case, 5½ x 4 x ⅞ inches; front to center of hub, 2¾ inches; hub, ⅜ inch for swivel spindles. Wrought brass, sanded antique brass finish front, 1¼ x 7¾ inches; practically unlimited changes.



Inside Knob No. R7D1853VF, 2¼ inches. Cast brass, sanded antique brass finish with edges highly polished.

Inside Escutcheon No. R7D7855-VF, 2⅛ x 7½ inches. Cast brass, sanded antique brass finish with edges highly polished.



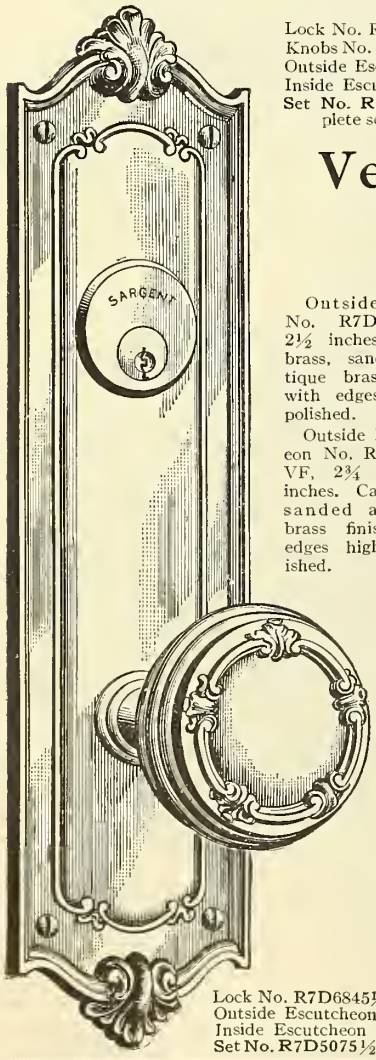
Outside Knob No. R7D1857VF, 2½ inches. Cast brass, sanded antique brass finish with edges highly polished.

Outside Escutcheon No. R7D7876 VF, 2¾ x 10½ inches. Cast brass, sanded antique brass finish with edges highly polished.

Lock No. R7D6845, each	$7.00
Knobs No. R7D1855VF, 2½x2¼, without roses, pair	1.40
Outside Escutcheon No. R7D7876VF, each	1.50
Inside Escutcheon No. R7D7855VF, each	.70
Set No. R7D5075VF Sanded antique brass finish, edges polished, complete set for single door	10.60

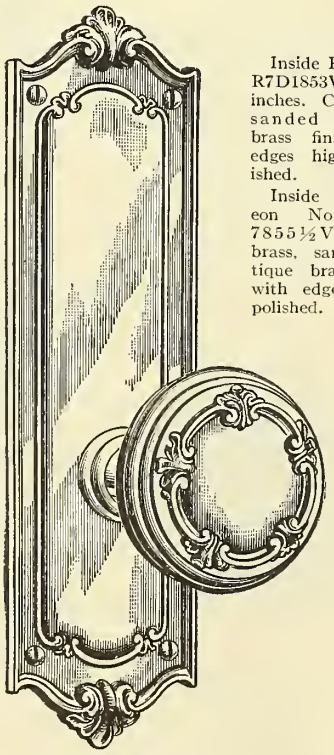
Vestibule Door Lock Sets

Design Vernon—Half Size Cuts



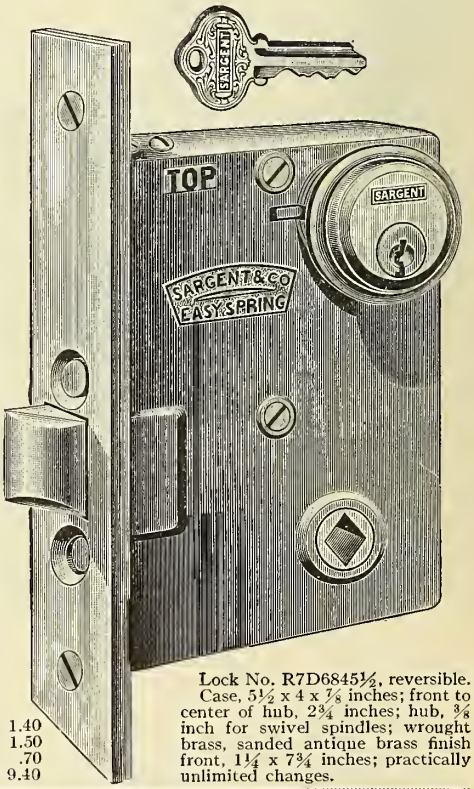
Outside Knob No. R7D1857VF, 2½ inches. Cast brass, sanded antique brass finish with edges highly polished.

Outside Escutcheon No. R7D7876-VF, 2¾ x 10½ inches. Cast brass, sanded antique brass finish with edges highly polished.



Inside Knob No. R7D1853VF, 2¼ inches. Cast brass, sanded antique brass finish with edges highly polished.

Inside Escutcheon No. R7D-7855½VF, cast brass, sanded antique brass finish with edges highly polished.



Lock No. R7D6845½, reversible.

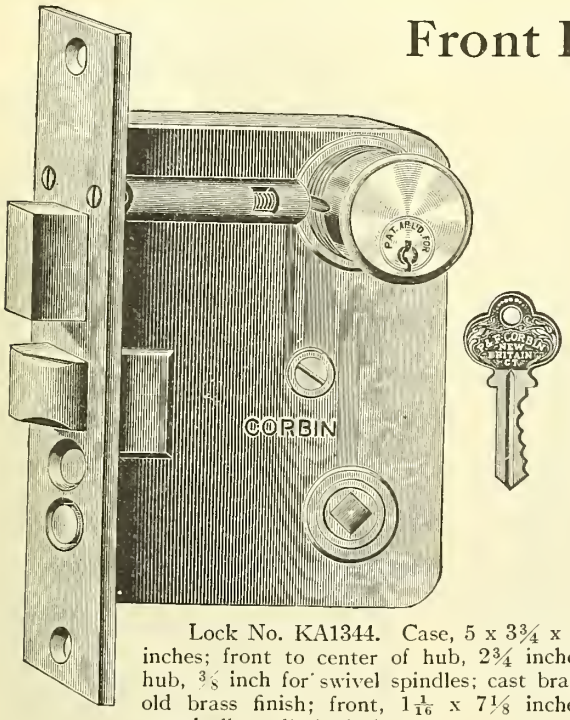
Case, 5½ x 4 x ⅞ inches; front to center of hub, 2¾ inches; hub, ⅜ inch for swivel spindles; wrought brass, sanded antique brass finish front, 1¼ x 7¾ inches; practically unlimited changes.

Lock No. R7D6845½, each... $5.80	Knobs No. R7D1855VF, 2½x2¼, without roses, pair 1.40
Outside Escutcheon No. R7D7876VF, each	1.50
Inside Escutcheon No. R7D7855½VF, each	.70
Set No. R7D5075½VF Sanded antique brass finish, edges polished, complete set for single door	9.40

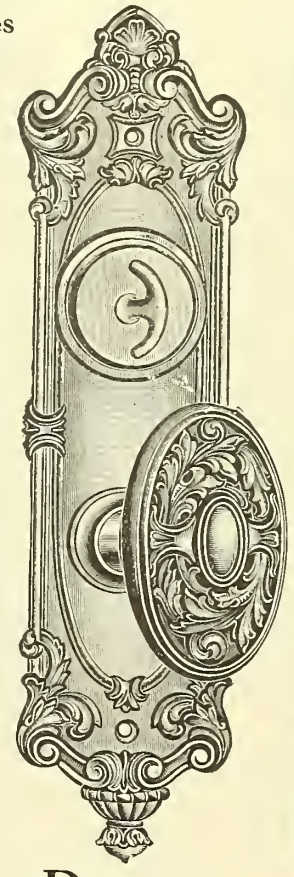
Front Door Lock Sets

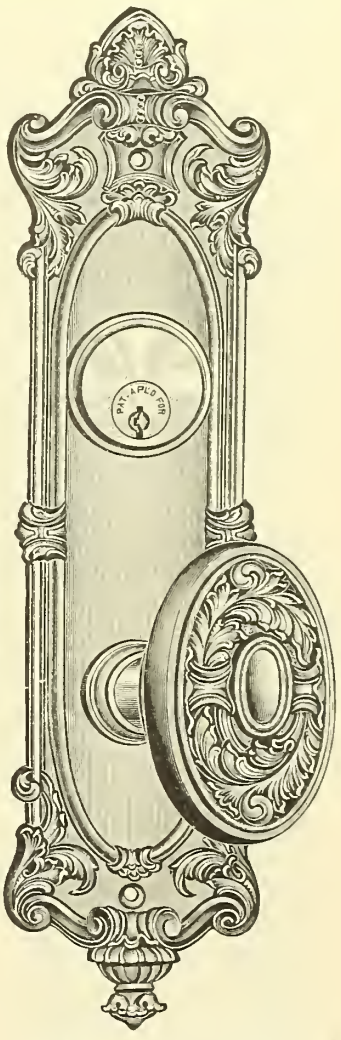
Design Marseilles

Half Size Cuts



Inside Knob No. KA89125, 2¼ inches. Inside Escutcheon No. KA89131, 2⅜ x 9 inches. Cast brass, old bass finish.

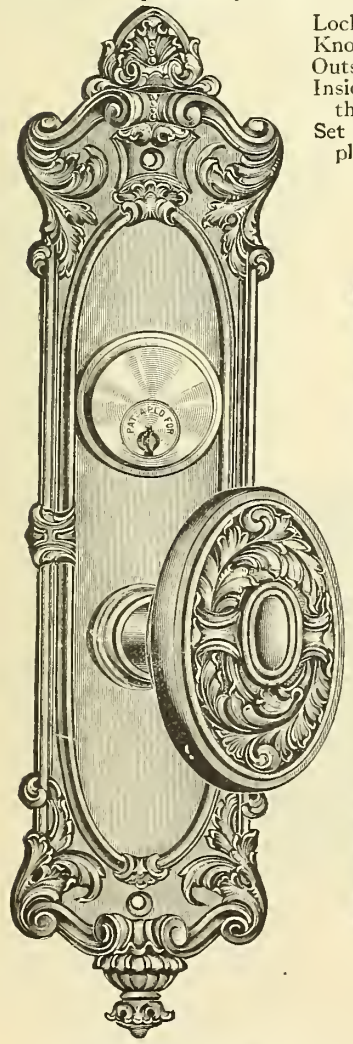




Outside Knob No. KA89125, 2¼ inches. Outside Escutcheon No. KA89130, 2⅝ x 10¾ inches. Cast brass, old brass finish.

Lock No. KA1344. Case, 5 x 3¾ x 11/16 inches; front to center of hub, 2¾ inches; hub, ⅜ inch for swivel spindles; cast brass, old brass finish; front, 1 1/16 x 7⅛ inches; practically unlimited changes.

Lock No. KA1344, each	$10.50
Knobs No. KA89125, without roses, pair	1.26
Outside Escutcheon No. KA89130, each	1.56
Inside Escutcheon No. KA89131, with thumb piece, each	1.50
Set No. KA891843 Old brass finish, complete set for single door	14.68

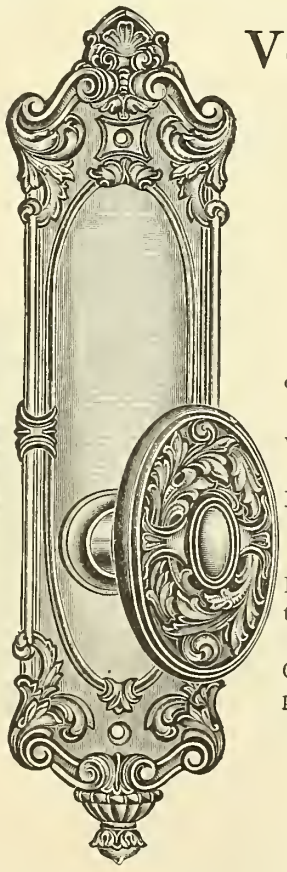


Outside Knob No. KA89125, 2¼ inches. Outside Escutcheon No. KA89130, 2⅝ x 10¾ inches. Cast brass, old brass finish.

Vestibule Door Lock Set

Design Marseilles

Half Size Cuts



Inside Knob No. KA89125, 2¼ inches. Inside Escutcheon No. KA89131, 2⅜ x 9 inches. Cast brass, old brass finish.

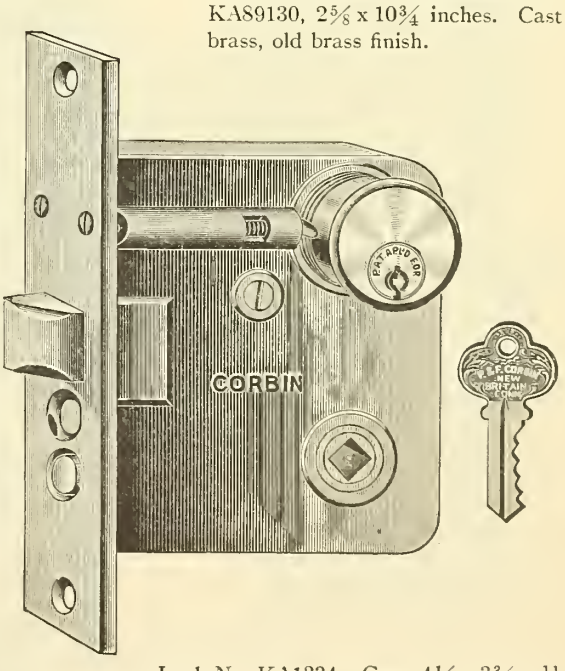
Lock No. KA1334, each ..... $ 7.95

Knob No. KA89125, without roses, pair 1.26

Outside Escutcheon No. KA89130, each 1.56

Inside Escutcheon No. KA89131, without thumb piece, each 1.20

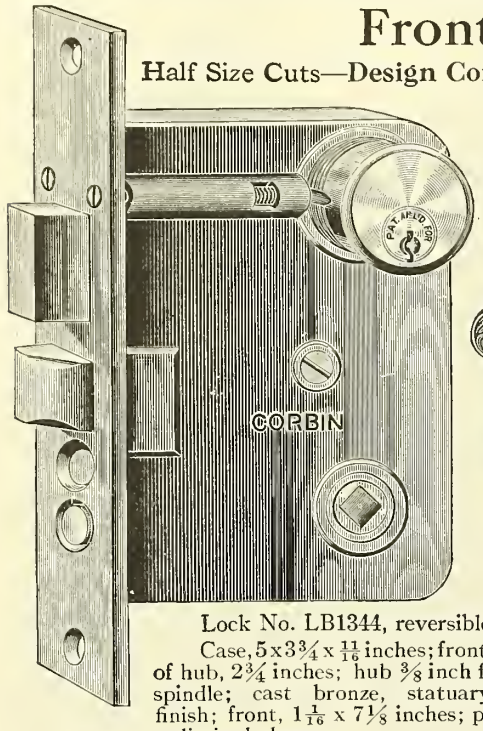
Set No. KA891743 Old brass finish, complete set for single door 12.12



Lock No. KA1334. Case, 4⅛ x 3¾ x 11/16 inches; front to center of hub 2¾ inches; hub ⅜ inch for swivel spindle. Cast brass, old brass finish front, 1 1/16 x 6¼ inches; practically unlimited changes.

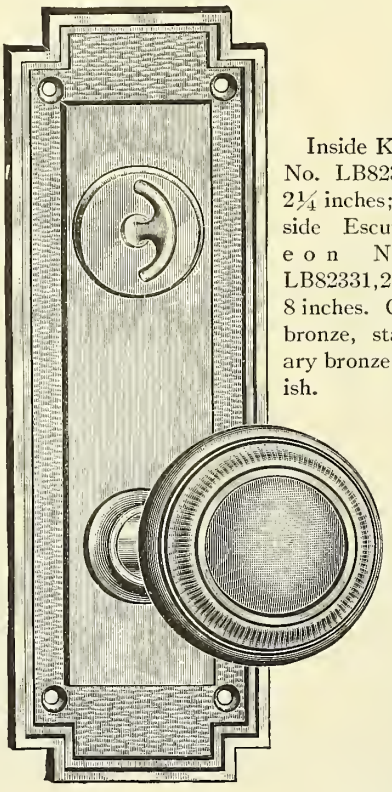
Front Door Lock Sets

Half Size Cuts—Design Corfu

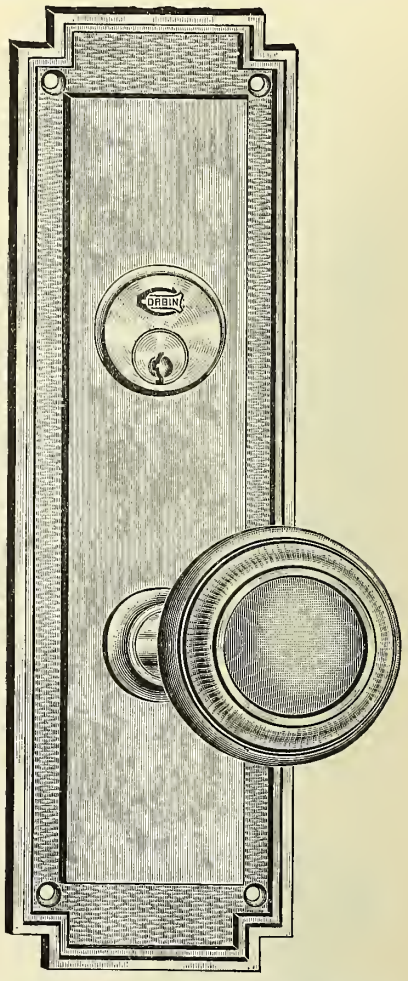


Lock No. LB1344, reversible.

Case, 5 x 3¾ x 11/16 inches; front to center of hub, 2¾ inches; hub ⅜ inch for swivel spindle; cast bronze, statuary bronze finish; front, 1 1/16 x 7⅛ inches; practically unlimited changes.

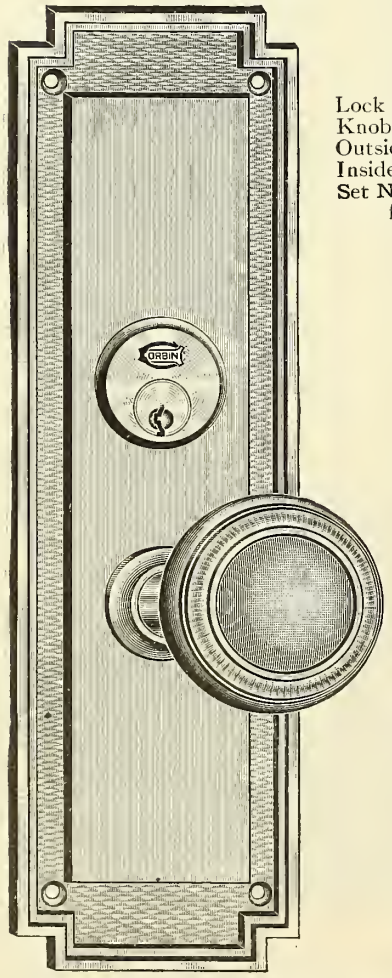


Inside Knob No. LB82322, 2¼ inches; Inside Escutcheon No. LB82331, 2⅝ x 8 inches. Cast bronze, statuary bronze finish.



Outside Knob No. LB82320, 2½ inches. Outside Escutcheon No. LB82330, 3 x 10 inches. Cast bronze, statuary bronze finish.

Lock No. LB1344, each	$10.50
Knobs No. LB82321, 2½ x 2¼, without roses, pair	2.55
Outside Escutcheon No. LB82330, each	3.46
Inside Escutcheon No. LB82331, with thumb piece each	3.26
Set No. LB823842 Statuary bronze finish, complete set for single door	19.62



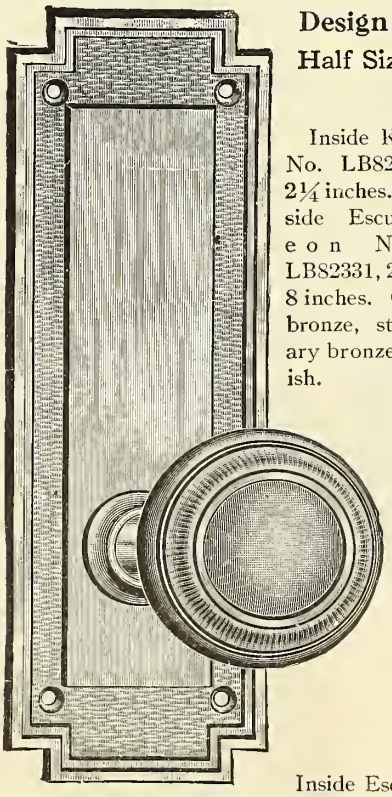
Outside Knob No. LB82322, 2¼ inches. Outside Escutcheon No. LB82330, 3 x 10 inches. Cast bronze, statuary bronze finish.

Lock No. LB1334, each	$ 7.95
Knobs No. LB82322, without roses, pair	$2.25
Outside Escutcheon No. LB82330, each	3.46

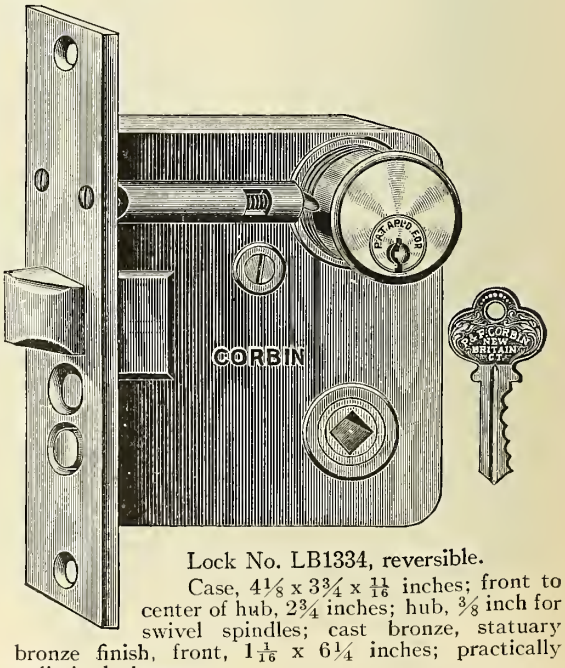
Vestibule Door Lock Sets

Design Corfu

Half Size Cuts



Inside Knob No. LB82322, 2¼ inches. Inside Escutcheon No. LB82331, 2⅝ x 8 inches. Cast bronze, statuary bronze finish.



Lock No. LB1334, reversible.

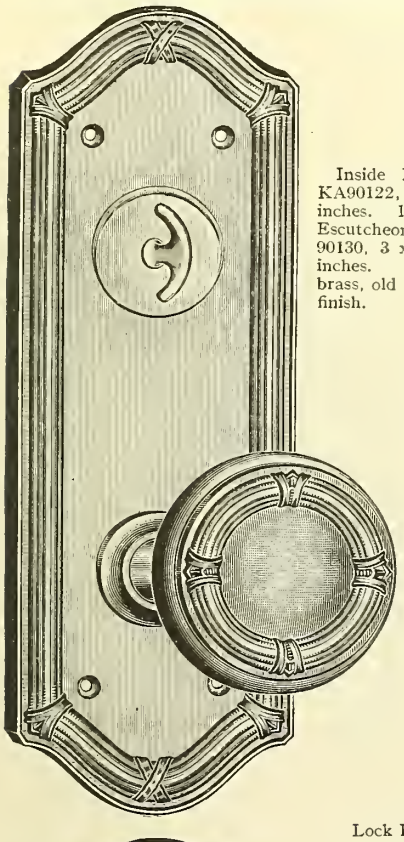
Case, 4⅛ x 3¾ x 11/16 inches; front to center of hub, 2¾ inches; hub, ⅜ inch for swivel spindles; cast bronze, statuary bronze finish, front, 1 1/16 x 6¼ inches; practically unlimited changes.

Inside Escutcheon No. LB82331, without thumb piece, each.	$ 2.96
Set No. LB823742 Statuary bronze finish, complete set for single door	16.78

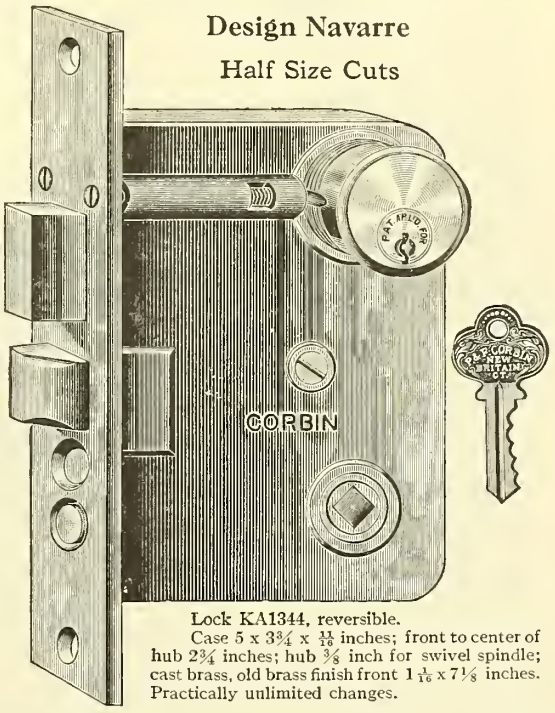
Front Door Lock Sets

Design Navarre

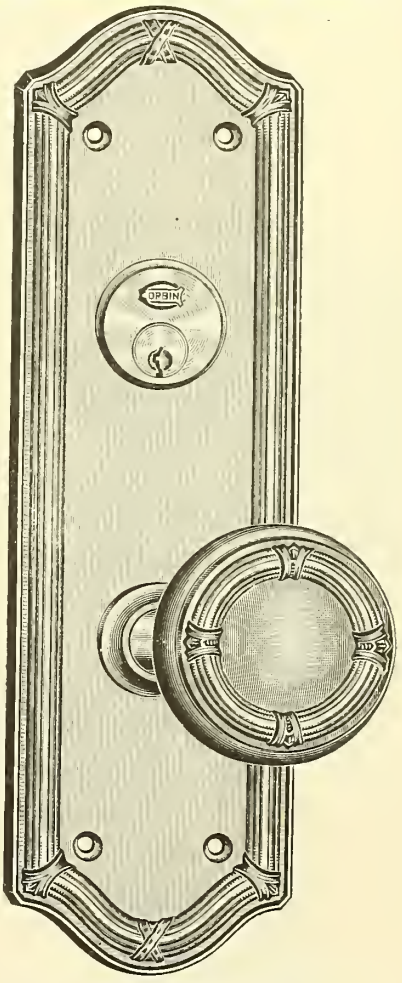
Half Size Cuts



Inside Knob KA90122, 2¼ inches. Inside Escutcheon KA 90130, 3 x 8⅜ inches. Cast brass, old brass finish.



Lock KA1344, reversible.
Case 5 x 3¾ x 1 1/16 inches; front to center of hub 2¾ inches; hub ⅜ inch for swivel spindle; cast brass, old brass finish front 1 1/16 x 7⅛ inches. Practically unlimited changes.

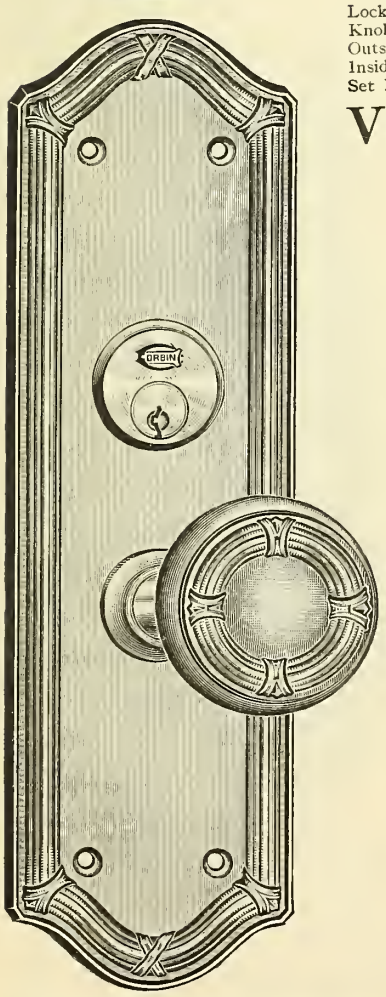


Outside Knob KA90120, 2½ inches. Outside Escutcheon KA90129, 3 x 10⅛ inches. Cast brass, old brass finish.

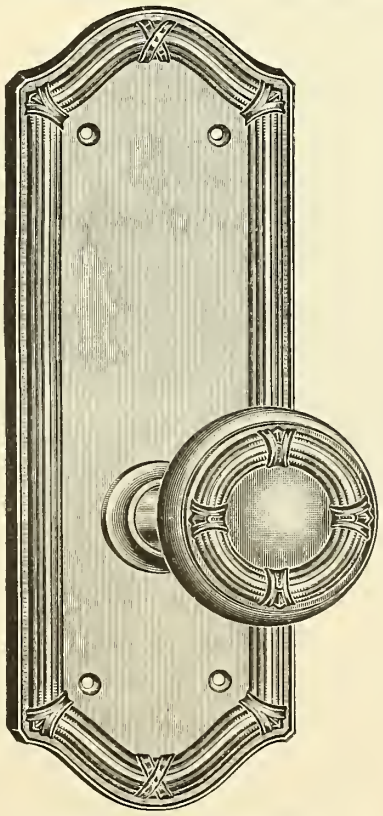
Lock KA1344, each	$10.50
Knob KA 90121, 2½ x 2¼, without roses, pair	4.20
Outside Escutcheon KA90129, each	4.16
Inside Escutcheon KA90130, with thumb piece, each	3.96
Set No. KA901846, Old brass finish. Complete set for single door	22.67

Vestibule Door Lock Sets

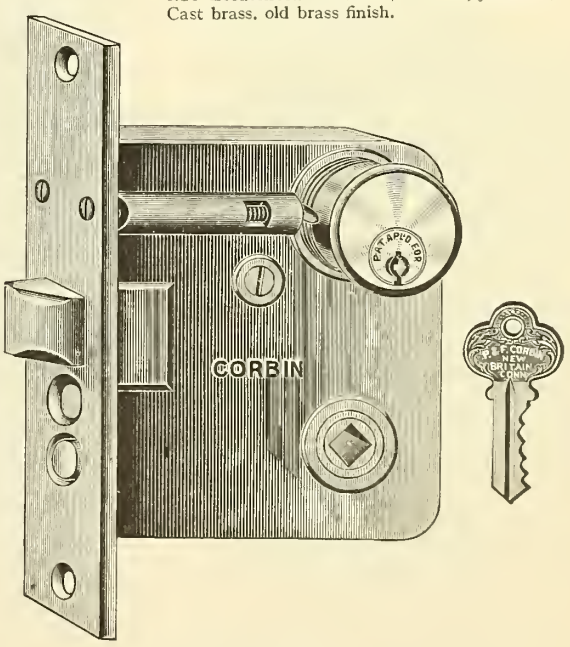
Design Navarre. Half Size Cuts



Outside Knob KA90122, 2¼ inches. Outside Escutcheon KA90129, 3 x 10⅛ inches. Cast brass, old brass finish.



Inside Knob KA90122, 2¼ inches. Inside Escutcheon KA90130, 3 x 8⅜ inches. Cast brass, old brass finish.



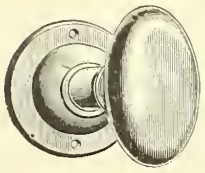
Lock KA1334, reversible.
Case 4⅛ x 3¾ x 1 1/16 inches; hub ⅜ inch for swivel spindles; cast brass, old brass finish; front 1 1/16 x 6¼ inches. Practically unlimited changes.

Lock KA1334, each	$ 7.95
Knob KA90122, without roses, pair	3.80
Outside Escutcheon KA90129, each	4.16
Inside Escutcheon KA90130, without thumb piece, each	3.66
Set No. KA901746 Old brass finish. Complete set for single door	19.72

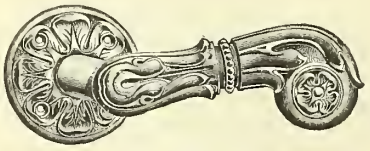
Iron Front Door or Gate Lock Set

Design Courtray

Lock is not reversible. When ordering state hand desired

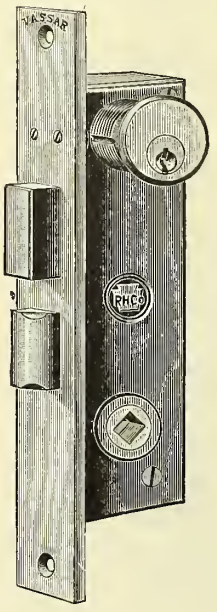


Inside Knob No. 3646½-87, 2¼ inches; Bower-Barff finish; size of rose 2 inches.



Right Hand

Outside Lever Handle No. 2566½-87, Bower-Barff finish; length of lever 4 inches; size of rose 2⅛ inches. State hand wanted.



Lock No. 01719–87. Case 6¾ x 1⅞ x ¾ inches; front to center of hub, 1 inch; ⅜ inch swivel spindles; cast bronze, Bower-Barff finish; front, 1¼ x 9 inches; practically unlimited changes.

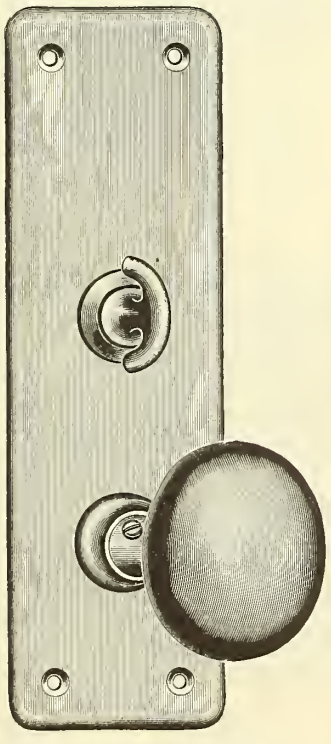
This Lock Set is especially adapted for front gates of residences, etc.

Lock No. 01719–87, each	$11.88
Knobs No. 3646½–87, pair	2.25
Levers No. 2566½–87, each	3.56
Set No. I-2000 Bower-Barff finish (dead black), complete sets for single doors, each	17.69

Inside Door Cylinder Lock Sets

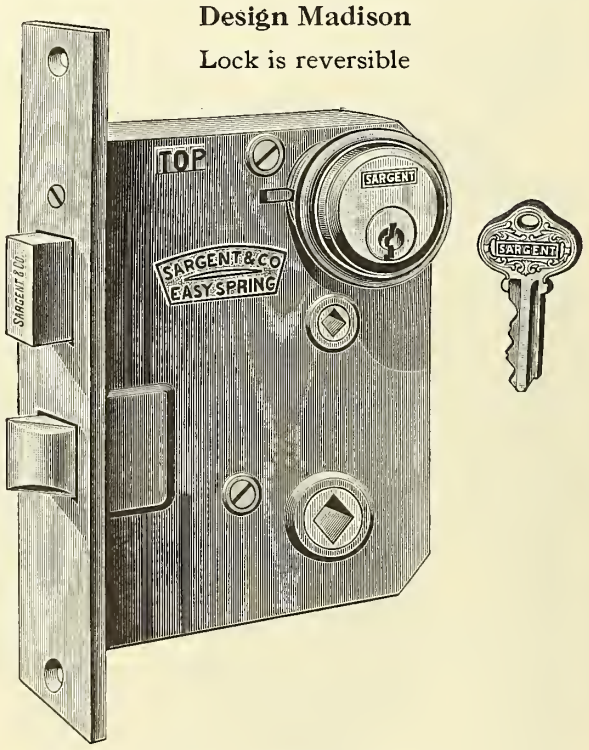
Design Madison

Lock is reversible

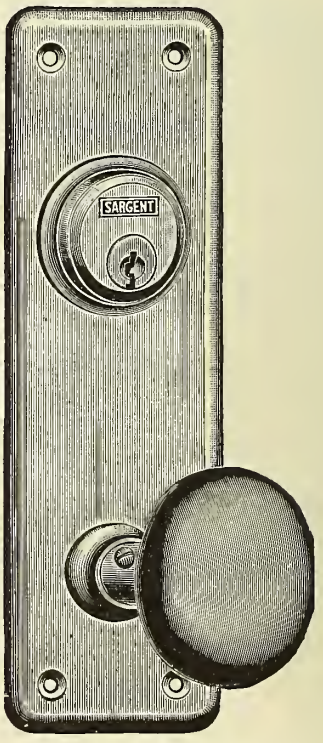


Inside Knob No. 1622P, 2¼ inches. Cast bronze, polished.

Inside Escutcheon No. 7875MR, 2¼ x 7½ inches, with thumb piece. Wrought bronze, polished.



Lock No. 6725P. Japanned case, 5½ x 3⅞ x ¾ inches; front to center of cylinder, 2¾ inches; hub, ⅜ inch; cast bronze, polished; front, 1 1/16 x 7½ inches.



Outside Knob No. 1622P, 2¼ inches. Cast bronze, polished.

Outside Escutcheon No. 7876MR, 2¼ x 7½ inches. Wrought bronze, polished.

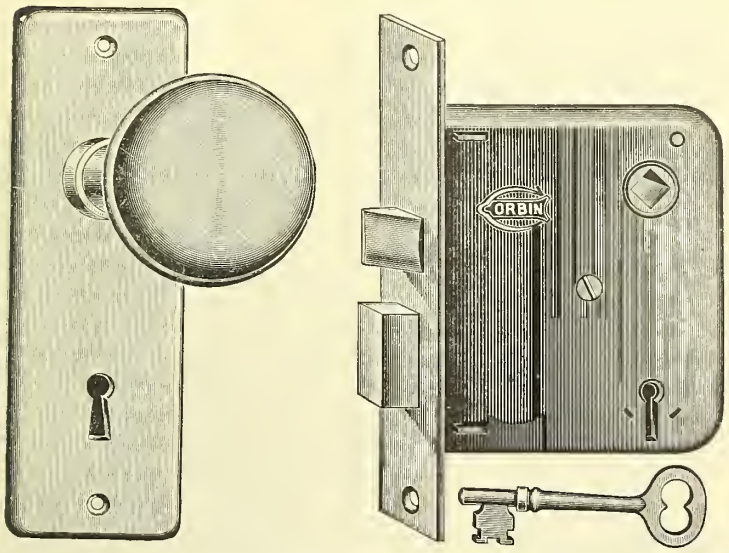
Lock No. 6725P, dozen	$78.00	Outside Escutcheon No. 7876MR, dozen	$4.40
Knobs No. 1622P, dozen pairs	10.00	Inside Escutcheon No. 7875MR, dozen	4.40
Set No. M1500 Bronze, polished, complete sets for doors, dozen			96.80

Inside Door Lock Sets

Half Size Cuts

Design Washington

Locks are Reversible

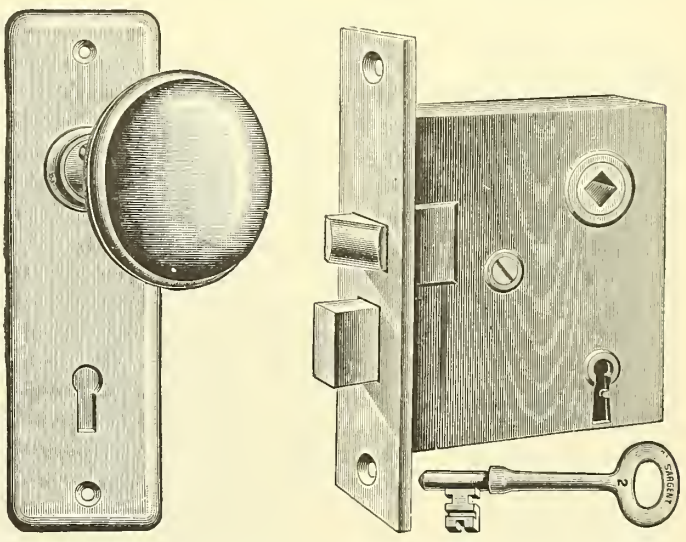


One pair Knobs No. N1523½, 2¼ inches; two Escutcheons No. N3420½, 1¾ x 5½ inches. Wrought steel, bronze plated.

Lock No. N1061. Wrought steel case, 3⅝ x 3⅛ x ½ inches; front to center of hub, 2⅜ inches; hub, $\frac{5}{16}$ inch; wrought steel, bronze plated front, ⅞ x 5¼ inches; 1 tumbler; 24 changes.

Lock No. N1061, dozen ..... $ 5.40
Knobs No. N1523½, dozen pairs 7.95
Escutcheons No. N3420½, dozen 1.65
Set No. N165064 Bronze plated, complete sets for doors, dozen 15.45

Design Madison

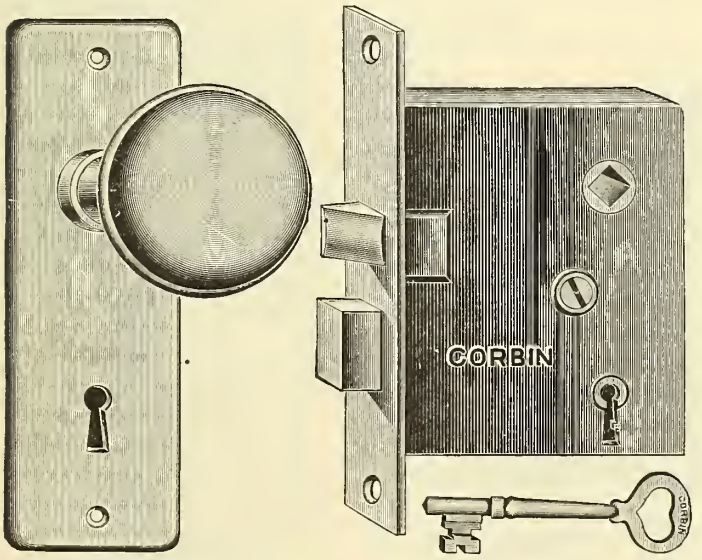


One pair Knobs No. AB 1342, 2¼ inches; two Escutcheons No. AB315MR, 1⅝ x 5⅜ inches. Wrought steel, antique copper finish.

Lock No. AB5161. Case, 3½ x 3¼ x ⅝ inches; front to center of hub, 2½ inches; hub, $\frac{5}{16}$ inch; wrought steel, antique copper finish, front ⅞ x 5¼ inches; 1 tumbler, 12 changes.

Lock No. AB5161, dozen ..... $ 4.00
Knobs No. AB1342, dozen pairs 5.00
Escutcheons No. AB315MR, dozen 1.30
Set No. AB340MR Antique copper finish, complete sets for door, dozen 10.80

Design Washington

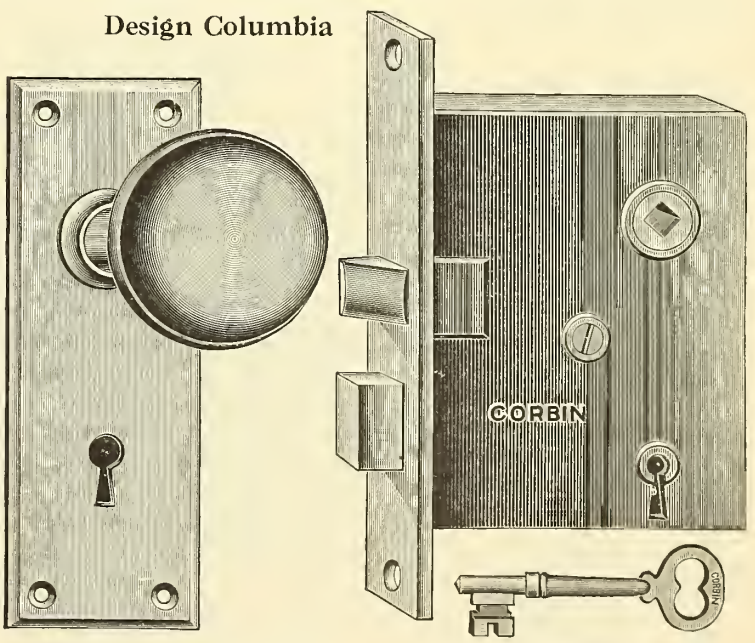


One pair Knobs No. 01583, 2¼ inches; two Escutcheons No. 2420½, 1¾ x 5½ inches. Wrought bronze, polished.

Lock No. 1285B. Case, 3¾ x 3⅛ x ½ inches; front to center of hub, 2⅜ inches; hub, $\frac{5}{16}$ inch; wrought bronze, polished, front, ⅞ x 5¼ inches; 1 tumbler, 12 changes.

Lock No. 1285B, dozen ..... $ 7.50
Knobs No. 01583, dozen pairs 10.50
Escutcheons No. 2420½, dozen 3.50
Set No. 265124 Polished bronze, complete sets for door, dozen 23.25

Design Columbia



One pair Knobs No. 01583, 2¼ inches; two Escutcheons No. 2422, 2 x 5¾ inches. Wrought bronze, polished.

Lock No. 1287B. Case, 4½ x $\frac{9}{16}$ inches; front to center of hub, 2⅝ inches; hub, $\frac{5}{16}$ inch; cast bronze, polished; front, ⅞ x 5⅞ inches; 1 tumbler; 12 changes.

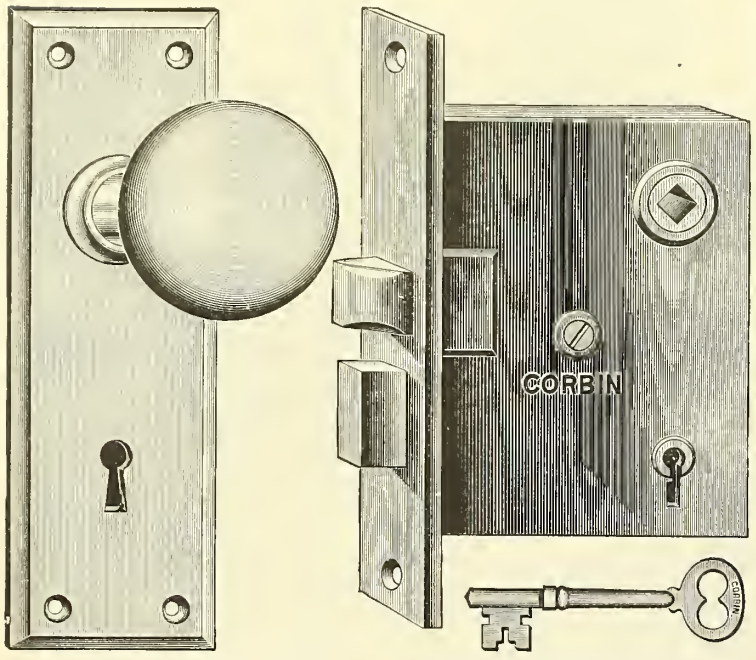
Lock No. 1287B, dozen $15.00
Knobs No. 01583, dozen pairs 10.50
Escutcheons No. 2422, dozen 3.75
Set No. M775 Bronze, polished, complete sets for doors, dozen 33.00

Inside Door Lock Sets

Half Size Cuts

Locks are reversible

Design Columbia

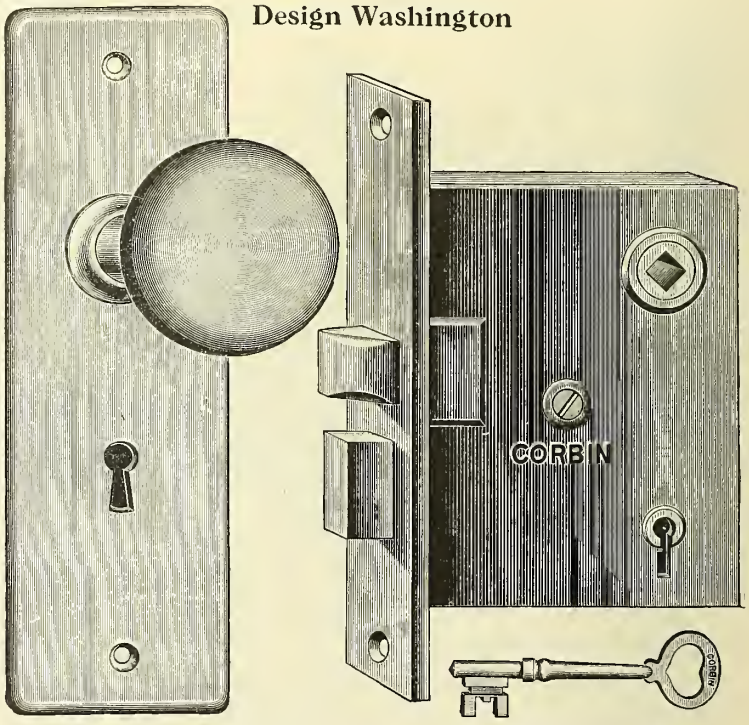


One pair Knobs cast bronze, polished; No. 1519½, 2¼ inches. Two Escutcheons, wrought bronze, polished; No. 2424, 2 x 7 inches.

Lock No. 1363. Case, 4¼ x 3½ x ⅝ inches; front to center of hub, 2¾ inches; hub, 5/16 inch; cast bronze, polished; front, 1 x 6⅛ inches; 1 tumbler; 24 changes.

Lock No. 1363, dozen	$27.00
Knob No. 1519½, dozen pairs	18.00
Escutcheon No. 2424, dozen	4.80
Set No. M875 Bronze, polished, complete sets for doors, dozen	54.60

Design Washington

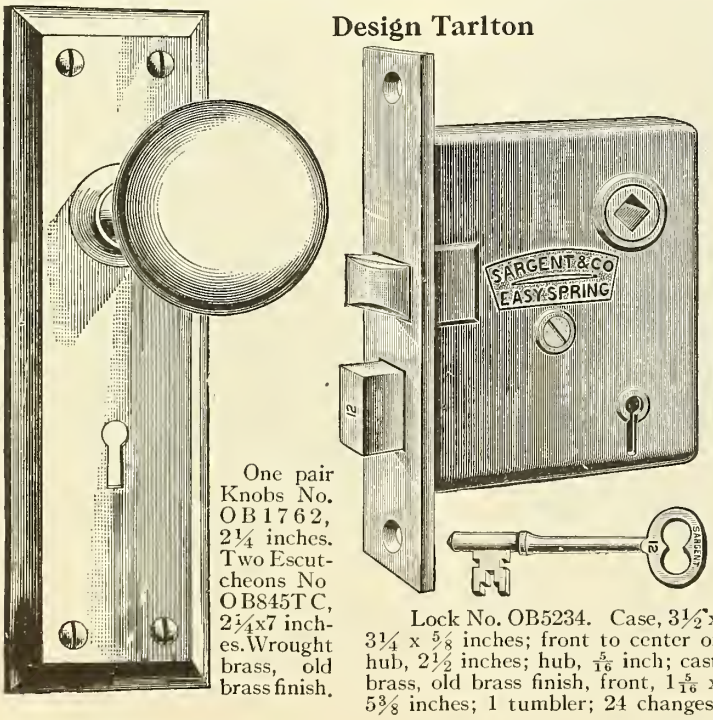


One pair Knobs, cast bronze, polished; No. 1519½, 2¼ inches. Two Escutcheons, wrought bronze, polished; No. 2430½, 2¼ x 7¼ inches.

Lock No. 1363. Case, 4¼ x 3½ x ⅝ inches; front to center of hub, 2¾ inches; hub, 5/16 inch; cast bronze, polished; front, 1 x 6⅛ inches; 1 tumbler; 24 changes.

Lock No. 1363, dozen	$27.00
Knob No. 1519½, dozen pairs	18.00
Escutcheon No. 2430½, dozen	6.00
Set No. M1075 Bronze, polished, sets for doors complete, dozen	57.00

Design Tarlton

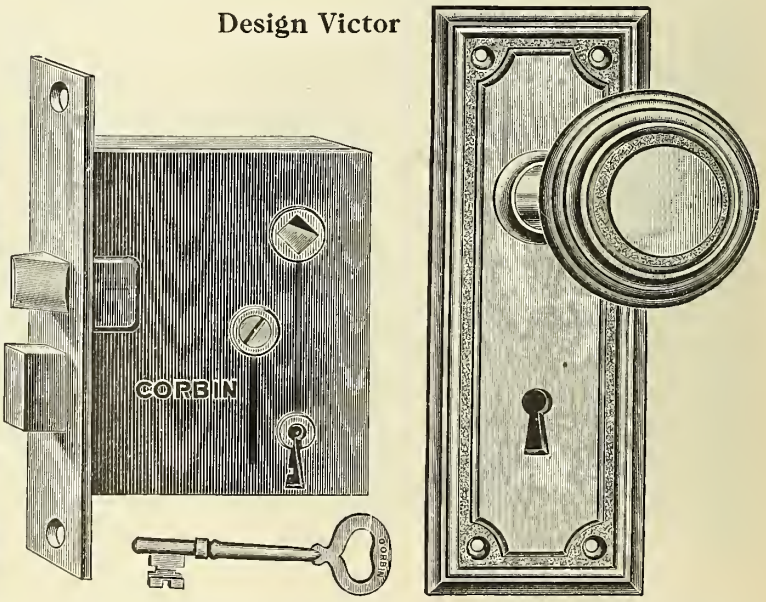


One pair Knobs No. OB1762, 2¼ inches. Two Escutcheons No OB845TC, 2¼x7 inches. Wrought brass, old brass finish.

Lock No. OB5234. Case, 3½ x 3¼ x ⅝ inches; front to center of hub, 2½ inches; hub, 5/16 inch; cast brass, old brass finish, front, 1 5/16 x 5⅜ inches; 1 tumbler; 24 changes.

Lock No. OB5234, dozen	$ 8.30
Knobs No. OB1762, dozen pairs	9.70
Escutcheons No. OB845TC, dozen	4.80
Set No. OB1255TC Old brass finish, complete for door, dozen	25.20

Design Victor



Lock No. KA13271. Case, 3¾ x 3⅛x½ inches; front to center of hub, 2⅜ inches; hub, 5/16 inch. Wrought steel, old brass finish, front, ⅞ x 5¼ inches; 1 tumbler; 12 changes.

One pair Knobs No. KA-61822, 2¼ inches. Two Escutcheons No. KA61832, 2¼ x 6¼ inches. Wrought steel, old brass finish.

Lock No. KA13271, dozen	$ 6.00
Knob No. KA61822, dozen pairs	8.25
Escutcheon No. KA61832, dozen	3.75
Set No. KA618048 Old brass finish, complete set for doors, dozen	21.75

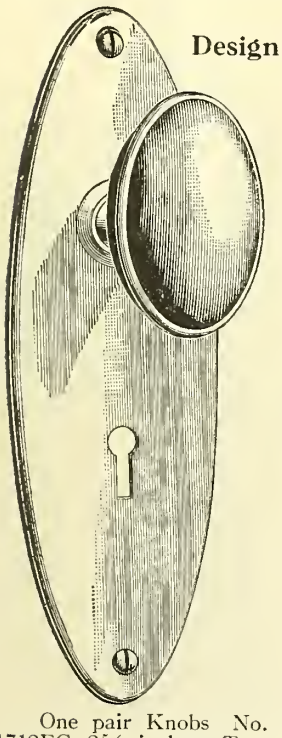
SEE DISCOUNT SHEET

Inside Door Lock Sets

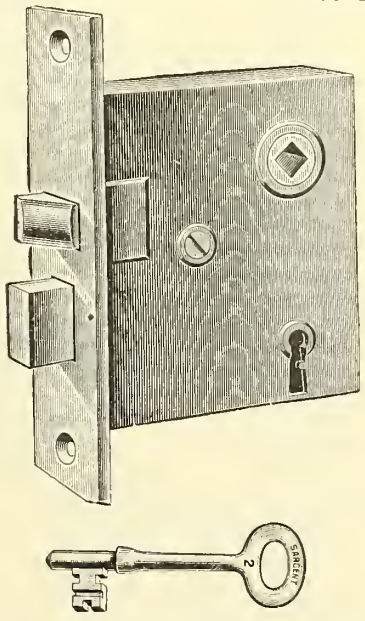
Design Fairfax

Half Size Cuts

Locks are reversible



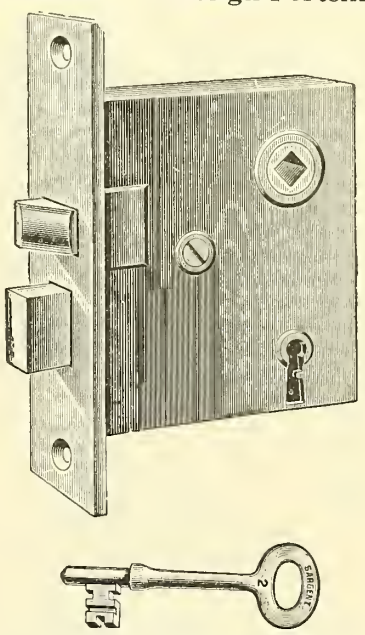
One pair Knobs No. OB 1712FC, 2⅝ inches. Two Escutcheons No. OB845FC, 2⅜ x 7 inches, same style as Fairfax design, on page 1108. Wrought brass, old brass finish.



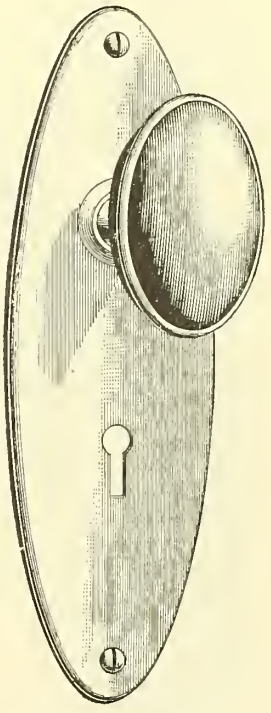
Lock No. OB5164. Case, 3½ x 3¼ x ⅝ inches; front to center of hub, 2½ inches; hub, 5/16 inch. Cast brass, old brass finish; front, ⅞ x 5¼ inches; 1 tumbler; 12 changes.

Lock No. OB5164, dozen ..... $ 5.80
Knob No. OB1712FC, dozen pairs 10.20
Escutcheons No. OB845FC, dozen 5.40
Set No. OB1075FC Old brass finish, complete sets for door, dozen 21.60

Design Portsmouth



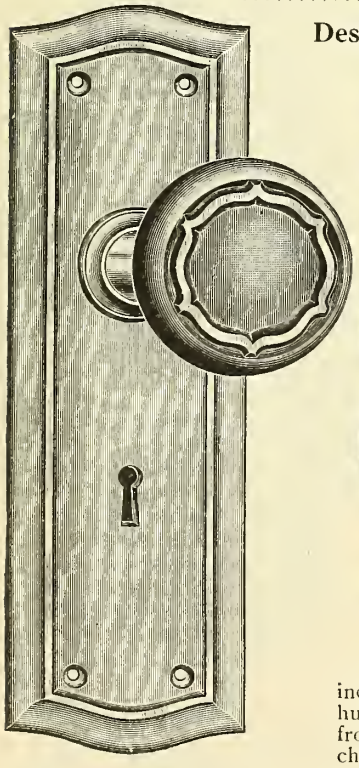
Lock No. 5164P. Case 3½ x 3¼ x ⅝ inches; front to center of hub, 2½ inches; hub, 5/16 inch. Cast bronze, polished; front, ⅞ x 5¼ inches; 1 tumbler; 12 changes.



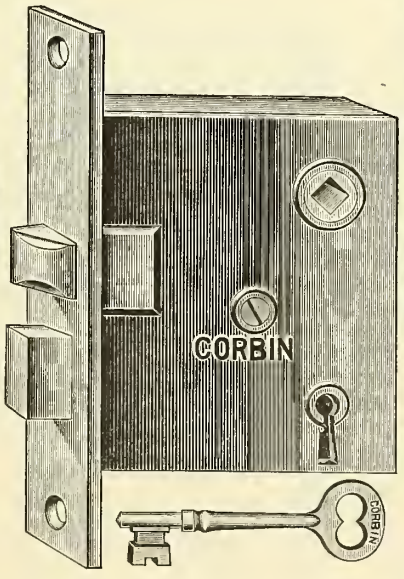
One pair Knobs No. 1702P, 2¼ inches. Two Escutcheons No. 845PC, 2⅜ x 7 inches. Wrought bronze, polished.

Lock No. 5164P, dozen ..... $ 5.00
Knobs No. 1702P, dozen pairs 7.00
Escutcheons No. 845PC, dozen 4.20
Set No. 1075PC Polished bronze, complete sets for door, dozen 18.00

Design Wakefield



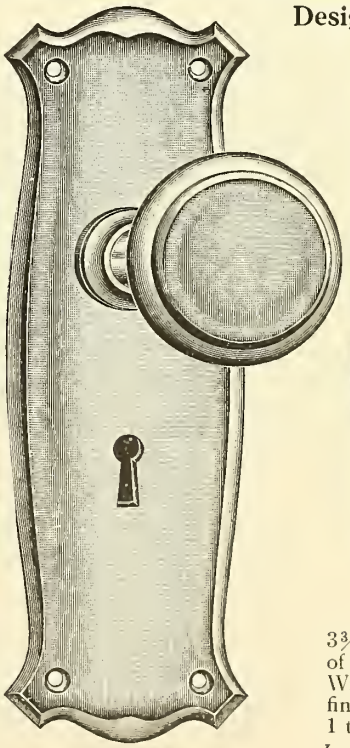
One pair Knobs No. KA 72622, 2¼ inches. Two Escutcheons No. KA72631, 2½ x 7¾ inches. Wrought brass, old brass finish.



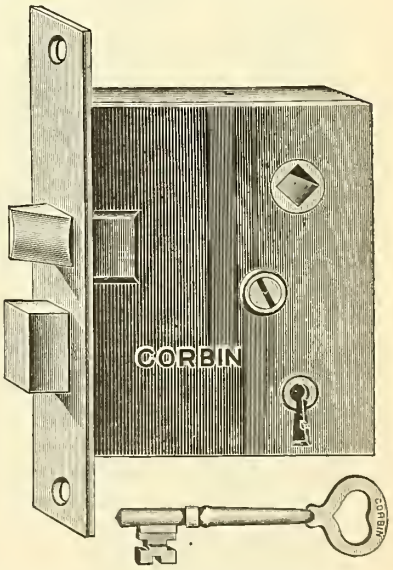
Lock No. KA785. Case, 3⅝ x 3¼ x 9/16 inches; front to center of hub, 2 9/16 inches; hub, 5/16 inch. Cast brass, old brass finish, front, 15/16 x 5½ inches; 1 tumbler; 24 changes.

Lock No. KA785, dozen $12.45
Knobs No. KA72622, dozen pairs . 15.75
Escutcheons No. KA72631, dozen .. 7.95
Set No. KA726156 Old brass finish, complete sets for door, dozen 36.00

Design Princeton



One pair Knobs No. SKA62122, 2¼ inches. Two Escutcheons No. SKA62131, 2½ x 7¾ inches. Wrought steel, sanded old brass finish.

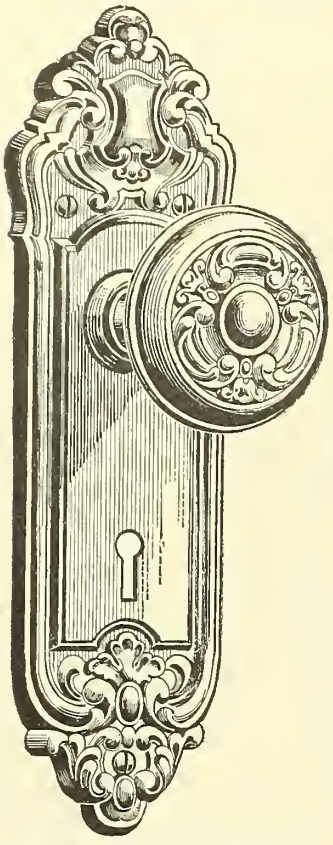


Lock No. SKA13271. Case, 3¾ x 3⅛ x ½ inches; front to center of hub, 2 3/16 inches; hub, 5/16 inch. Wrought steel, sanded old brass finish, front, ⅞ x 5¼ inches; 1 tumbler; 12 changes.

Lock No. SKA13271, dozen. $ 6.00
Knobs No. SKA62122, dozen pairs 10.50
Escutcheons No. SKA62131, dozen 3.75
Set No. SKA621-048 Sanded old brass, complete sets for doors, dozen 24.00

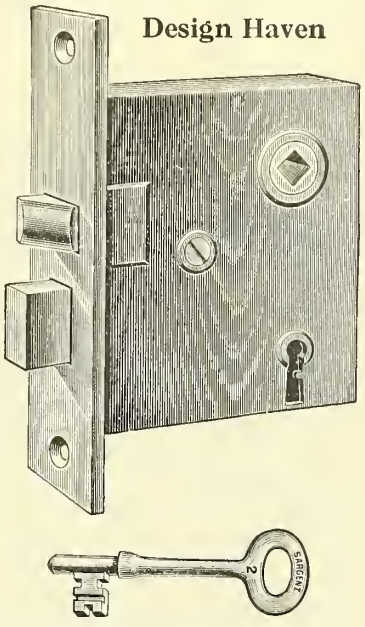
Inside Door Lock Sets

Half Size Cuts. Locks are reversible



One pair Knobs No. OE1342HF, 2¼ inches. Two Escutcheons No. OE354-HF, 2 1/16 x 8¼ inches. Wrought steel, old brass finish, depressed surface oxidized and relieved.

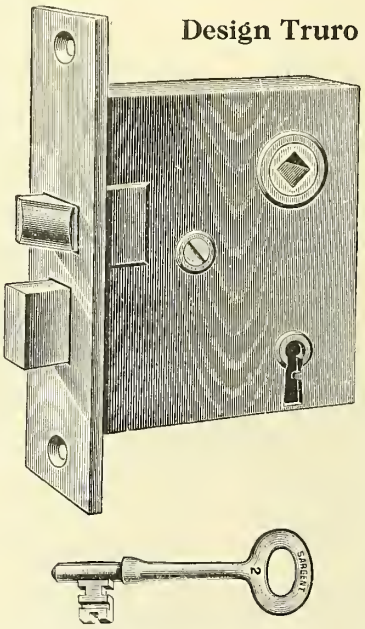
Design Haven



Lock No. OE5161. Case 3½ x 3¼ x ⅝ inches; front to center of hub 2½ inches; hub 5/16 inch; front is wrought steel, old brass finish, ⅞ x 5¼ inches; 1 tumbler, 12 changes.

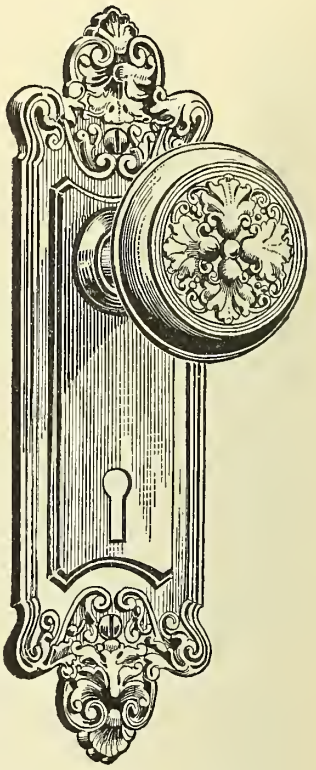
Lock No. OE5161, dozen	$ 4.00
Knobs No. OE1342HF, dozen pairs	6.00
Escutcheon No. OE354HF, dozen	3.00
Set No. OE344HF Old brass, depressed surface, oxidized and relieved, complete set for door, dozen	12.00

Design Truro

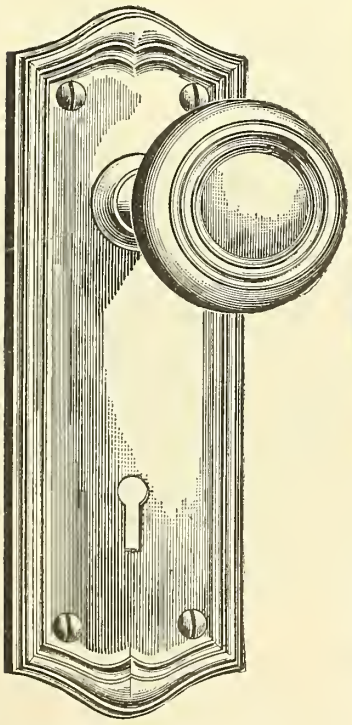


Lock No. AB5161. Case 3½ x 3¼ x ⅝ inches; front to center of hub 2½ inches; hub 5/16 inch; front is wrought steel, antique copper finish, ⅞ x 5¼ inches; 1 tumbler, 12 changes.

Lock No. AB5161, dozen	$ 4.00
Knobs No. AB1452TG, dozen pairs	5.40
Escutcheon No. AB345TG, dozen	2.40
Set No. AB364TG Antique copper finish, complete set for door, dozen	15.60



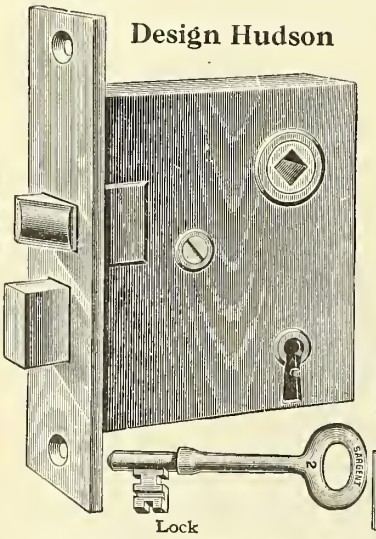
One pair Knobs No. AB1452TG, 2¼ inches. Two Escutcheons No. AB-345TG, 2¼ x 7½ inches. Cast iron, antique copper finish.



One pair Knobs, 2¼ inches. No. 1762TH, wrought bronze, polished; No. R7D1462TH, wrought steel, sanded, antique brass finish, with edges highly polished brass.

Two Escutcheons, 2½ x 7¼ inches. No. 845TH, wrought bronze, polished; No. R7D345TH, wrought steel, sanded antique brass finish, with edges highly polished brass.

Design Hudson



Lock

Case 3½ x 3¼ x ⅝ inches; front to center of hub 2½ inches; front ⅞ x 5¼ inches; 1 tumbler, 12 changes. No. 5164P, cast bronze, polished; No. R7D5161, wrought steel sanded antique brass finish with edges highly polished.

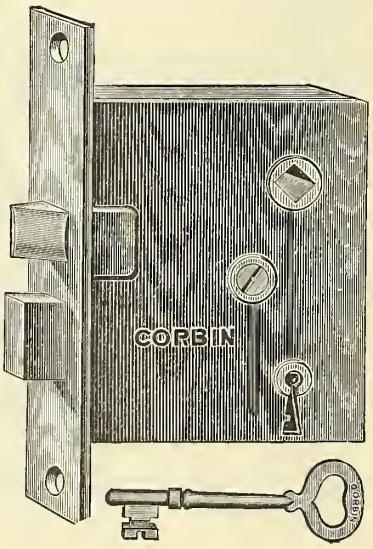
POLISHED BRONZE

Lock No. 5164P, dozen	$ 5.00
Knobs No. 1762TH, dozen pairs	8.40
Escutcheons No. 845TH, dozen	4.20
Set No. 1055TH, polished bronze, complete sets for doors, dozen set	20.40

WROUGHT STEEL

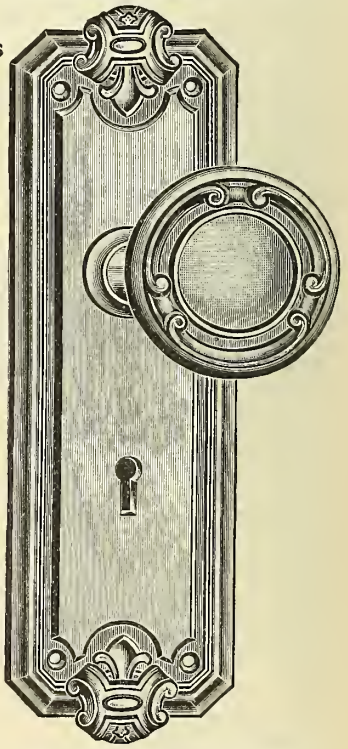
Lock No. R7D5161, dozen	4.00
Knobs No. R7D1462TH, dozen pairs	7.20
Escutcheons No. R7D345TH, dozen	2.40
Set No. R7D354TH Wrought steel, sanded antique brass finish with edges highly polished brass, complete sets for doors, dozen set	12.60

Design Anvers



Lock No. S2KA1285. Case 3¾ x 3⅛ x ½ inches; front to center of hub 2⅜ inches; hub 5/16 inch; wrought brass sanded, antique brass shaded. Size front, ⅞ x 5¼ inches; 1 tumbler, 12 changes.

Lock No. S2KA1285, dozen	$ 8.70
Knobs No. S2KA72322, dozen pairs	15.75
Escutcheon No. S2KA72331, dozen	7.95
Set No. S2KA723124 Sanded antique brass, shaded, edges highly polished. Complete sets for doors	32.25



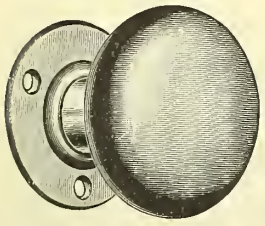
One pair Knobs No. S2KA72322, 2¼ inches. Two Escutcheons No. S2KA-72331, 2½ x 7¾ inches. Wrought brass sanded, antique brass shaded, with edges highly polished.

SEE DISCOUNT SHEET

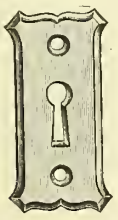
Inside Door Lock Sets

Half Size Cuts

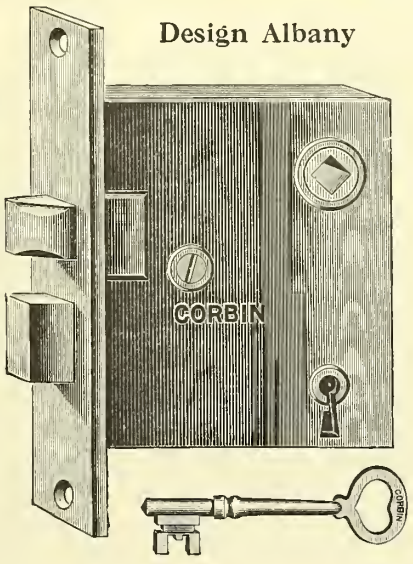
Design Albany



One pair Knobs No. LB1419½, wrought bronze, statuary bronze finish.



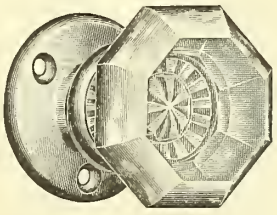
Two Escutcheons No. LB 76440, 1 x 2 inches, cast bronze, statuary bronze finish.



Lock No. LB785. Japanned case 3⅝ x 3¼ x 9/16 inches; front to center of hub 2 9/16 inches; hub 5/16 inch; cast bronze, statuary bronze finish front 15/16 x 5½ inches; 1 tumbler, 24 changes.

Lock No. LB785, dozen $12.45
Knobs No. LB1419½, dozen pairs 17.85
Escutcheons No. LB76440, dozen 6.12
Set No. LB2075 Statuary bronze finish, complete sets for doors, dozen 42.54

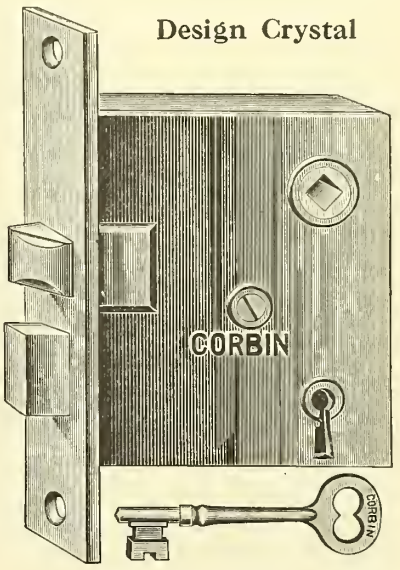
Design Crystal



One pair Knobs No. DA 0240½, 2¼ inches, brass, old brass finish mountings.



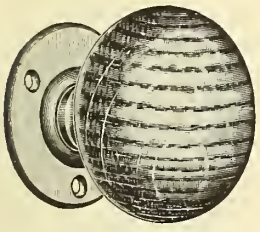
Two Escutcheons No. DA 2560, 1⅛ x 1⅜ inches; wrought brass, old brass finish.



Lock No. DA785. Japanned case 3⅝ x 3¼ x 9/16 inches; front to center of hub 2 9/16 inches; hub 5/16 inch; cast brass, old brass finish, front 15/16 x 5½ inches; 1 tumbler; 24 changes.

Lock No. DA785, dozen $12.45
Knobs No. DA0240½, dozen pairs 41.40
Escutcheon No. DA2560, dozen 1.80
Set No. DA2175 Old brass finish, glass knobs, complete sets for doors, dozen 57.45

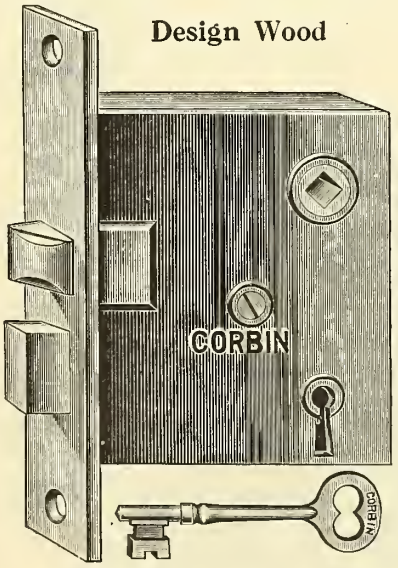
Design Wood



One pair Knobs, 2¼ inches. No. 06001¼, oak; No. 06001¼, mahogany; wrought brass, old brass finish mountings.



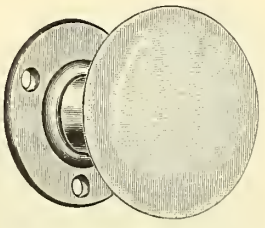
Two Escutcheons No. DA 2560, 1⅛ x 1⅜ inches; wrought brass, old brass finish.



Lock No. DA785. Japanned case 3⅝ x 3¼ x 9/16 inches; front to center of hub 2 9/16 inches; hub 5/16 inch; cast brass, old brass finish, front 15/16 x 5½ inches· 1 tumbler; 24 changes.

Lock No. DA785, dozen $12.45
Knob No. DA06001¼, oak, dozen pairs 7.90
Knob No. DA06001¼, mahogany, dozen pairs 7.90
Escutcheon No. DA2560, dozen 1.80
Set No. DA2275½ Old brass finish, oak knob, complete fordoors, dozen 23.95
Set No. DA2275 Old brass finish, mahogany knob, complete for doors, dozen 23.95

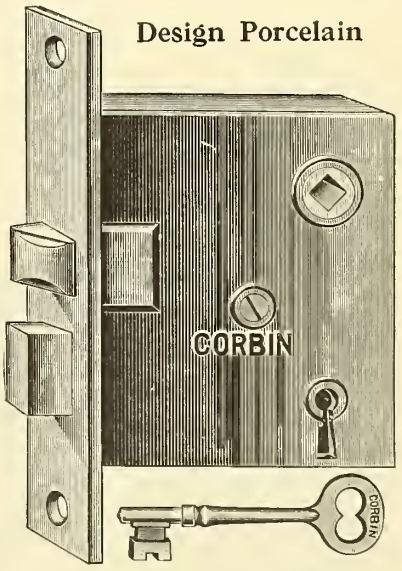
Design Porcelain



One pair Knobs No. DA 2851, 2¼ inches; porcelain, wrought brass, old brass finish mountings.



Two Escutcheons No. DA 2560, 1⅛ x 1⅜ inches; wrought brass, old brass finish.



Lock No. DA785. Japanned case 3⅝ x 3¼ x 9/16 inches; hub 5/16 inch; front to center of hub 2 9/16 inch; cast brass, old brass finish, front 15/16 x 5½ inches; 1 tumbler; 24 changes.

Lock No. DA785, dozen $12.45
Knobs No. DA2851, dozen pairs 9.30
Escutcheons No. DA2560, dozen 1.80
Set No. DA2375 Old brass finish, porcelain knobs, complete for doors 25.35

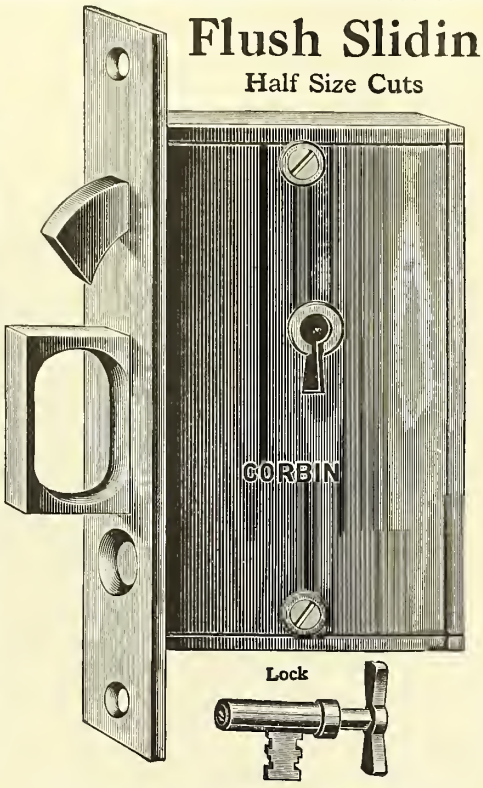
Flush Sliding Door Lock Sets

Design Columbia



Escutcheon, 2 x 5¾ inches.
Cast bronze polished, No. 0986¾.
Cast bronze, statuary bronze finish, No. LB0986¾.
For single doors with two escutcheons.
For double doors with four escutcheons.

Half Size Cuts

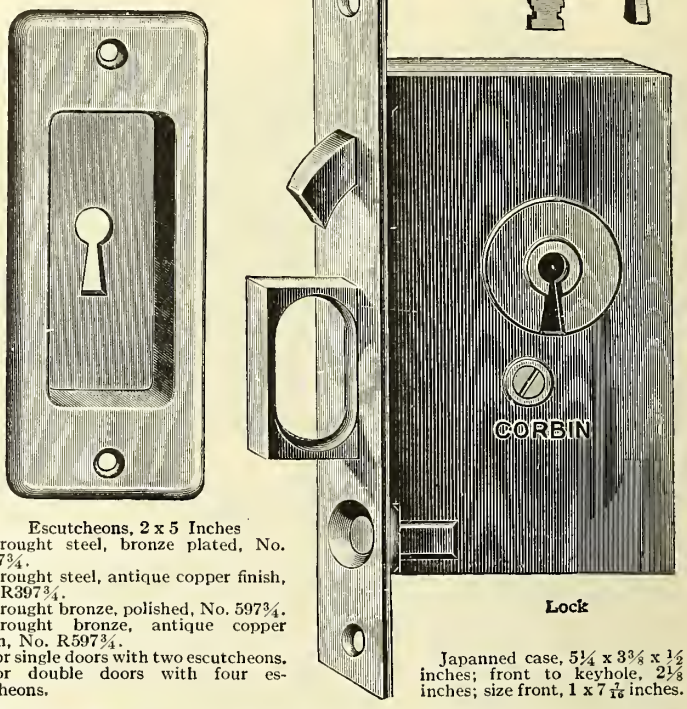


Lock

Japanned case 5½ x 3½ x ⅝ inches; front to keyhole 2 inches; size front, 1⅛ x 7⅝ inches.

Set No. 302312	Polished bronze, complete for single doors, set	$ 3.69
Set No. 302314	Polished bronze, complete for double doors, set	6.15
Set No. LB302312	Bronze, statuary bronze finish, complete for single doors, set	4.02
Set No. LB302314	Bronze, statuary bronze finish, complete for double doors, set	6.84

Design Washington



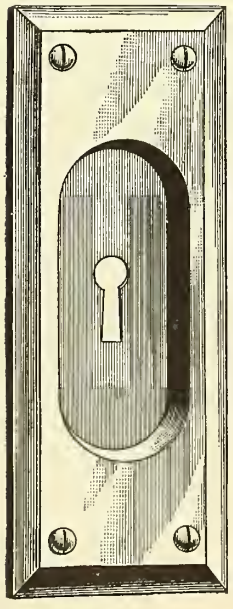
Escutcheons, 2 x 5 Inches
Wrought steel, bronze plated, No. N397¾.
Wrought steel, antique copper finish, No. R397¾.
Wrought bronze, polished, No. 597¾.
Wrought bronze, antique copper finish, No. R597¾.
For single doors with two escutcheons.
For double doors with four escutcheons.

Lock

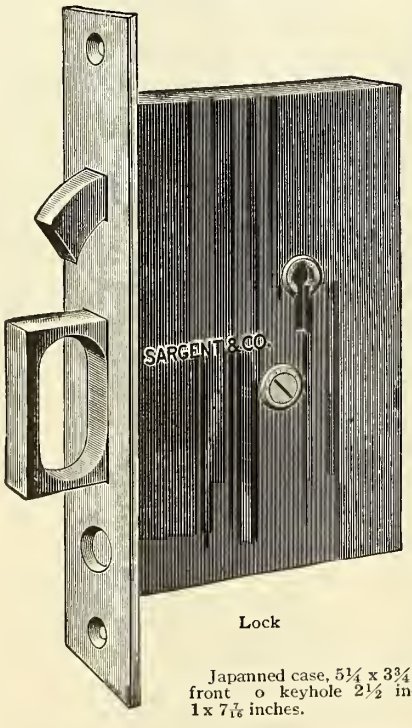
Japanned case, 5¼ x 3⅜ x 1½ inches; front to keyhole, 2⅛ inches; size front, 1 x 7 1/16 inches.

Set No. N165-308	Steel, bronze plated, complete for double door, dozen sets	$34 20
Set No. R165-308	Steel, antique copper finish, complete for double doors, dozen sets	39.60
Set No. 265312	Bronze, polished, complete for single doors, dozen sets	30.90
Set No. 265314	Bronze, polished, complete for double doors, dozen sets	47.40
Set No. R265312	Bronze, antique copper finish, complete for single doors, dozen sets	34.50
Set No. R265314	Bronze, antique copper finish, complete for double doors, dozen sets	54.60

Design Tarlton



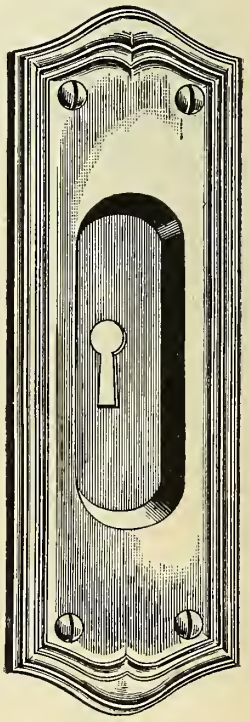
Escutcheons, 2⅜ x 6 inches.
Wrought steel, old brass finish, No. OB344TC.
Brass, old brass finish, No. OB844TC.
For single doors with two escutcheons.
For double doors with four escutcheons.



Lock

Japanned case, 5¼ x 3¾ x ⅝ inches; front o keyhole 2½ inches; front, 1 x 7 1/16 inches.

Design Hudson

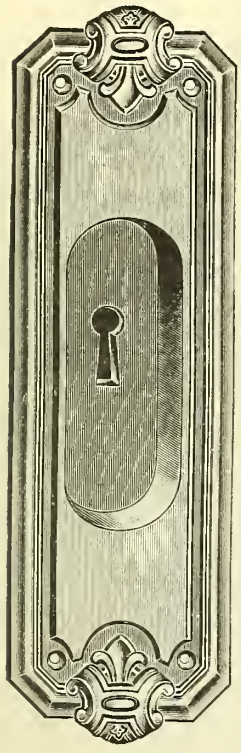


Escutcheons, 2½ x 7¼ inches.
Wrought bronze, polished, No. 844TH.
Steel, sanded antique brass finish with edges highly polished brass, No. R7D344TH.
For single doors with two escutcheons.
For double doors with four escutcheons.

Set No. OB6961TC	Steel, old brass finish, complete for single door, set	$ 1.65
Set No. OB6962TC	Steel, old brass finish, complete for double door, set	2.70
Set No. OB6963TC	Brass, old brass finish, complete for single door, set	2.05
Set No. OB6964TC	Brass, old brass finish, complete for double door, set	3.30
Set No. R7D6961TH	Steel sanded antique brass, with edges highly polished brass, complete for single door, set	$ 1.60
Set No. R7D6962TH	Steel sanded antique brass, with edges highly polished brass, complete for double door, set	2.60
Set No. 6963TH	Bronze, polished, complete for single door, set	2.25
Set No. 6964TH	Bronze, polished, complete for double door, set	3.65

Flush Sliding Door Lock Sets

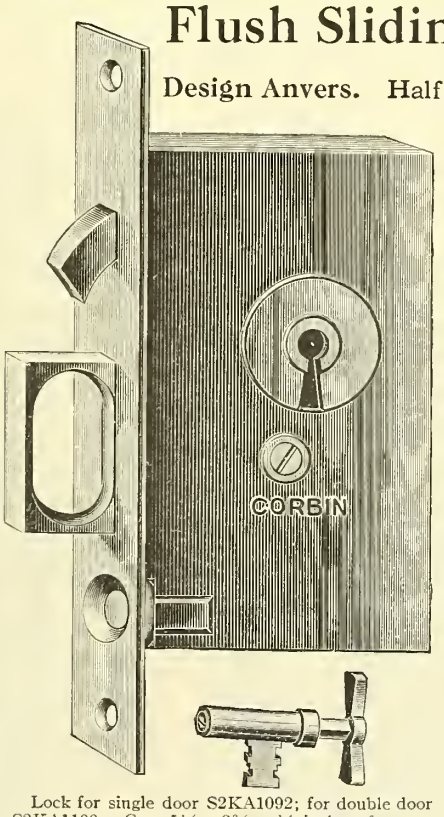
Design Anvers. Half Size Cuts



Escutcheon S2KA72334, 2½ x 7¾ inches. Wrought brass sanded, antique brass shaded with edges highly polished.

For single door with two escutcheons.

For double door with four escutcheons.



Lock for single door S2KA1092; for double door S2KA1100. Case 5¼ x 3⅜ x ½ inches; front to keyhole 2⅛ inches.

Set No. S2KA723312 Sanded antique brass shaded with edges highly polished, for single door, dozen sets..... $41.40

Set No. S2KA723314 Sanded antique brass shaded with edges highly polished, for double door, dozen sets..... 68.40



Escutcheon KA61834. Wrought steel, old brass finish.

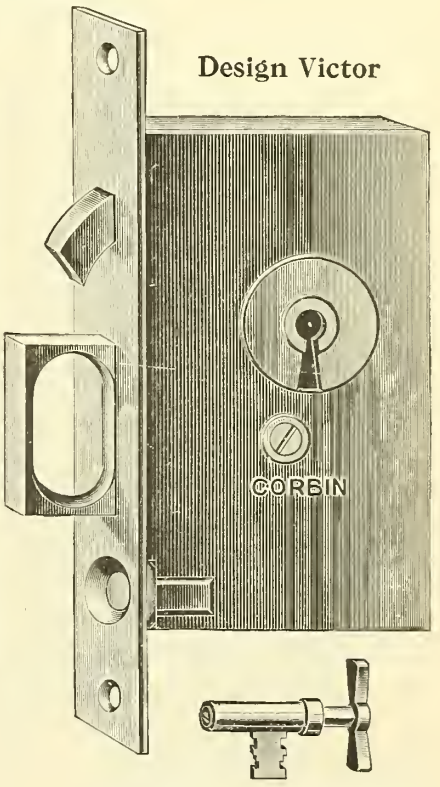
For single door with two escutcheons.

For double door with four escutcheons.

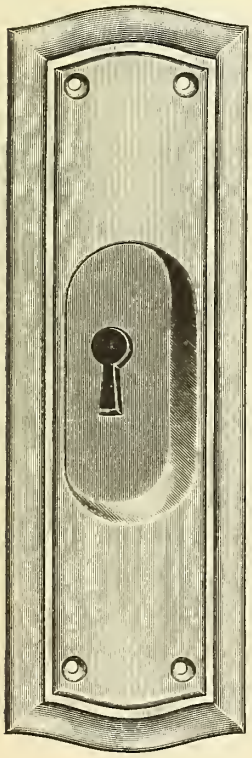
Set No. KA618306 Old brass finish. Complete for single door, dozen sets.. $28.80

Set No. KA618308 Old brass finish. Complete for double door, dozen sets.. 46.80

Design Victor



Lock for single door KA13092, for double door KA13100. Case 5¼ x 3⅜ x ½ inches; front to keyhole 2⅛ inches; steel, old brass finish, front 1⅝ x 7⅝ inches.

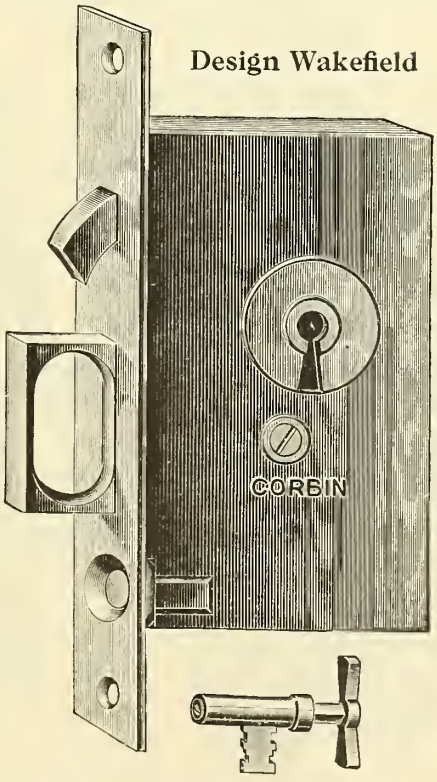


Escutcheon KA72634, 2½ x 7¾ inches. Wrought brass, old brass finish.

For single doors with two escutcheons.

For double doors with four escutcheons.

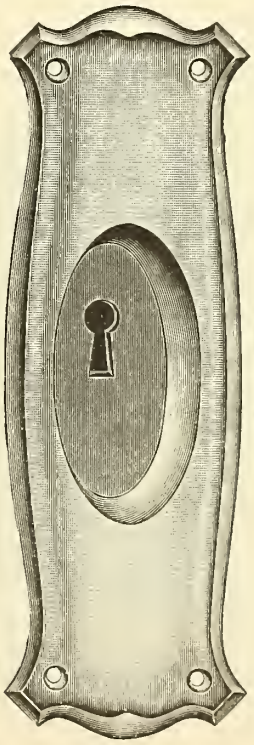
Design Wakefield



Lock for single door KA1092, for double door KA1100. Case 5¼ x 3⅜ x ½ inches; front to keyhole 2⅛ inches; brass, old brass finish, front 1⅝ x 7⅝ inches.

Set No. OB726312 Old brass finish. Complete for single door, dozen sets.. $41.40

Set No. OB726314 Old brass finish. Complete for single door, dozen sets.. 68.40

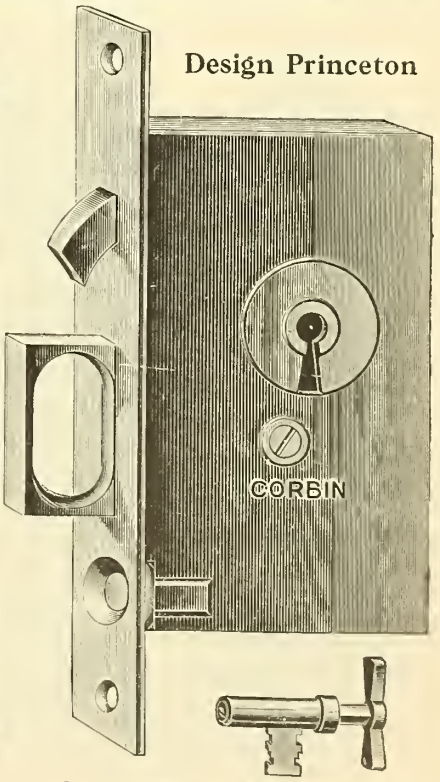


Escutcheon SKA62134, 2½ x 7¾ inches. Wrought steel, sanded old brass finish.

For single door with two escutcheons.

For double door with four escutcheons.

Design Princeton



Lock, for single door, SKA13092, for double door SKA13100. Case 5¼ x 3⅜ x ½ inches; front to keyhole 2⅛ inches, steel, sanded old brass finish, front 1⅝ x 7⅝ inches

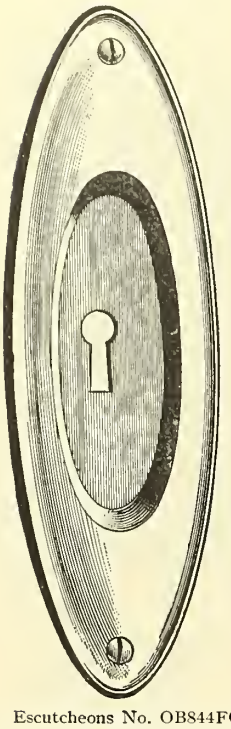
Set No. SKA621306 Sanded old brass finish. Complete for single door, dozen sets $28.80

Set No. SKA621308 Sanded old brass finish. Complete for single door, dozen sets 46.80

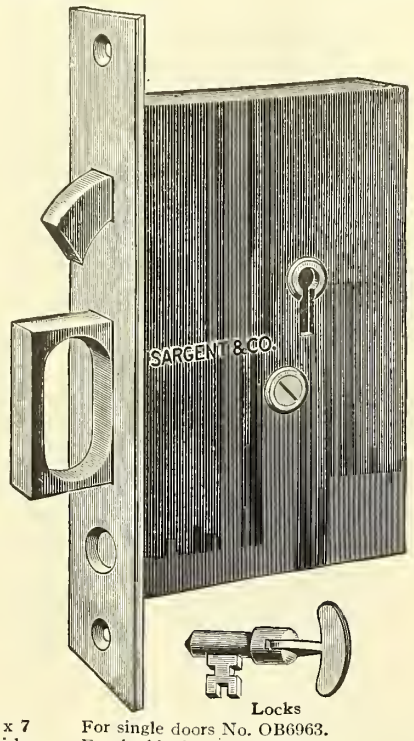
Flush Sliding Door Lock Sets

Half Size Cuts

Design Fairfax



Escutcheons No. OB844FC, 2⅜ x 7 inches. Wrought brass, old brass finish. For single door with two escutcheons. For double doors with four escutcheons.

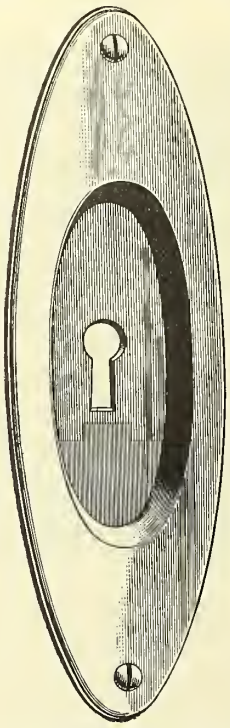


Locks

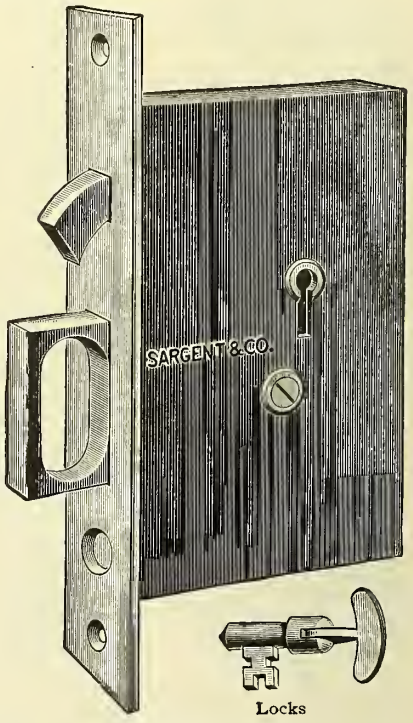
For single doors No. OB6963.
For double doors No. OB6964.
Case, 5¼ x 3¾ x ⅝ inches; front to keyhole, 2½ inches; brass, old brass finish front, 1 x 7 7/16 inches.

Set No. OB6963FC Old brass finish, complete for single door, set $2.30
Set No. OB6964FC Old brass finish, complete for double door, set 3.80

Design Portsmouth



Escutcheon No. 844PC, 2⅜ x 7 inches. Wrought bronze, polished. For single doors with two escutcheons. For double doors with four escutcheons.

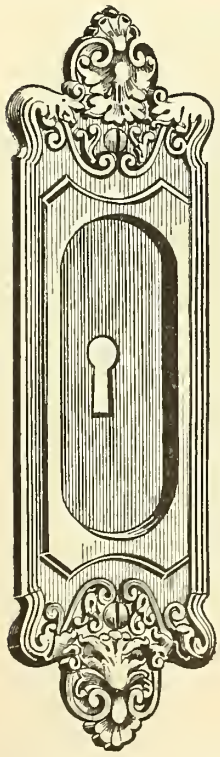


Locks

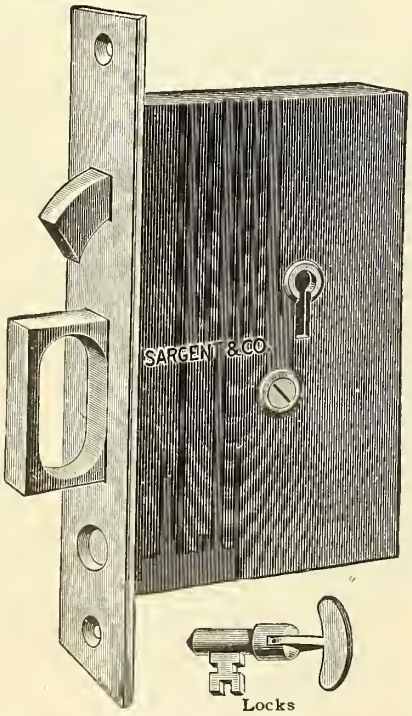
For single doors No. 6963P.
For double doors No. 6964P.
Case, 5¼ x 3¾ x ⅝ inches; front to keyhole, 2½ inches; bronze polished front, 1 x 7 7/16 inches.

Set No. 6963PC Bronze, polished, complete for single door, set $2.15
Set No. 6964PC Bronze, polished, complete for double door, set 3.45

Design Truro



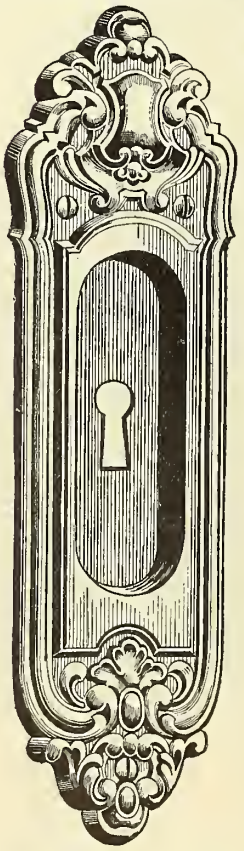
Escutcheon No. AB425TG, 2¼ x 7½ inches. Cast iron, antique copper finish. For single doors with two escutcheons. For double doors with four escutcheons.



Locks

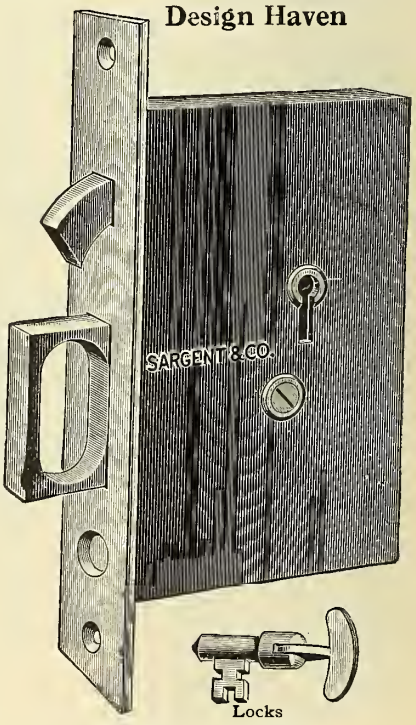
For single doors No. AB6961.
For double doors No. AB6962.
Case, 5¼ x 3¾ x ⅝ inches; front to keyhole, 2½ inches; steel, antique copper finish front, 1 x 7 7/16 inches.

Set No. AB6961TG Antique copper finish, complete for single door, set $1.70
Set No. AB6962TG Antique copper finish, complete for double door, set 2.80



Escutcheons No. OE344HF, 2 7/16 x 8¼ inches. Wrought steel, old brass finish. Depressed surface oxidized and relieved.

Design Haven



Locks

For single door No. OE6961.
For double door No. OE6962.
Case, 5¼ x 3¾ x ⅝ inches; front to center of keyhole, 2½ inches; steel, old brass finish front, 1 x 7 7/16 inches.

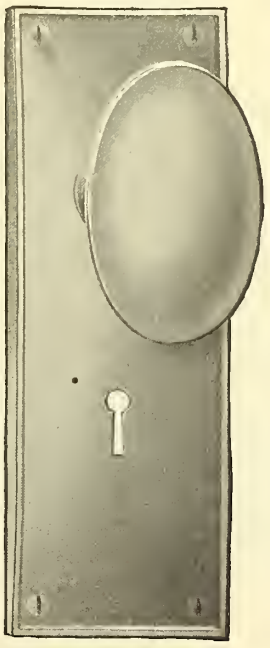
Set No. OE6961HF Old brass finish, depressed surface oxidized, relieved, complete for single door, set $1.70
Set No. OE6962HF Old brass finish, depressed surface oxidized, relieved, complete for double door, set 2.80

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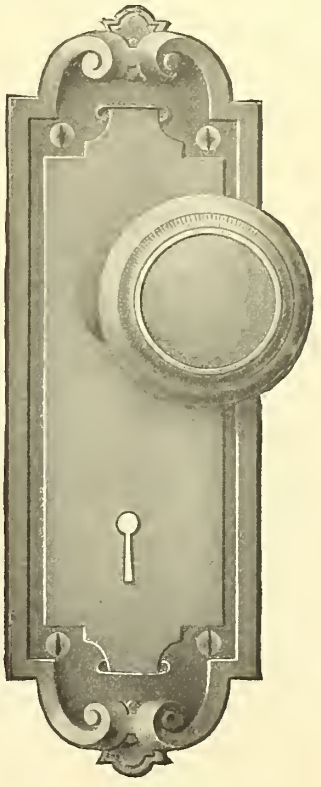
Special Designs—Builders Hardware



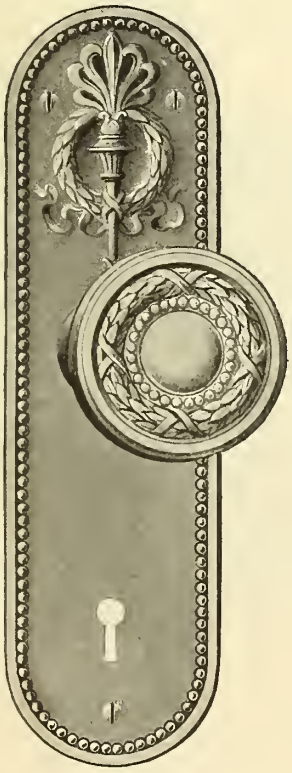
School Adams
Design Boston



School Colonial
Design Yarmouth



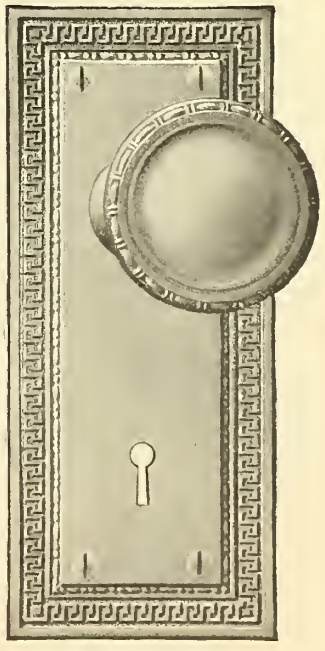
School Elizabethan
Design Stockton



School Empire
Design Corsica



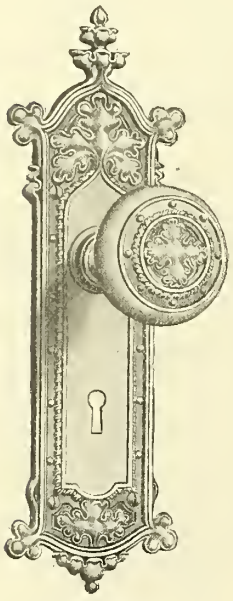
School Flemish
Design Utrecht



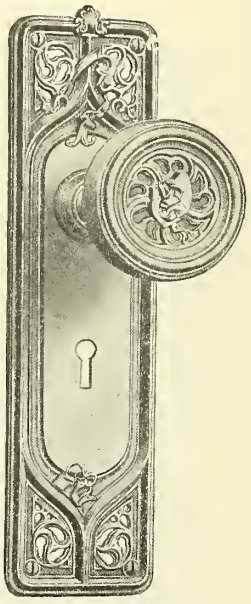
School Greek
Design Meander

The above combined Escutcheons and Knobs are illustrated to show what we are in position to furnish for the complete hardware trimming of a house. Other designs are available in many of the schools and we solicit opportunities to quote in this connection.

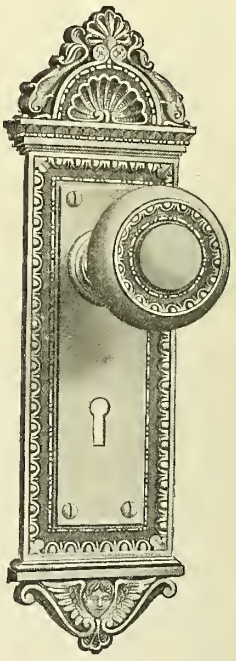
Special Designs—Builders Hardware



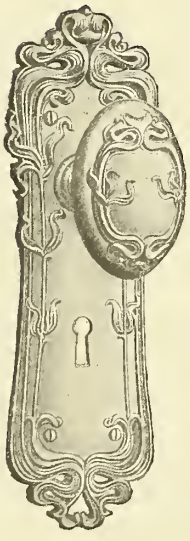
School English Gothic
Design Kirkby



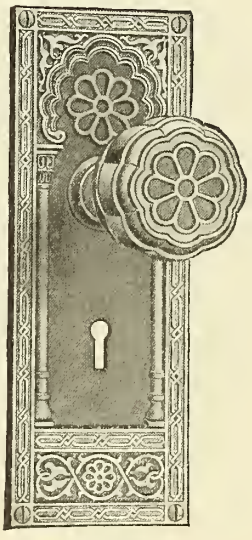
School French Gothic
Design Fargeau



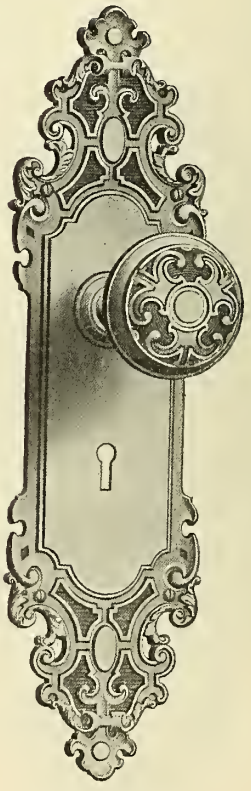
School of Italian Renaissance
Design Parma



School L'Art Nouveau
Design Larna



School Moorish
Design Olmedo



School Elizabethan
Design Bedford

These combined Escutcheons and Knobs are illustrated to give an idea of what we are in position to furnish for the complete hardware trimming of a house. Other designs in any of the schools are also available.

SEE DISCOUNT SHEET

Hand of Doors

As seen from outside

In ordering Locks (except those which are reversible) it is necessary that the hand of door be given, therefore we give the following illustrations to explain fully



View 1, Left Hand — View 2, Right Hand

Regular Doors. As seen from outside, doors opening in. Regular bevel bolts. View 1 shows a left-hand door, requiring a left-hand lock. View 2 shows a right-hand door, requiring a right-hand lock.



View 3, Left Hand, Reverse Bevel — View 4, Right Hand, Reverse Bevel

Reversed Doors. As seen from outside, doors opening out. Reverse bevel bolts

View 3. Left-hand Reverse Bevel

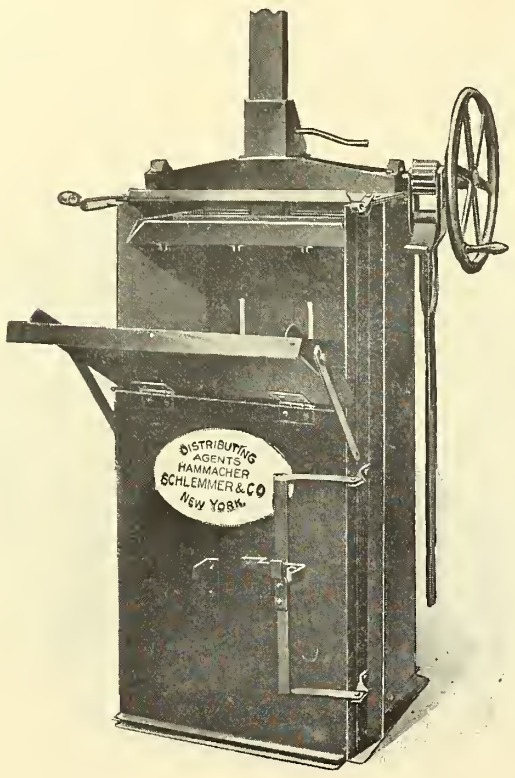
Left-hand Reverse Bevel Rim Locks.
Left-hand Reverse Bevel Rim Night Latches.
Left-hand Reverse Bevel Mortise Night Latches.
Right-hand Mortise Knob Locks.

View 4. Right-hand Reverse Bevel

Right-hand Reverse Bevel Rim Locks.
Right-hand Reverse Bevel Rim Night Latches.
Right-hand Reverse Bevel Mortise Night Latches.
Left-hand Mortise Knob Locks.

All Steel Baler

Schick



No. 3, ready to fill

Built entirely from heavy sheet steel—strongly reinforced with steel angle bars. Is absolutely fireproof, therefore means reduction of fire risk and insurance rate. The double method of applying the pressure, i. e., with lever and wheel, insures rapidity and compactness in baling.

Full open side swing door. Bale is easily removed after pressing. Will bale all kinds of waste paper, waste rags, canvas cuttings, cloth cuttings, tobacco stems, excelsior or any other waste which is capable of being compressed.

Produces full weight, compact bales which stand shipment; are fireproof and cleanly.

Contains very few working parts which are made of crucible steel castings.

The operation is simple with a direct and positive mechanism.

Nothing inflammable—guaranteed throughout.

Annealed Baling Wire

In bundles of 250 wires, 3 wires required for each bale, **enough for 80 bales**

For No. 3 machine, 8 feet No. 16 wire, bundle..... **$2.00**
For No. 4 machine, 10 feet No. 14 wire, bundle..... **2.00**

Dimensions of No. 3

Size of bale, 18 x 20 x 33 inches.
Weight of bale, 100 to 150 pounds.
Weight of press, 300 pounds.
Base, 24 inches x 24 inches.
Floor space for operating, 42 inches x 36 inches.
Compression chamber, 42 inches x 20 inches x 18 inches.
Price of No. 3, $45.00

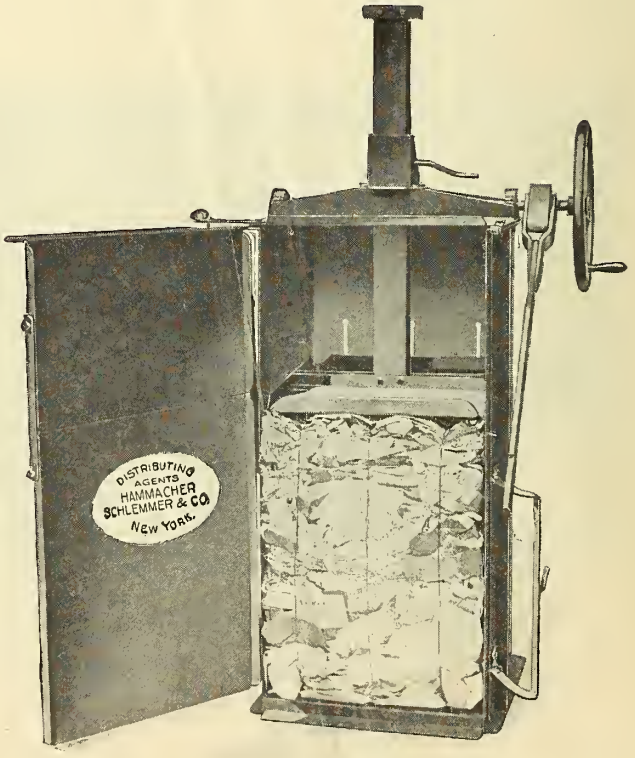
Dimensions of No. 4

Equipped with Double Ram

Size of bale, 20 x 24 x 38 inches
Weight of bale, 250 to 300 pounds.
Weight of press, 385 pounds.
Inside measurements, 22 x 24 x 50 inches.
Outside measurements, 25½ x 27½ x 51 inches.
Price of No. 4, $75.00

Grades and Values of Waste

Mixed.....As low as $6.00 to as high as $18.00 per ton
News.....As low as 8.00 to as high as 20.00 per ton
Blanks and No. 2
Shavings .....As low as $18.00 to as high as 27.00 per ton
No. 1 Shavings.....As low as 32.00 to as high as 45.00 per ton



No. 3 with bale compressed and wired ready for removal from Press

SEE DISCOUNT SHEET